FLIGHT AND GROUND INSTRUCTOR
Airmen Knowledge Test Question Bank

Please Note:
Subject matter codes appear above each item.

1.6.0.0.1.a.1 H20
A change in behavior as a result of experience can be defined as
A. learning.
B. knowledge.
C. understanding.

1.6.0.0.2.a.1 H20
The learning process may include such elements as verbal, conceptual, and
A. habitual.
B. experiential.
C. problem solving.

1.6.0.0.3.a.1 H20
While learning the material being taught, students may be learning other things as well. This additional learning is called
A. residual.
B. conceptual.
C. incidental.

1.6.0.0.4.a.1 H20
Individuals make more progress learning if they have a clear objective. This is one feature of the law of
A. primacy.
B. readiness.
C. willingness.

1.6.0.0.5.a.1 H20
Providing opportunities for a student to practice and then directing this process towards a goal is the basis of the law of
A. exercise.
B. learning.
C. readiness.

1.6.0.0.6.a.1 H20
The law that is based on the emotional reaction of the learner is the law of
A. effect.
B. primacy.
C. intensity.

1.6.0.0.7.a.1 H20
Things most often repeated are best remembered because of which law of learning?
A. Law of effect.
B. Law of recency.
C. Law of exercise.

1.6.0.0.8.a.1 H20
Which law of learning implies that a student will learn more from the real thing than from a substitute?
A. Law of effect.
B. Law of primacy.
C. Law of intensity.

1.6.0.0.9.a.1 H20
Which law of learning determines the relative positions of lectures within a course syllabus?
A. Law of primacy.
B. Law of recency.
C. Law of intensity.

1.6.0.1.0.a.1 H20
Which law of learning often creates a strong impression?
A. Law of primacy.
B. Law of intensity.
C. Law of readiness.

1.6.0.1.1.a.1 H20
What is the basis of all learning?
A. Perception.
B. Motivation.
C. Positive self-concept.

1.6.0.1.2.a.1 H20
A basic need that affects all of a person's perceptions is the need to
A. maintain and enhance the organized self.
B. accomplish a higher level of satisfaction.
C. avoid areas that pose a threat to success.

1.6.0.1.3.a.1 H20
Instruction, as opposed to the trial and error method of learning, is desirable because competent instruction speeds the learning process by
A. motivating the student to a better performance.
B. emphasizing only the important points of training.
C. teaching the relationship of perceptions as they occur.

1.6.0.1.4.a.1 H20
Which factor affecting perception has a great influence on the total perceptual process?
A. Self-concept.
B. Goals and values.
C. Time and opportunity.

1.6.0.1.5.a.1 H20
Perceptions result when a person
A. gives meaning to sensations being experienced.
B. is able to discern items of useful information.
C. responds to visual cues first, then aural cues, and relates these cues to ones previously learned.

1.6.0.1.6.a.1 H20
The factor which contributes most to a student's failure to remain receptive to new experiences and which creates a tendency to reject additional training is
A. basic needs.
B. element of threat.
C. negative self-concept.

1.6.0.1.7.a.1 H20
The mental grouping of affiliated perceptions is called

A. insights.
B. association.
C. conceptualization.

1.6.0.1.8.a.1 H20
An instructor may foster the development of insights by
A. helping the student acquire and maintain a favorable self-concept.
B. pointing out the attractive features of the activity to be learned.
C. keeping the rate of learning consistent so that it is predictable.

1.6.0.1.9.a.1 H20
In the learning process, fear or the element of threat will
A. narrow the student's perceptual field.
B. decrease the rate of associative reactions.
C. cause a student to focus on several areas of perception.

1.6.0.2.0.a.1 H20
Name one way an instructor can help develop student insights.
A. Provide a safe environment in which to learn.
B. Point out various items to avoid during the learning process.
C. Keep learning blocks small so they are easier to understand.

1.6.0.2.1.a.1 H20
Insights, as applied to learning, involve a person's
A. association of learning with change.
B. grouping of associated perceptions into meaningful wholes.
C. ability to recognize the reason for learning a procedure.

1.6.0.2.2.a.1 H20
Which statement is true concerning motivations?
A. Motivations must be tangible to be effective.
B. Motivations may be very subtle and difficult to identify.
C. Negative motivations often are as effective as positive motivations.

1.6.0.2.3.a.1 H20
Motivations that cause a student to react with fear and anxiety are
A. tangible.
B. negative.
C. difficult to identify.

1.6.0.2.4.a.1 H20
For a motivation to be effective, students must believe their efforts will be rewarded in a definite manner. This type of motivation is
A. subtle.
B. negative.
C. tangible.

1.6.0.2.5.a.1 H20
Which is generally the more effective way for an instructor to properly motivate students?
A. Maintain pleasant personal relationships with students.
B. Provide positive motivations by the promise or achievement of rewards.
C. Reinforce their self-confidence by requiring no tasks beyond their ability to perform.

1.6.0.2.6.a.1 H20
Motivations in the form of reproof and threats should be avoided with all but the student who is
A. overconfident and impulsive.
B. avidly seeking group approval.
C. experiencing a learning plateau.

1.6.0.2.7.a.1 H20
What level of knowledge is being tested if asked, "What is the maneuvering speed of the aircraft listed in the owner's manual?"
A. Rote.
B. Application.
C. Understanding.

1.6.0.2.8.a.1 H20
During the flight portion of a practical test, the examiner retards the throttle and asks the applicant to perform a simulated forced landing. What level of learning is being tested?
A. Application.
B. Correlation.
C. Understanding.

1.6.0.2.9.a.1 H20
When asking a student to explain how gross weight affects maneuvering speed, what level of learning is being tested?
A. Application.
B. Correlation.
C. Understanding.

1.6.0.3.0.a.1 H20
At which level of learning do most instructors stop teaching?
A. Application.
B. Correlation.
C. Understanding.

1.6.0.3.1.a.1 H20
The best way to prepare a student to perform a task is to
A. explain the purpose of the task.
B. provide a clear, step-by-step example.
C. give the student an outline of the task.

1.6.0.3.2.a.1 H20
A primary consideration in planning for student performance is the
A. student's motivational level.
B. student's intellectual level.
C. length of the practice session.

1.6.0.3.3.a.1 H20
A learning plateau may be defined as the
A. point in the learning curve at which skill proficiency retrogresses.
B. normal and temporary leveling-off of an individual's learning rate.
C. achievement of the highest possible level of competence for a particular individual.

1.6.0.3.4.a.1 H20
According to one theory, some forgetting is due to the practice of submerging an unpleasant experience into the subconscious. This is called
A. blanking.

B. immersion.
C. repression.

1.6.0.3.5.a.1 H20
When the learning of similar things overshadows other learning experiences, it is called
A. suppression.
B. correlation.
C. interference.

1.6.0.3.6.a.1 H20
When a person has difficulty recalling facts after several years, this is known as
A. disuse.
B. repression.
C. poor retention.

1.6.0.3.7.a.1 H20
Responses that produce a pleasurable return are called
A. reward.
B. praise.
C. positive feedback.

1.6.0.3.8.a.1 H20
Which transfer of learning occurs when the performance of a maneuver interferes with the learning of another maneuver?
A. Adverse.
B. Positive.
C. Negative.

1.6.0.3.9.a.1 H20
The performance of rectangular patterns helps a student fly traffic patterns. What type transfer of learning is this?
A. Lateral.
B. Positive.
C. Deliberate.

1.6.0.4.0.a.1 H20
To ensure proper habits and correct techniques during training, an instructor should
A. use the building block technique of instruction.
B. repeat subject matter the student has already learned.
C. introduce challenging material to continually motivate the student.

1.6.0.4.1.a.1 H21
Before a student can concentrate on learning, which human needs must be satisfied?
A. Safety.
B. Physical.
C. Security.

1.6.0.4.2.a.1 H21
After individuals are physically comfortable and have no fear for their safety, which human needs become the prime influence on their behavior?
A. Social.
B. Physical.
C. Egoistic.

1.6.0.4.3.a.1 H21

Which of the student's human needs offer the greatest challenge to an instructor?
A. Social.
B. Egoistic.
C. Self-fulfillment.

1.6.0.4.4.a.1 H21
When a student uses excuses to justify inadequate performance, it is an indication of the defense mechanism known as
A. flight.
B. aggression.
C. rationalization.

1.6.0.4.5.a.1 H21
Although defense mechanisms can serve a useful purpose, they can also be a hindrance because they
A. provide feelings of adequacy.
B. alleviate the cause of problems.
C. involve self-deception and distortion of reality.

1.6.0.4.6.a.1 H21
When a student asks irrelevant questions or refuses to participate in class activities, it usually is an indication of the defense mechanism known as
A. flight.
B. aggression.
C. resignation.

1.6.0.4.7.a.1 H21
Taking physical or mental flight is a defense mechanism students use when they
A. want to escape from frustrating situations.
B. cannot accept the real reasons for their behavior.
C. lose interest during the advanced stages of training.

1.6.0.4.8.a.1 H21
When students subconsciously use the defense mechanism called rationalization, they
A. use excuses to justify acceptable behavior.
B. cannot accept the real reasons for their behavior.
C. develop symptoms that give them excuses for removing themselves from frustration.

1.6.0.4.9.a.1 H21
When students display the defense mechanism called aggression, they
A. become visibly angry, upset, and childish.
B. may refuse to participate in class activities.
C. attempt to justify actions by asking numerous questions.

1.6.0.5.0.a.1 H21
When a student engages in daydreaming, it is the defense mechanism of
A. flight.
B. fantasy.
C. avoidance.

1.6.0.5.1.a.1 H21
When a student becomes bewildered and lost in the advanced phase of training after completing the early phase without grasping the fundamentals, the defense mechanism is usually in the form of
A. submission.
B. resignation.
C. rationalization.

1.6.0.5.2.a.1 H21
Which would more likely result in students becoming frustrated?
A. Giving the students meaningless praise.
B. Telling students their work is unsatisfactory with no explanation.
C. Covering up instructor mistakes or bluffing when the instructor is in doubt.

1.6.0.5.3.a.1 H21
When students are unable to see the benefits or purpose of a lesson, they will
A. be less motivated.
B. not learn as quickly.
C. be expected to increase their efforts.

1.6.0.5.4.a.1 H21
When the instructor keeps the student informed of lesson objectives and completion standards, it minimizes the student's feelings of
A. insecurity.
B. resignation.
C. aggressiveness.

1.6.0.5.5.a.1 H21
Student confidence tends to be destroyed if instructors
A. bluff whenever in doubt about some point.
B. continually identify student errors and failures.
C. direct and control the student's actions and behavior.

1.6.0.5.6.a.1 H22
The effectiveness of communication between instructor and student is measured by the
A. degree of dynamic, interrelated elements.
B. similarity between the idea transmitted and the idea received.
C. relationship between communicative and dynamic elements.

1.6.0.5.7.a.1 H22
In order to be successful, communicators must speak or write from a background of
A. technical expertise.
B. knowing the ideas presented.
C. up-to-date, stimulating material.

1.6.0.5.8.a.1 H22
To communicate effectively, instructors must
A. recognize the level of comprehension.
B. provide an atmosphere which encourages questioning.
C. reveal a positive attitude while delivering their message.

1.6.0.5.9.a.1 H22
Effective communication has taken place when, and only when, the
A. information is transmitted and received.
B. receivers react with understanding and change their behavior accordingly.
C. receivers have the ability to question and comprehend ideas that have been transmitted.

1.6.0.6.0.a.1 H22
In the communication process, the communicator will be more successful in gaining and retaining the receiver's attention by

A. being friendly and informative.
B. using a varied communicative approach.
C. using a variety of audiovisual aids in class.

1.6.0.6.1.a.1 H22
By using abstractions in the communication process, the communicator will
A. bring forth specific items of experience in the minds of the receivers.
B. be using words which refer to objects or ideas that human beings can experience directly.
C. not evoke in the listener's or reader's mind the specific items of experience the communicator intends.

1.6.0.6.2.a.1 H22
The danger in using abstract words is that they
A. sum up vast areas of experience.
B. call forth different mental images in the minds of the receivers.
C. will not evoke the specific items of experience in the listener's mind that the communicator intends.

1.6.0.6.3.a.1 H22
Probably the greatest single barrier to effective communication in the teaching process is a lack of
A. respect for the instructor.
B. personality harmony between instructor and student.
C. a common experience level between instructor and student.

1.6.0.6.4.a.1 H22
A communicator's words cannot communicate the desired meaning to another person unless the
A. words have meaningful referents.
B. words give the meaning that is in the mind of the receiver.
C. listener or reader has had some experience with the objects or concepts to which these words refer.

1.6.0.6.5.a.1 H23
What is the proper sequence in which an instructor should employ the four basic steps in the teaching process?
A. Preparation, presentation, application, and review and evaluation.
B. Preparation, demonstration, practice, and review.
C. Explanation, demonstration, practice, and evaluation.

1.6.0.6.6.a.1 H23
Which method of presentation is desirable for teaching a skill such as cross-country planning?
A. Lecture/application.
B. Presentation/practice.
C. Demonstration/performance.

1.6.0.6.7.a.1 H23
Which statement is true regarding student evaluation?
A. The student's own evaluations can only be objective.
B. Evaluation of the student's learning should be an integral part of each lesson.
C. If deficiencies or faults not associated with the present lesson are revealed, they should be corrected immediately.

1.6.0.6.8.a.1 H23
In the teaching process, which method of presentation is suitable for presenting new material, for summarizing ideas, and for showing relationships between theory and practice?
A. Lecture method.
B. Integrated instruction method.
C. Demonstration/performance method.

1.6.0.6.9.a.1 H23
Evaluation of student performance and accomplishment during a lesson should be based on
A. objectives and goals established in the lesson plan.
B. performance of each student compared to an objective standard.
C. each student's ability to make an objective evaluation of their own progress.

1.6.0.7.0.a.1 H23
To enhance a student's acceptance of further instruction, the instructor should
A. keep the student informed of the progress made.
B. continually prod the student to maintain motivational levels.
C. establish performance standards a little above the student's actual ability.

1.6.0.7.1.a.1 H24
The proper sequence for the subparts of an introduction is
A. attention, motivation, and overview.
B. attention, development, and overview.
C. overview, motivation, and conclusion.

1.6.0.7.2.a.1 H24
In organizing lesson material, which step should relate the coverage of material to the entire course?
A. Overview.
B. Conclusion.
C. Introduction.

1.6.0.7.3.a.1 H24
The method of arranging lesson material from the simple to complex, past to present, and known to unknown, is one that
A. creates student thought pattern departures.
B. shows the relationships of the main points of the lesson.
C. requires students to actively participate in the lesson.

1.6.0.7.4.a.1 H24
When teaching from the known to the unknown, an instructor is using the student's
A. current knowledge of the subject.
B. previous experiences and knowledge.
C. previously held opinions, both valid and invalid.

1.6.0.7.5.a.1 H24
In developing a lesson, the instructor must logically organize explanations and demonstrations to help the student
A. achieve the desired learning outcome.
B. acquire a thorough understanding of the material presented.
C. understand the relationships of the main points of the lesson.

1.6.0.7.6.a.1 H24
The first step in preparing a lecture is to
A. research the subject.
B. develop the main ideas or key points.
C. establish the objective and desired outcome.

1.6.0.7.7.a.1 H24
Which is a true statement regarding the teaching lecture?
A. Delivering the lecture in an extemporaneous manner is not recommended.
B. Instructor receives direct feedback from students which is easy to interpret.
C. Instructor must develop a keen perception for subtle responses and be able to interpret the meaning of these reactions.

1.6.0.7.8.a.1 H24
During a teaching lecture, what would detract from an instructor's dignity and reflect upon the student's intelligence?
A. Use of figurative language.
B. Errors in grammar and use of vulgarisms.
C. Using picturesque slang and colloquialisms.

1.6.0.7.9.a.1 H24
What is one advantage of a lecture?
A. Uses time economically.
B. Excellent when additional research is required.
C. Allows for maximum attainment of certain types of learning outcomes.

1.6.0.8.0.a.1 H24
An instructor can best inspire active student participation during lectures through the use of
A. questions.
B. visual aids.
C. encouragement.

1.6.0.8.1.a.1 H24
The distinguishing characteristic of an informal lecture is the
A. use of visual aids.
B. student's participation.
C. requirement for informal notes.

1.6.0.8.2.a.1 H24
Which teaching method is most economical in terms of the time required to present a given amount of material?
A. Briefing.
B. Teaching lecture.
C. Demonstration/performance.

1.6.0.8.3.a.1 H24
Which type question should an instructor use to begin a guided discussion with a group of students?
A. Relay.
B. Overhead.
C. Rhetorical.

1.6.0.8.4.a.1 H24
Which statement about the guided discussion method of teaching is true?
A. The lesson objective becomes apparent at the application level of learning.
B. Students without a background in the subject can also be included in the discussion.
C. Unless the students have some knowledge to exchange with each other, they cannot reach the desired learning outcomes.

1.6.0.8.5.a.1 H24
In a guided discussion, learning is produced through the
A. skillful use of questions.
B. use of questions, each of which contains several ideas.
C. use of reverse questions directed to the class as a whole.

1.6.0.8.6.a.1 H24
Which question would be best as a leadoff question for a guided discussion on the subject of torque?
A. Does torque affect an airplane?
B. How does torque affect an airplane?

C. What effect does torque have on an airplane in a turn?

1.6.0.8.7.a.1 H24
In a guided discussion, leadoff questions should usually begin with
A. why.
B. what.
C. when.

1.6.0.8.8.a.1 H24
When it appears students have adequately discussed the ideas presented during a guided discussion, one of the most valuable tools an instructor can use is
A. a session of verbal testing.
B. a written test on the subject discussed.
C. an interim summary of what the students accomplished.

1.6.0.8.9.a.1 H24
What are the essential steps in the demonstration/performance method of teaching?
A. Demonstration, practice, and evaluation.
B. Demonstration, student performance, and evaluation.
C. Explanation, demonstration, student performance, instructor supervision, and evaluation.

1.6.0.9.0.a.1 H24
In the demonstration/performance method of instruction, which two separate actions are performed concurrently?
A. Instructor explanation and demonstration.
B. Student performance and instructor supervision.
C. Instructor explanation and student demonstration.

1.6.0.9.1.a.1 H24
What is the last step in the demonstration/performance method?
A. Summary.
B. Evaluation.
C. Student performance.

1.6.0.9.2.a.1 H25
Which statement is true about an instructor's critique of a student's performance?
A. The critique should always be conducted in private.
B. It is a step in the learning process, not in the grading process.
C. Instructor comments and recommendations should be based on the performance the way it should have been.

1.6.0.9.3.a.1 H25
Which statement is true about instructors' critiques?
A. Instructors should rely on their personality to make a critique more acceptable.
B. A comprehensive critique should emphasize positive aspects of student performance.
C. Before students willingly accept their instructor's critique, they must first accept the instructor.

1.6.0.9.4.a.1 H25
When an instructor critiques a student, it should always be
A. done in private.
B. subjective rather than objective.
C. conducted immediately after the student's performance.

1.6.0.9.5.a.1 H25
An instructor's critique of a student's performance should

A. treat every aspect of the performance in detail.
B. be private so that the student is not embarrassed.
C. provide direction and guidance to improve performance.

1.6.0.9.6.a.1 H25
Which statement is true about an instructor's critique of a student's performance?
A. Praise for praise's sake is of value.
B. It should be constructive and objective.
C. It should treat every aspect of the performance in detail.

1.6.0.9.7.a.1 H25
To be effective, a critique should
A. not contain negative remarks.
B. treat every aspect of the performance in detail.
C. be flexible enough to satisfy the requirements of the moment.

1.6.0.9.8.a.1 H26
Which is a valid reason for the use of proper oral quizzing during a lesson?
A. Promotes active student participation.
B. Identifies points that need less emphasis.
C. Helps the instructor determine the general intelligence level of the students.

1.6.0.9.9.a.1 H26
Proper oral quizzing by the instructor during a lesson can have which result?
A. Promotes effective use of available time.
B. Identifies points which need more emphasis.
C. Permits the introduction of new material not covered previously.

1.6.1.0.0.a.1 H26
One desirable result of proper oral quizzing by the instructor is to
A. reveal the effectiveness of the instructor's training procedures.
B. fulfill the requirements set forth in the overall objectives of the course.
C. reveal the essential information from which the student can determine progress.

1.6.1.0.1.a.1 H26
During oral quizzing in a given lesson, effective questions should
A. be brief and concise.
B. provide answers that can be expressed in a variety of ways.
C. divert the student's thoughts to subjects covered in previous lessons.

1.6.1.0.2.a.1 H26
In all quizzing as a portion of the instruction process, the questions should
A. include catch questions to develop the student's perceptive power.
B. call for specific answers and be readily evaluated by the instructor.
C. include questions with more than one central idea to evaluate how completely a student understands the subject.

1.6.1.0.3.a.1 H26
To be effective in oral quizzing during the conduct of a lesson, a question should
A. be difficult for that stage of training.
B. include a combination of where, how, and why.
C. divert the student's thoughts to subjects covered in other lessons.

1.6.1.0.4.a.1 H26

To answer a student's question, it is most important that the instructor
A. clearly understand the question.
B. have complete knowledge of the subject.
C. introduce more complicated information to partially answer the question, if necessary.

1.6.1.0.5.a.1 H26
A written test has validity when it
A. yields consistent results.
B. samples liberally whatever is being measured.
C. actually measures what it is supposed to measure and nothing else.

1.6.1.0.6.a.1 H26
A written test that has reliability
A. yields consistent results.
B. measures small differences in the achievement of students.
C. actually measures what it is supposed to measure and nothing else.

1.6.1.0.7.a.1 H26
The characteristic of a written test, which measures small differences in achievement between students, is its
A. validity.
B. reliability.
C. discrimination.

1.6.1.0.8.a.1 H26
When a written test shows positive discrimination, it will
A. cover several levels of difficulty.
B. distinguish between students both low and high in achievement.
C. include a representative and comprehensive sampling of the course objectives.

1.6.1.0.9.a.1 H26
A written test is said to be comprehensive when it
A. includes all levels of difficulty.
B. samples liberally whatever is being measured.
C. measures knowledge of the same topic in many different ways.

1.6.1.1.0.a.1 H26
Which type of test item creates the greatest probability of guessing?
A. True-false.
B. Supply-type.
C. Multiple choice.

1.6.1.1.1.a.1 H26
Which is the main disadvantage of supply-type test items?
A. They cannot be graded with uniformity.
B. They are readily answered by guessing.
C. They are easily adapted to statistical analysis.

1.6.1.1.2.a.1 H26
What is a characteristic of supply-type test items?
A. They are easily adapted to testing of knowledge facts and details.
B. Test results would be graded the same regardless of the student or the grader.
C. The same test graded by different instructors would probably be given different scores.

1.6.1.1.3.a.1 H26
One of the main advantages of selection-type test items over supply-type test items is that the selection-type
A. decreases discrimination between responses.
B. would be graded objectively regardless of the student or the grader.
C. precludes comparison of students under one instructor with those under another instructor.

1.6.1.1.4.a.1 H26
Which is one of the major difficulties encountered in the construction of multiple-choice test items?
A. Adapting the items to statistical item analysis.
B. Keeping all responses approximately equal in length.
C. Inventing distractors which will be attractive to students lacking knowledge or understanding.

1.6.1.1.5.a.1 H26
Which statement is true about multiple-choice test items that are intended to measure achievement at a higher level of learning?
A. It is unethical to mislead students into selecting an incorrect alternative.
B. Some or all of the alternatives should be acceptable but only one should be clearly better than the others.
C. The use of common errors as distracting alternatives to divert the student from the correct response is ineffective and invalid.

1.6.1.1.6.a.1 H26
Which statement is true relative to effective multiple-choice test items?
A. Negative words or phrases need not be emphasized.
B. Items should call for abstract background knowledge.
C. Keep all alternatives of approximately equal length.

1.6.1.1.7.a.1 H26
In a written test, which type of selection-type test items reduces the probability of guessing correct responses?
A. Essay.
B. Matching.
C. Multiple-choice.

1.6.1.1.8.a.1 H26
Which type test is desirable for evaluating training that involves an operation, procedure, or process?
A. Oral.
B. Performance.
C. Proficiency.

1.6.1.1.9.a.1 H27
Which is a true statement concerning the use of visual aids?
A. Visual aids ensure getting and holding the student's attention.
B. Visual aids can be used to emphasize the key points in a lesson.
C. Visual aids should not be used simply to cover a subject in less time.

1.6.1.2.0.a.1 H27
Instructional aids used in the teaching/learning process should be
A. self-supporting and require no explanation.
B. compatible with the learning outcomes to be achieved.
C. selected prior to developing and organizing the lesson plan.

1.6.1.2.1.a.1 H27
Instructional aids used in the teaching/learning process should not be used
A. as a crutch by the instructor.
B. for teaching more in less time.

C. to visualize relationships between abstracts.

1.6.1.2.2.a.1 H27
The use of instructional aids should be based on their ability to support a specific point in the lesson. What is the first step in determining if and where instructional aids are necessary?
A. Organize subject material into an outline or a lesson plan.
B. Determine what ideas should be supported with instructional aids.
C. Clearly establish the lesson objective, being certain what must be communicated.

1.6.1.2.3.a.1 H30
Which statement is true regarding true professionalism as an instructor?
A. Anything less than sincere performance destroys the effectiveness of the professional instructor.
B. To achieve professionalism, actions and decisions must be limited to standard patterns and practices.
C. A single definition of professionalism would encompass all of the qualifications and considerations which must be present.

1.6.1.2.4.a.1 H30
An instructor can most effectively maintain a high level of student motivation by
A. making each lesson a pleasurable experience.
B. relaxing the standards of performance required during the early phase of training.
C. continually challenging the student to meet the highest objectives of training that can be established.

1.6.1.2.5.a.1 H30
Faulty performance due to student overconfidence should be corrected by
A. increasing the standard of performance for each lesson.
B. praising the student only when the performance is perfect.
C. providing strong, negative evaluation at the end of each lesson.

1.6.1.2.6.a.1 H30
What should an instructor do with a student who assumes that correction of errors is unimportant?
A. Divide complex flight maneuvers into elements.
B. Try to reduce the student's overconfidence to reduce the chance of an accident.
C. Raise the standard of performance for each lesson, demanding greater effort.

1.6.1.2.7.a.1 H30
Which statement is true regarding the achievement of an adequate standard of performance?
A. A flight instructor should devote major effort and attention to the continuous evaluation of student performance.
B. Flight instructors can affect a genuine improvement in the student/instructor relationship by not strictly enforcing standards.
C. Flight instructors fail to provide competent instruction when they permit students to partially learn an important item of knowledge or skill.

1.6.1.2.8.a.1 H30
Which statement is true regarding positive or negative approaches in aviation instructional techniques?
A. A student with normal abilities should not be affected by an instructor who emphasizes emergency procedures early in training.
B. A positive approach, to be effective, will point out the pleasurable features of aviation before the unpleasant possibilities are discussed.
C. The introduction of emergency procedures before the student is acquainted with normal operations is likely to be neither discouraging nor affect learning.

1.6.1.2.9.a.1 H30
Which is an example of a positive approach in the first flight lesson of a student with no previous aviation experience?
A. Conducting a thorough preflight.

B. A normal flight to a nearby airport and return.
C. Instruction in the care which must be taken when taxiing an airplane.

1.6.1.3.0.a.1 H30
When under stress, normal individuals usually react
A. by showing excellent morale followed by deep depression.
B. by responding rapidly and exactly, often automatically, within the limits of their experience and training.
C. inappropriately such as extreme overcooperation, painstaking self-control, and inappropriate laughing or singing.

1.6.1.3.1.a.1 H30
One possible indication of a student's abnormal reaction to stress would be
A. a hesitancy to act.
B. extreme overcooperation.
C. a noticeable lack of self-control.

1.6.1.3.2.a.1 H30
The instructor can counteract anxiety in a student by
A. treating the student's fears as a normal reaction.
B. discontinuing instruction in tasks that cause anxiety.
C. allowing the student to decide when he/she is ready for a new maneuver to be introduced.

1.6.1.3.3.a.1 H30
Which would most likely be an indication that a student is reacting abnormally to stress?
A. Slow learning.
B. Inappropriate laughter or singing.
C. Automatic response to a given situation.

1.6.1.3.4.a.1 H31
The basic demonstration/performance method of instruction consists of several steps in proper order. They are
A. instructor tells - student does; student tells - student does; student does - instructor evaluates.
B. instructor tells - instructor does; student tells - instructor does; student does - instructor evaluates.
C. instructor tells - instructor does; student tells - instructor does; student tells - student does; student does - instructor evaluates.

1.6.1.3.5.a.1 H31
Integrated flight instruction has many benefits but, the main objective is to
A. develop the student's ability to fly the aircraft during inadvertent IMC.
B. ensure the student is not overly dependent on instruments during VFR flight.
C. help the student develop habit patterns for observance of and reliance on flight instruments.

1.6.1.3.6.a.1 H31
The primary objective of integrated flight instruction is the
A. formation of firm habit patterns for observing and relying on flight instruments.
B. difference in the pilot's operation of the flight controls during both VMC and IMC.
C. developing of the habit of occasionally monitoring their own and the aircraft's performance.

1.6.1.3.7.a.1 H31
Which is an acceptable procedure when using the integrated method of flight instruction?
A. Use alternate and distinct periods devoted entirely to instrument flight or to visual flight.
B. Prior to the first flight, clearly explain the differences in the manipulation of flight controls for maintaining aircraft control when under simulated instrument conditions and when using references outside the aircraft.
C. Include in the student's first instruction on the function of flight controls the instrument indication to be expected, as well as the outside references used in attitude control.

1.6.1.3.8.a.1 H31
During integrated flight instruction, the instructor must be sure the student
A. develops the habit of looking for other traffic.
B. is able to control the aircraft for extended periods under IMC.
Ccan depend on the flight instruments when maneuvering by outside references.
-

1.6.1.3.9.a.1 H31
Students who grow impatient when learning the basic elements of a task are those who
A. are less easily discouraged than the unaggressive students.
B. should have the preliminary training presented one step at a time with clearly stated goals for each step.
C. should be advanced to the next higher level of learning and not held back by insisting that the immediate goal be reached before they proceed to the next level.

1.6.1.4.0.a.1 H31
Which obstacle to learning is a greater deterrent to learning pilot skills than is generally recognized?
A. Anxiety.
B. Impatience.
C. Physical discomfort.

1.6.1.4.1.a.1 H31
What is the primary consideration in determining the length and frequency of flight instruction periods?
A. Fatigue.
B. Mental acuity
C. Instructor preparation.

1.6.1.4.2.a.1 H31
Students quickly become apathetic when they
A. realize material is being withheld by the instructor.
B. understand the objectives toward which they are working.
C. recognize that the instructor is not adequately prepared.

1.6.1.4.3.a.1 H31
Which is one of the ways in which anxiety will affect a student?
A. Anxiety may limit the student's ability to learn from perceptions.
B. Anxiety will speed up the learning process for the student if properly controlled and directed by the instructor.
C. Anxiety causes dispersal of the student's attention over such a wide range of matters as to interfere with normal reactions.

1.6.1.4.4.a.1 H32
In planning any instructional activity, the first consideration should be to
A. determine the overall objectives and standards.
B. establish common ground between the instructor and student.
C. identify the blocks of learning which make up the overall objective.

1.6.1.4.5.a.1 H32
Which statement is true concerning extraneous blocks of instruction during a course of training?
A. They are usually necessary parts of the total objective.
B. They detract from the completion of the final objective.
C. They assist in the attainment of the lesson's objective.

1.6.1.4.6.a.1 H32
Development and assembly of blocks of learning in their proper relationship will provide a means for
A. both the instructor and student to easily correct faulty habit patterns.

B. challenging the student by progressively increasing the units of learning.
C. allowing the student to master the segments of the overall pilot performance requirements individually and combining these with other related segments.

1.6.1.4.7.a.1 H32
In planning instructional activity, the second step is to
A. develop lesson plans for each period or unit of instruction.
B. identify blocks of learning which constitute the necessary parts of the total objective.
C. develop a training syllabus that will serve as a guide for conducting training at each level of learning.

1.6.1.4.8.a.1 H32
Each lesson of a training syllabus includes
A. attention, motivation, and overview.
B. introduction, development, and conclusion.
C. objective, content, and completion standards.

1.6.1.4.9.a.1 H32
When it is impossible to conduct a scheduled lesson, it is preferable for the instructor to
A. review and possibly revise the training syllabus.
B. proceed to the next scheduled lesson, or if this is not practical, cancel the lesson.
C. conduct a lesson that is not predicated completely on skills to be developed during the lesson which was postponed.

1.6.1.5.0.a.1 H32
Which statement is true regarding lesson plans?
A. Lesson plans should not be directed toward the course objective; only to the lesson objective.
B. A well-thought out mental outline of a lesson may be used any time as long as the instructor is well prepared.
C. Lesson plans help instructors keep a constant check on their own activity as well as that of their students.

1.6.1.5.1.a.1 H32
With regard to the characteristics of a well-planned lesson, each lesson should contain
A. new material that is related to the lesson previously presented.
B. one basic element of the principle, procedure, or skill appropriate to that lesson.
C. every bit of information needed to reach the objective of the training syllabus.

1.6.1.5.2.a.1 H32
Which statement is true about lesson plans?
A. Lesson plans should follow a prescribed format.
B. Standard prepared lesson plans are effective for teaching all students.
C. The use of standard lesson plans may not be effective for students requiring a different approach.

1.6.1.5.3.a.1 H32
A lesson plan, if constructed properly, will provide an outline for
A. proceeding from the unknown to the known.
B. the teaching procedure to be used in a single instructional period.
C. establishing blocks of learning that become progressively larger in scope.

1.6.1.5.4.a.1 H32
(Refer to figure 1.) Section A is titled:
A. Overview.
B. Objective.
C. Introduction.

1.6.1.5.5.a.1 H32

(Refer to figure 1.) Section B is titled:
A. Elements.
B. Blocks of Learning.
C. Course of Training.

1.6.1.5.6.a.1 H32
(Refer to figure 1.) Section G is titled:
A. Summary.
B. Evaluation.
C. Completion Standards.

1.6.1.5.7.a.1 H32
(Refer to figure 1.) Section E is titled:
A. Content.
B. Discussion.
C. Instructor's Actions.

1.6.1.5.8.a.1 H32
(Refer to figure 1.) Section C is titled:
A. Schedule.
B. Overview.
C. Training Schedule.

1.6.1.5.9.a.1 H32
(Refer to figure 1.) Section D is titled:
A. Apparatus.
B. Equipment.
C. Preparation.

1.6.1.6.0.a.1 H32
(Refer to figure 1.) Section F is titled:
A. Application.
B. Understanding.
C. Student's Actions.

2.6.1.6.1.a.1 I20
In what part of the atmosphere does most weather occur?
A. Tropopause.
B. Troposphere.
C. Stratosphere.

2.6.1.6.2.a.1 I21
Which is the primary driving force of weather on the Earth?
A. The Sun.
B. Coriolis.
C. Rotation of the Earth.

2.6.1.6.3.a.1 I21
The average lapse rate in the troposphere is
A. 2.0° C per 1,000 feet.
B. 3.0° C per 1,000 feet.
C. 5.4° C per 1,000 feet.

2.6.1.6.4.a.1 I21
The most frequent type of ground- or surface-based temperature inversion is that produced by
A. terrestrial radiation on a clear, relatively still night.
B. warm air being lifted rapidly aloft in the vicinity of mountainous terrain.
C. the movement of colder air under warm air or the movement of warm air over cold air.

2.6.1.6.5.a.1 I21
Which weather conditions should be expected beneath a low-level temperature inversion layer when the relative humidity is high?
A. Light wind shear and poor visibility due to light rain.
B. Smooth air and poor visibility due to fog, haze, or low clouds.
C. Turbulent air and poor visibility due to fog, low stratus type clouds, and showery precipitation.

2.6.1.6.6.a.1 I21
If the air temperature is +6 °C at an elevation of 700 feet and a standard (average) temperature lapse rate exists, what will be the approximate freezing level?
A. 6,700 feet MSL.
B. 3,700 feet MSL.
C. 2,700 feet MSL.

2.6.1.6.7.a.1 I21
If the air temperature is +12 °C at an elevation of 1,250 feet and a standard (average) temperature lapse rate exists, what will be the approximate freezing level?
A. 7,250 feet MSL.
B. 5,250 feet MSL.
C. 4,250 feet MSL.

2.6.1.6.8.a.1 I22
An altimeter indicates 1,850 feet MSL when set to 30.18. What is the approximate pressure altitude?
A. 1,590 feet.
B. 1,824 feet.
C. 2,110 feet.

2.6.1.6.9.a.1 I22
An aircraft is flying at a constant power setting and constant indicated altitude. If the outside air temperature (OAT) increases, true airspeed will
A. increase and true altitude will decrease.
B. increase and true altitude will increase.
C. decrease and true altitude will increase.

2.6.1.7.0.a.1 I22
An aircraft is flying at a constant power setting and constant indicated altitude. If the outside air temperature (OAT) decreases, true airspeed will
A. decrease, and true altitude will decrease.
B. increase, and true altitude will increase.
C. increase, and true altitude will decrease.

2.6.1.7.1.a.1 I22
As density altitude increases, which will occur if a constant indicated airspeed is maintained in a no-wind condition?
A. True airspeed increases; groundspeed decreases.
B. True airspeed decreases; groundspeed decreases.
C. True airspeed increases; groundspeed increases.

2.6.1.7.2.a.1 I22

Density altitude may be determined by correcting
A. true altitude for nonstandard temperature.
B. pressure altitude for nonstandard temperature.
C. indicated altitude for temperature variations.

2.6.1.7.3.a.1 I22
What are the standard temperature and pressure values for mean sea level?
A. 15 °F and 29.92" Hg.
B. 59 °C and 29.92 mb.
C. 59 °F and 1013.2 mb.

2.6.1.7.4.a.1 I23
What causes wind?
A. Coriolis force.
B. Pressure differences.
C. The rotation of the Earth.

2.6.1.7.5.a.1 I23
The windflow around a low pressure is
A. cyclonic.
B. adiabatic.
C. anticyclonic.

2.6.1.7.6.a.1 I23
Winds at 5,000 feet AGL on a particular flight are southwesterly while most of the surface winds are southerly. This difference in direction is primarily due to
A. local terrain effects on pressure.
B. stronger Coriolis force at the surface.
C. friction between the wind and the surface.

2.6.1.7.7.a.1 I23
In the Northern Hemisphere, a pilot making a long distance flight from east to west would most likely find favorable winds associated with high- and low-pressure systems by flying to the
A. north of a high and a low.
B. north of a high and to the south of a low.
C. south of a high and to the north of a low.

2.6.1.7.8.a.1 I23
When flying from a high- to a low-pressure area in the Northern Hemisphere, the wind direction and velocity will be from the
A. left and increasing.
B. left and decreasing.
C. right and increasing.

2.6.1.7.9.a.1 I23
The general circulation of air associated with a high-pressure area in the Northern Hemisphere is
A. inward, upward, and clockwise.
B. outward, downward, and clockwise.
C. outward, upward, and counterclockwise.

2.6.1.8.0.a.1 I23
Which statement is true regarding high- or low-pressure systems?
A. A high-pressure area or ridge is an area of rising air.
B. A low-pressure area or trough is an area of rising air.

C. A high-pressure area is a trough of descending air.

2.6.1.8.1.a.1 I24
Which is an operational consideration regarding actual air temperature and dewpoint temperature spread?
A. The temperature spread decreases as the relative humidity decreases.
B. The temperature spread decreases as the relative humidity increases.
C. The temperature spread increases as the relative humidity increases.

2.6.1.8.2.a.1 I24
The ratio of the existing water vapor in the air, as compared to the maximum amount that could exist at a given temperature, is called
A. the dewpoint.
B. saturation point.
C. relative humidity.

2.6.1.8.3.a.1 I24
What is the process by which ice can form on a surface directly from water vapor on a cold, clear night?
A. Sublimation.
B. Condensation.
C. Supersaturation.

2.6.1.8.4.a.1 I24
Which precipitation type usually indicates freezing rain at higher altitudes?
A. Snow.
B. Hail.
C. Ice pellets.

2.6.1.8.5.a.1 I24
When warm air moves over a cold lake, what weather phenomenon is likely to occur on the leeward side of the lake?
A. Fog.
B. Showers.
C. Cloudiness.

2.6.1.8.6.a.1 I24
Streamers of precipitation trailing beneath clouds but evaporating before reaching the ground are known as
A. virga.
B. sublimation.
C. condensation trails.

2.6.1.8.7.a.1 I25
From which measurement of the atmosphere can stability be determined?
A. Ambient lapse rate.
B. Atmospheric pressure.
C. Difference between standard temperature and surface temperature.

2.6.1.8.8.a.1 I25
The formation of either predominantly stratiform or predominantly cumuliform clouds is dependent upon the
A. source of lift.
B. stability of the air being lifted.
C. percent of moisture content of the air being lifted.

2.6.1.8.9.a.1 I25

At approximately what altitude above the surface would you expect the base of cumuliform clouds if the surface air temperature is 77 °F and the dewpoint is 53 °F?
A. 9,600 feet AGL.
B. 8,000 feet AGL.
C. 5,500 feet AGL.

2.6.1.9.0.a.1 I25
At approximately what altitude above the surface would you expect the base of cumuliform clouds if the surface air temperature is 33 °C and the dewpoint is 15 °C?
A. 4,100 feet AGL.
B. 6,000 feet AGL.
C. 7,200 feet AGL.

2.6.1.9.1.a.1 I25
If clouds form as a result of very stable, moist air being forced to ascend a mountain slope, the clouds will be
A. cirrus type with no vertical development or turbulence.
B. cumulonimbus with considerable vertical development and heavy rains.
C. stratus type with little vertical development and little or no turbulence.

2.6.1.9.2.a.1 I26
The height of the bases of the middle clouds in the middle latitudes ranges from
A. 1,000 to 10,000 feet.
B. 6,500 to 23,000 feet.
C. 16,500 to 45,000 feet.

2.6.1.9.3.a.1 I26
Which middle level clouds are characterized by rain, snow, or ice pellets posing a serious icing problem if temperatures are near or below freezing?
A. Nimbostratus.
B. Altostratus lenticular.
C. Altocumulus castellanus.

2.6.1.9.4.a.1 I27
Consider the following air mass characteristics:

1. Cumuliform clouds.
2. Stable lapse rate.
3. Unstable lapse rate.
4. Stratiform clouds and fog.
5. Smooth air (above the friction level) and poor visibility.
6. Turbulence up to about 10,000 feet and good visibility except in areas of precipitation.

A moist air mass, which is colder than the surface over which it passes, frequently has which of the above characteristics?
A. 1, 3, and 6.
B. 3, 4, and 5.
C. 2, 4, and 5.

2.6.1.9.5.a.1 I27
The weather condition normally associated with unstable air is
A. stratiform clouds.
B. fair to poor visibility.
C. good visibility, except in blowing sand or snow.

2.6.1.9.6.a.1 I27
A moist, unstable air mass is characterized by

A. poor visibility and smooth air.
B. cumuliform clouds and showery precipitation.
C. stratiform clouds and continuous precipitation.

2.6.1.9.7.a.1 I27
What type weather is associated with an advancing warm front that has moist, unstable air?
A. Stratiform clouds, lightning, steady precipitation.
B. Cumuliform clouds, smooth air, steady precipitation.
C. Cumuliform clouds, turbulent air, showery-type precipitation.

2.6.1.9.8.a.1 I27
A moist, cold air mass that is being warmed from below is characterized, in part, by
A. fog and drizzle.
B. showers and thunderstorms.
C. continuous heavy precipitation.

2.6.1.9.9.a.1 I27
What is a characteristic of stable air?
A. excellent visibility.
B. Restricted visibility.
C. Showery-type precipitation.

2.6.2.0.0.a.1 I27
What type weather can one expect from moist, unstable air and very warm surface temperature?
A. Fog and low stratus clouds.
B. Continuous heavy precipitation.
C. Strong updrafts and cumulonimbus clouds.

2.6.2.0.1.a.1 I27
What is a typical characteristic of a stable air mass?
A. Cumuliform clouds.
B. Showery precipitation.
C. Continuous precipitation.

2.6.2.0.2.a.1 I27
A moist, warm air mass that is being cooled from below is characterized, in part, by
A. smooth air.
B. cumuliform clouds.
C. showers and thunderstorms.

2.6.2.0.3.a.1 I27
Frontal waves normally form on
A. stationary or occluded fronts.
B. slow-moving warm fronts or occluded fronts.
C. slow-moving cold fronts or stationary fronts.

2.6.2.0.4.a.1 I27
Cool air moving over a warm surface is generally characterized by
A. instability and showers.
B. stability, fog, and drizzle.
C. instability and continuous precipitation.

2.6.2.0.5.a.1 I27

If a wave were to form on a stationary front running east and west across the United States, that portion east of the wave would normally
A. remain stationary with that portion west of the wave becoming a cold front.
B. become a warm front and that portion west of the wave would become a cold front.
C. become a cold front and that portion west of the wave would become a warm front.

2.6.2.0.6.a.1 I27
Which statement is true regarding a cold front occlusion?
A. The air ahead of the warm front is warmer than the air behind the overtaking cold front.
B. The air ahead of the warm front has the same temperature as the air behind the overtaking cold front.
C. The air between the warm front and cold front is colder than either the air ahead of the warm front or the air behind the overtaking cold front.

2.6.2.0.7.a.1 I28
Consider the following statements about mountain waves:
1. Mountain waves always develop in a series on the upwind (windward) side of mountain ridges.
2. In a mountain wave, the air dips sharply downward immediately to the lee side of a ridge, before rising and falling in a wave motion for a considerable distance downstream.
3. If the air is humid and the wave is of large amplitude, lenticular (lens-shaped) clouds mark the wave's crest.
4. In a typical wave, the greatest amplitude is seldom more than 1,000 feet above the ridge crest elevation.
From the statements above, select those which are true.
A. 2 and 3.
B. 1, 2, and 3.
C. 1, 3, and 4.

2.6.2.0.8.a.1 I28
When flying low over hilly terrain, ridges, or mountain ranges, the greatest potential danger from turbulent air currents will usually be encountered on the
A. leeward side when flying with the wind.
B. leeward side when flying into the wind.
C. windward side when flying into the wind.

2.6.2.0.9.a.1 I28
Low-level wind shear, which results in a sudden change of wind direction, may occur
A. after a warm front has passed.
B. when surface winds are light and variable.
C. when there is a low-level temperature inversion with strong winds above the inversion.

2.6.2.1.0.a.1 I28
Which condition could be expected if a strong temperature inversion exists near the surface?
A. Strong, steady downdrafts and an increase in OAT.
B. A wind shear with the possibility of a sudden loss of airspeed.
C. An OAT increase or decrease with a constant wind condition.

2.6.2.1.1.a.1 I29
Which situation would most likely result in freezing rain?
A. Rain falling from air which has a temperature of more than 32 °F into air having a temperature of 32 °F or less.
B. Rain falling from air which has a temperature of 32 °F or less into air having a temperature of more than 32 °F.
C. Rain which has a supercooled temperature of 0 °C or less falling into air having a temperature of more than 0 °C.

2.6.2.1.2.a.1 I29
The most rapid accumulation of clear ice on an aircraft in flight may occur with temperatures between 0 °C to -15 °C in
A. cumuliform clouds.
B. stratiform clouds.
C. any clouds or dry snow.

2.6.2.1.3.a.1 I29
Which is an operational consideration regarding aircraft structural icing?
A. It is unnecessary for an aircraft to fly through rain or cloud droplets for structural ice to form.
B. Clear ice is most likely to form on an airplane when flying through stratified clouds or light drizzle.
C. In order for structural ice to form, the temperature at the point where moisture strikes the aircraft must be 0 °C (32 °F) or colder.

2.6.2.1.4.a.1 I30
What are the minimum requirements for the formation of a thunderstorm?
A. Sufficient moisture and a lifting action.
B. Sufficient moisture, an unstable lapse rate, and lifting action.
C. Towering cumulus clouds, sufficient moisture, and a frontal zone.

2.6.2.1.5.a.1 I30
Select the true statement pertaining to the life cycle of a thunderstorm.
A. The initial stage of a thunderstorm is always indicated by the development of a nimbus cloud.
B. The beginning of rain at the Earth's surface indicates the mature stage of the thunderstorm.
C. The beginning of rain at the Earth's surface indicates the dissipating stage of the thunderstorm.

2.6.2.1.6.a.1 I30
Tornadoes are most likely to occur with which type of thunderstorms?
A. Tropical thunderstorms during the mature stage.
B. Squall line thunderstorms that form ahead of warm fronts.
C. Steady-state thunderstorms associated with cold fronts or squall lines.

2.6.2.1.7.a.1 I30
What feature is associated with the cumulus stage of a thunderstorm?
A. Frequent lightning.
B. Continuous updrafts.
C. Beginning of rain at the surface.

2.6.2.1.8.a.1 I30
Which type of cloud is associated with violent turbulence and a tendency toward the production of funnel clouds?
A. Cumulonimbus mamma.
B. Standing lenticular.
C. Altocumulus castellanus.

2.6.2.1.9.a.1 I30
A squall line is usually associated with a
A. stationary front.
B. fast-moving cold front.
C. fast-moving warm front.

2.6.2.2.0.a.1 I30
Consider the following statements regarding hail as an in-flight hazard and select those which are correct.
1. There is a correlation between the visual appearance of thunderstorms and the amount of hail within them.
2. Large hail is most commonly found in thunderstorms which have strong updrafts and large liquid water content.
3. Hail may be found at any level within a thunderstorm but not in the clear air outside of the storm cloud.
4. Hail is usually produced during the mature stage of the thunderstorm's lifespan.
5. Hailstones may be thrown upward and outward from a storm cloud for several miles.

The true statements are:
A. 2, 4, and 5.
B. 1, 2, and 3.

C. 1, 2, 4, and 5.

2.6.2.2.1.a.1 I30
Which statement is true concerning the in-flight hazard of hail?
A. Hail is usually produced by altocumulus clouds.
B. Rain at the surface indicates the absence of hail aloft.
C. Hailstones may be thrown outward from a storm cloud for several miles.

2.6.2.2.2.a.1 I30
Hail, an in-flight hazard, is most likely to be associated with
A. cumulus clouds.
B. stratocumulus clouds.
C. cumulonimbus clouds.

2.6.2.2.3.a.1 I30
Hail will most likely be encountered
A. beneath the anvil cloud of a large cumulonimbus.
B. during the dissipating stage of the cumulonimbus.
C. above the cumulonimbus cloud well above the freezing level.

2.6.2.2.4.a.1 I31
One condition necessary for the formation of fog is
A. calm air.
B. visible moisture.
C. high relative humidity.

2.6.2.2.5.a.1 I31
Radiation fog is most likely to occur under what conditions?
A. Warm, moist air being forced upslope by light winds resulting in the air being cooled and condensed.
B. High humidity during the early evening, cool cloudless night with light winds, and favorable topography.
C. Low temperature/dewpoint spread, calm wind conditions, the presence of hydroscopic nuclei, low overcast, and favorable topography.

2.6.2.2.6.a.1 I31
Advection fog is formed as a result of
A. moist air moving over a colder surface.
B. the addition of moisture to a mass of cold air as it moves over a body of water.
C. the ground cooling adjacent air to the dewpoint temperature on clear, calm nights.

2.6.2.2.7.a.1 I31
With respect to advection fog, which statement is true?
A. It forms almost exclusively at night or near daybreak.
B. It forms when unstable air is cooled adiabatically.
C. It can appear suddenly during day or night, and it is more persistent than radiation fog.

2.6.2.2.8.a.1 I31
Which in-flight hazard is most commonly associated with warm fronts?
A. Ground fog.
B. Advection fog.
C. Precipitation-induced fog.

2.6.2.2.9.a.1 I31
Fog associated with a warm front is a result of saturation due to

A. nocturnal cooling.
B. evaporation of precipitation.
C. evaporation of surface moisture.

2.6.2.3.0.a.1 I32
In reference to clear air turbulence (CAT), areas to be avoided are those where horizontal wind shear exceeds
A. 40 knots per 150 miles.
B. 10 knots per 50 miles.
C. 6 knots per 1,000 feet.

2.6.2.3.1.a.1 I35
Which statement is true regarding the effect of fronts on soaring conditions?
A. A slow-moving front provides the strongest lift.
B. Excellent soaring conditions usually exist in the cold air ahead of a warm front.
C. Frequently the air behind a cold front provides excellent soaring for several days.

2.6.2.3.2.a.1 I35
The conditions most favorable to wave formation over mountainous areas are a layer of
A. unstable air at mountaintop altitude and a wind of at least 20 MPH blowing across the ridge.
B. stable air at mountaintop altitude and a wind of at least 20 MPH blowing across the ridge.
C. moist, unstable air at mountaintop altitude and a wind of less than 5 MPH blowing across the ridge.

2.6.2.3.3.a.1 I35
When soaring in the vicinity of mountain ranges, the greatest potential danger from vertical and rotor-type currents will usually be encountered on the
A. leeward side when flying with the wind.
B. leeward side when flying into the wind.
C. windward side when flying into the wind.

2.6.2.3.4.a.1 I35
Select the true statement concerning thermals.
A. Strong thermals have proportionately increased sink in the air between them.
B. Thermals will not develop unless the Sun's rays strike the Earth at a vertical angle.
C. A thermal invariably remains directly above the surface area from which it developed.

2.6.2.3.5.a.1 I35
One of the most dangerous features of mountain waves is the turbulent areas in and
A. below rotor clouds.
B. above rotor clouds.
C. below lenticular clouds.

2.6.2.3.6.a.1 I35
Which thermal indices would predict the best probability of good soaring conditions?
A. +5.
B. -5.
C. -10.

2.6.2.3.7.a.1 I35
An important precaution when soaring in a dust devil is to
A. avoid the eye of the vortex because of extreme turbulence.
B. avoid steep turns on the upwind side to prevent being blown into the vortex.
C. avoid the clear area at the outside edge of the dust because of severe downdrafts.

2.6.2.3.8.a.1 I35
One of the best visual indications of a thermal is a
A. smooth cumulus cloud with a concave base.
B. broken to overcast sky with cumulus clouds.
C. fragmented cumulus cloud with a concave base.

2.6.2.3.9.a.1 I35
Convective circulation patterns associated with sea breezes are caused by
A. land absorbing and radiating heat faster than the water.
B. warm and less dense air moving inland from over the water, causing it to rise.
C. cool and less dense air moving inland from over the water, causing it to rise.

2.6.2.4.0.a.1 I35
Which is true regarding the development of convective circulation?
A. Cool air must sink to force the warm air upward.
B. Warm air is less dense and rises on its own accord.
C. Cool air surrounding convective circulation sinks at a greater rate than the warmer air rises (within the thermal), thus forcing the warmer air upward.

2.6.2.4.1.a.1 I35
Under what condition can enough lift be found for soaring under stable weather conditions?
A. Over steep escarpments or cliffs.
B. In mountain waves that form on the upwind side of the mountains.
C. On the upwind side of hills or ridges with moderate winds present.

2.6.2.4.2.a.1 I35
(Refer to figure 2.) Using the 0900 sounding, what minimum surface temperature is required for instability to occur and for good thermals to develop from the surface to 15,000 feet MSL?
A. 58 °F.
B. 80 °F.
C. 90 °F.

2.6.2.4.3.a.1 I35
(Refer to figure 2.) At the 0900 sounding and the line plotted from the surface to 10,000 feet, what temperature must exist at the surface for instability to take place between these altitudes?
A. Any temperature more than 68 °F.
B. Any temperature less than 68 °F.
C. Any temperature between 43 °F and 68 °F.

2.6.2.4.4.a.1 I35
(Refer to figure 2.) According to the sounding taken at 1400, is the atmosphere stable or unstable and at what altitudes?
A. Stable from 6,000 to 10,000 feet.
B. Stable from 10,000 to 13,000 feet.
C. Unstable from 10,000 to 13,000 feet.

2.6.2.4.5.a.1 I35
(Refer to figure 2.) Using the 1400 sounding, does an inversion exist and, if so, at what altitudes?
A. No; there is no inversion shown.
B. Yes; between 10,000 and 13,000 feet.
C. Yes; between 13,000 and 15,000 feet.

2.6.2.4.6.a.1 I35
(Refer to figure 2.) Using the 1400 sounding, between what altitudes could good thermalling be expected?
A. 2,500 to 6,000 feet.

B. 6,000 to 10,000 feet.
C. 10,000 to 13,000 feet.

2.6.2.4.7.a.1 I41
(Refer to figure 3.) Which station is reporting the wind as calm?
A. DAL.
B. FTW.
C. TYR.

2.6.2.4.8.a.1 I41
(Refer to figure 3.) What is the reported duration of the rain at the time of the observation at AUS?
A. 25 minutes.
B. 26 minutes.
C. 36 minutes.

2.6.2.4.9.a.1 I41
(Refer to figure 3.) What does the LB26E40 mean at the end of the report for AMA?
A. Drizzle began at 26 past the hour and ended at 40 past the hour.
B. Lightning began at 1726 with 40 percent coverage of radar echoes.
C. There are large buildups to the east with wind gusting 26 to 40 knots.

2.6.2.5.0.a.1 I41
(Refer to figure 3.) Which station is reporting the lowest visibility?
A. AUS.
B. FTW.
C. TYR.

2.6.2.5.1.a.1 I41
(Refer to figure 3.) The altimeter setting at AUS is
A. 1016.9 mb.
B. 30.05" Hg.
C. 31.69" Hg.

2.6.2.5.2.a.1 I41
(Refer to figure 3.) In the report for BKO, what is the reported ceiling?
A. 2,000 feet.
B. 13,000 feet.
C. 25,000 feet.

2.6.2.5.3.b.1 I41
GIVEN:
OUN SA 1355 AO2 CLR BLO 120 M 101/55/50/2210/993 $.

The ASOS report indicates that the location is
A. augmented by an observer.
B. possibly in need of maintenance.
C. unable to measure precipitation amounts.

2.6.2.5.4.b.1 I41
GIVEN:
PNC SA 1155 AWOS M7 OVC 1/2 89/78/1815G25/018
P005/WND 30V36/WEA: TRW+.

This AWOS report indicates that

A. the station is unattended.
B. barometric pressure is 30.18” Hg.
C. the wind speed varies from 30 to 36 knots.

2.6.2.5.5.a.1 I41
GIVEN:
RKR SA 1352 AMOS 36/26/3618/007 PK WIND 27 024.

The 024 indicates
A. the peak wind occurred 24 minutes past the hour.
B. 24 hundredths of an inch of liquid precipitation since the last observation.
C. a drop of 24 hundredths of an inch of mercury in the altimeter setting in the last hour.

2.6.2.5.6.a.1 I42
Interpret the following radar weather report:
LIT 1133 AREA 4TRW 22/100 88/170 196/180 220/115 C2425 MT 310 AT 162/110
A. There are four cells with tops at 10,000 feet, 17,000 feet, and 11,500 feet.
B. The maximum top of the cells is located 162° and 110 NM from the station (LIT).
C. The visibility is 4 miles in thunderstorms and the intensity of thunderstorms remains unchanged.

2.6.2.5.7.a.1 I42
Which statement is true concerning this radar weather report for OKC?
OKC 1934 LN 8TRW / 86/ 40 164/60 199/115 15W 2425 MT 570 AT 159/65 2 INCH HAIL RPRTD THIS ECHO.
A. The visibility is 8 miles in rain showers.
B. There are three cells with tops at 11,500, 40,000, and 60,000 feet.
C. The maximum top of the cells is 57,000 feet located 65 NM south-southeast of the station.

2.6.2.5.8.a.1 I42
(Refer to figure 4.) Which is a true statement?
A. It is clear above 8,500 feet at DAL.
B. There are moderate buildups west of ABI.
C. The pilot reported a north wind at 30 knots at BRO.

2.6.2.5.9.a.1 I42
(Refer to figure 4.) Turbulence was reported west of
A. AUS.
B. ABI.
C. BRO.

2.6.2.6.0.a.1 I42
(Refer to figure 4.) Which is the true statement?
A. Thunderstorms were reported north of BRO.
B. Moderate turbulence was reported by a pilot east of ABI.
C. The base of the overcast at AUS was reported to be 13,000 feet.

2.6.2.6.1.a.1 I42
(Refer to figure 4.) The lowest cloud base reported is
A. 500 feet at BRO.
B. 4,500 feet at DAL.
C. 5,000 feet at BRO.

2.6.2.6.2.b.1 I43
(Refer to figure 5.) What is the visibility forecast for BRO?
A. 1 mile.

B. 3 miles.
C. 6 miles or more.

2.6.2.6.3.a.1 I43
(Refer to figure 5.) What type of weather can be expected after 0400Z at DAL?
A. At least a ceiling of 1,000 feet and visibility of 3 miles.
B. Ceiling of more than 3,000 feet and visibility greater than 5 miles.
C. Ceiling greater than 5,000 feet and visibility greater than 5 miles.

2.6.2.6.4.a.1 I43
(Refer to figure 5.) Which of the stations are forecasting the wind to be less than 6 knots for the entire forecast period?
A. ABI.
B. ACT.
C. AUS and ACT.

2.6.2.6.5.a.1 I43
(Refer to figure 5.) The valid time for the forecasts is from
A. 0940Z on the 30th until 0940Z the following day.
B. 1010Z on the 30th until 1000Z the following day.
C. 1000Z on the 30th until 1000Z the following day.

2.6.2.6.6.a.1 I43
(Refer to figure 5.) What is the lowest ceiling forecast for ABI?
A. 1,000 feet.
B. 1,400 feet.
C. 10,000 feet.

2.6.2.6.7.b.1 I43
To determine the freezing level and areas of probable icing aloft, you should refer to
A. an Area Forecast.
B. an AIRMET or SIGMET.
C. a Weather Depiction Chart.

2.6.2.6.8.b.1 I43
For a brief summary of the location and movement of fronts, pressure systems, and circulation patterns, the pilot should refer to
A. a Radar Summary Chart.
B. an Aviation Area Forecast.
C. a Significant Weather Prognostic Chart.

2.6.2.6.9.b.1 I43
What is the meaning of MVFR, as used in the categorical outlook portion of an Aviation Area Forecast?
A. A ceiling less than 1,000 feet and/or visibility less than 3 miles.
B. A ceiling less than 1,000 feet and/or visibility less than 1 mile.
C. A ceiling of 1,000 to 3,000 feet and/or visibility of 3 to 5 miles.

2.6.2.7.0.a.1 I43
An Aviation Area Forecast is valid for
A. 12 hours with an additional 6 hours categorical outlook.
B. 12 hours with an additional 12 hours categorical outlook.
C. 18 hours with an additional 12 hours categorical outlook.

2.6.2.7.1.a.1 I43

(Refer to figure 6.) What is the forecast for northwestern Alabama after 2300Z?
A. IFR with widely scattered thunderstorms.
B. Ceilings of 1,000 to 3,000 feet and/or visibility of 3 to 5 miles with possible rain showers.
C. Ceilings below 1,000 feet and visibility restricted to 3 miles by light rain and fog.

2.6.2.7.2.a.1 I43
(Refer to figure 6.) This forecast is valid for
A. 24 hours with an additional 12-hour outlook.
B. 18 hours with an additional 12-hour outlook.
C. 12 hours with an additional 6-hour outlook.

2.6.2.7.3.a.1 I43
(Refer to figure 6.) What is the forecast visibility for south-central Texas for the period ending 2300Z?
A. 3 miles.
B. More than 6 miles.
C. This visibility is not forecast.

2.6.2.7.4.a.1 I43
(Refer to figure 6.) The lowest layer of clouds forecast for Oklahoma is
A. 100 feet AGL.
B. below 1,000 feet MSL.
C. below 1,000 feet AGL.

2.6.2.7.5.a.1 I43
What information would be covered in an AIRMET?
A. Severe turbulence.
B. Extensive mountain obscurement.
C. Hail of 3/4 inch or greater diameter.

2.6.2.7.6.a.1 I43
Which in-flight advisory would contain information on severe icing?
A. PIREP.
B. SIGMET.
C. CONVECTIVE SIGMET.

2.6.2.7.7.a.1 I43
What information is contained in a CONVECTIVE SIGMET in the conterminous United States?
A. Moderate thunderstorms and surface winds greater than 40 knots.
B. Tornadoes, embedded thunderstorms, and hail 3/4 inch or greater in diameter.
C. Severe icing, severe turbulence, or widespread dust storms lowering visibility to less than 3 miles.

2.6.2.7.8.a.1 I43
(Refer to figure 7.) What is the temperature for 6,000 feet at AMA?
A. 8 °C.
B. The temperature is standard for that altitude.
C. No temperatures are forecast for levels within 2,500 feet of station elevation.

2.6.2.7.9.a.1 I43
(Refer to figure 7.) Why is there no wind forecast for 3,000 and 6,000 feet at ABQ?
A. Wind which is expected to be light and variable is omitted.
B. No winds are forecast within 1,500 feet of station elevation.
C. No winds are forecast within 3,000 feet of station elevation.

2.6.2.8.0.a.1 I43
(Refer to figure 7.) What is the forecast wind for 12,000 feet at AMA?
A. Calm.
B. Light and variable.
C. 090° in excess of 50 knots.

2.6.2.8.1.a.1 I44
By referring to the isobars on a Surface Analysis Weather Chart, what can a person determine?
A. Pressure gradient.
B. Temperature changes.
C. Areas of precipitation.

2.6.2.8.2.a.1 I44
The intensity trend of a front (as of chart time) is best determined by referring to a
A. Surface Analysis.
B. Radar Summary Chart.
C. Weather Depiction Chart.

2.6.2.8.3.a.1 I44
(Refer to figure 8.) What does this symbol mean on a Surface Analysis Weather Chart?
A. Squall line.
B. Occluded front.
C. High-pressure ridge.

2.6.2.8.4.a.1 I44
(Refer to figure 9.) Which symbol used on a Surface Analysis Weather Chart represents a dissipating warm front?
A. 1.
B. 2.
C. 3.

2.6.2.8.5.a.1 I45
(Refer to figure 10.) On a Weather Depiction Chart, what does this information mean?
A. Visibility 5 miles, sky obscured.
B. Visibility 5 miles, haze, overcast, ceiling 3,500 feet.
C. Visibility 3 to 5 miles, sky obscured, ceiling 5,000 feet.

2.6.2.8.6.a.1 I45
On a Weather Depiction Chart, what weather conditions would be contained in an unshaded area that is enclosed by a smooth line?
A. Ceiling less than 1,000 feet and/or visibility less than 3 miles.
B. Ceiling between 5,000 and 7,000 feet and/or visibility greater than 5 miles.
C. Ceiling between 1,000 and 3,000 feet and/or visibility between 3 and 5 miles.

2.6.2.8.7.a.1 I45
A Weather Depiction Chart is useful to a pilot in determining
A. the temperature and dewpoint at selected stations.
B. the forecast areas of cloud cover and precipitation.
C. areas where weather conditions were reported above or below VFR minimums.

2.6.2.8.8.a.1 I45
(Refer to figure 11.) On a Weather Depiction Chart, what does this information mean?
A. Visibility one-half mile, 200 feet overcast, smoke.
B. Visibility 2 miles, sky obscured, haze, ceiling 2,000 feet.
C. Visibility 2 miles, sky obscured, fog, cloud layer at 20,000 feet.

2.6.2.8.9.a.1 I45
(Refer to figure 12.) The Weather Depiction Chart indicates that the coastal sections of Texas and Louisiana are reporting
A. marginal VFR conditions due to broken ceilings of 2,000 feet.
B. VFR conditions with scattered clouds at 2,000 feet and higher cirriform.
C. all ceilings at or above 20,000 feet with visibilities of 20 miles or more.

2.6.2.9.0.a.1 I45
(Refer to figure 12.) The Weather Depiction Chart indicates that northern Illinois and southern Wisconsin are reporting
A. low IFR conditions due to ceilings below 500 feet with drizzle.
B. marginal VFR conditions due to reduced visibility in drizzle and fog.
C. IFR conditions due to overcast ceilings less than 1,000 feet with reduced visibilities in rain and rain showers.

2.6.2.9.1.a.1 I45
(Refer to figure 12.) The Weather Depiction Chart indicates that most of Virginia is reporting
A. marginal VFR conditions due to extensive low ceilings.
B. IFR conditions due to very low visibilities and frontal buildups.
C. marginal VFR conditions due to reduced visibilities in fog and haze.

2.6.2.9.2.a.1 I45
(Refer to figure 12.) What restrictions to visibility are depicted in western Iowa?
A. Drizzle.
B. Fog, rain, and haze.
C. Drizzle, fog, and rain.

2.6.2.9.3.a.1 I46
(Refer to figure 13.) What is the direction and speed of movement of the line that extends from southwestern Nebraska to east-central Minnesota?
A. Northeast at 50 knots.
B. Southeast at 22 knots.
C. Northeast at 30 knots.

2.6.2.9.4.a.1 I46
(Refer to figure 13.) What is the VIP level of area A?
A. 2.
B. 3.
C. 5.

2.6.2.9.5.a.1 I46
(Refer to figure 13.) What does the 280 in area C mean?
A. The base of the clouds is 2,800 feet MSL.
B. Coverage of precipitation is 28.0 percent.
C. The highest top of precipitation is 28,000 feet MSL.

2.6.2.9.6.a.1 I46
(Refer to figure 13.) What is the VIP level of the black area in area F?
A. 3.
B. 4.
C. 6.

2.6.2.9.7.a.1 I46
A Radar Summary Chart can be very helpful to a pilot because it graphically displays
A. the intensity and movement of precipitation.

B. ceilings and precipitation between reporting stations.
C. areas of clouds, ceiling heights, and intensity of freezing precipitation.

2.6.2.9.8.a.1 I47
(Refer to figure 14.) Which area(s) should have the lowest ceilings at 1800Z?
A. The area just ahead of the cold front.
B. The area extending from northern Kansas to western Wisconsin.
C. The areas where precipitation is expected to occur, east of the cold front and west of the warm front.

2.6.2.9.9.a.1 I47
(Refer to figure 14.) Where is snow expected at 1800Z?
A. Northern Oregon and Washington.
B. In the central Great Lakes area.
C. From northwest Kansas to the Great Lakes and from northwest Colorado northward to Canada.

2.6.3.0.0.a.1 I47
(Refer to figure 14.) What type precipitation is expected in eastern Arkansas at 1800Z?
A. Rain showers over the entire area.
B. Continuous rain over the entire area.
C. Rain showers and thunderstorms affecting .5 or more of the area.

2.6.3.0.1.a.1 I47
(Refer to figure 14.) At what altitude is the freezing level in central Oklahoma as forecast on the 24-hour Significant Weather Prog?
A. 4,000 feet MSL.
B. 5,000 feet MSL.
C. 6,000 feet MSL.

2.6.3.0.2.a.1 I47
(Refer to figure 14.) At what altitude is the freezing level in central Oklahoma as forecast on the 12-hour Significant Weather Prog?
A. On the surface.
B. 4,000 feet MSL.
C. 8,000 feet MSL.

2.6.3.0.3.a.1 I47
Which weather chart depicts the conditions forecast to exist at a specific time in the future?
A. Prognostic.
B. Surface Analysis.
C. Weather Depiction.

2.6.3.0.4.a.1 I50
(Refer to figure 15.) What percent coverage of severe thunderstorms is forecast to occur in the area of moderate risk in the north-central United States?
A. 6 to 10.
B. 10 to 50.
C. 50 to 90.

2.6.3.0.5.a.1 I50
If an area on a Severe Weather Outlook Chart is labeled APCHG, this indicates
A. possible tornadoes.
B. thunderstorm activity may approach extreme intensity.
C. winds greater than or equal to 35 knots but less than 50 knots.

2.6.3.0.6.b.1 I50
(Refer to figure 15.) The right panel on a Severe Weather Outlook Chart indicates
A. tornado watch areas.
B. general thunderstorm activity.
C. forecast severe thunderstorm areas.

2.6.3.0.7.a.1 I49
(Refer to figure 16.) What are the probable weather conditions in the area indicated by arrow B on the Stability Chart?
A. Neutral stability; showery precipitation.
B. Stable air; stratified cloudiness and steady precipitation.
C. Moderate humidity and unstable air; scattered shower activity.

2.6.3.0.8.a.1 I49
(Refer to figure 16.) What are the probable weather conditions in the area indicated by arrow C on the Stability Chart?
A. Unstable air; instability, showers, and thunderstorms.
B. Neutral stability; stratus clouds and light precipitation.
C. Moderately saturated air; steady precipitation and light turbulence.

2.6.3.0.9.a.1 I49
(Refer to figure 16.) What are the probable weather conditions in the area indicated by arrow D on the Stability Chart?
A. Stable air; predominately fair.
B. High relative humidity; showers and thunderstorms.
C. Marginally unstable air; moderate turbulence and possible thunderstorms.

2.6.3.1.0.a.1 I49
(Refer to figure 16.) Which symbol on the Stability Chart signifies very stable air and no precipitation?
A. 23 / -15
B. -3 / 34
C. 0 / 35

2.6.3.1.1.a.1 I51
From which of the following can the observed temperature, wind, and temperature/dewpoint spread be determined at specified flight levels?
A. Stability Charts.
B. Winds Aloft Forecasts.
C. Constant Pressure Charts.

2.6.3.1.2.a.1 I51
When using a Constant Pressure Analysis Chart for planning a flight at 10,000 feet MSL, which analysis should the pilot refer to?
A. 850-millibar.
B. 700-millibar.
C. 500-millibar.

2.6.3.1.3.a.1 J25
What is the expected duration of an individual microburst?
A. One microburst may continue for as long as an hour.
B. Five minutes with maximum winds lasting approximately 2 to 4 minutes.
C. Seldom longer than 15 minutes from the time the burst strikes the ground until dissipation.

2.6.3.1.4.a.1 J25
Maximum downdrafts in a microburst encounter may be as strong as
A. 6,000 feet per minute.
B. 4,500 feet per minute.
C. 1,500 feet per minute.

2.6.3.1.5.a.1 J25
How long do the maximum intensity winds last in an individual microburst?
A. 2 to 4 minutes.
B. 5 to 10 minutes.
C. 15 minutes.

3.6.3.1.6.a.1 A01
Which is the correct symbol for the minimum steady flight speed at which an airplane is controllable?
A. Vs.
B. Vs1.
C. Vso.

3.6.3.1.7.a.1 A10
If the certification category of an airplane is listed as "utility," it means the airplane is intended for which maneuvers?
A. Any type of acrobatic maneuver.
B. All nonacrobatic maneuvers plus limited acrobatics including spins.
C. Any maneuver incident to normal flying except acrobatics or spins.

3.6.3.1.8.a.1 A20
What document(s) must you have in your personal possession while operating as pilot in command of an aircraft?
A. An appropriate pilot certificate and a current medical certificate.
B. A certificate showing accomplishment of a checkout in the aircraft and a current flight review.
C. A pilot logbook with endorsements showing accomplishment of a current flight review and recency of experience.

3.6.3.1.9.a.1 A20
A person whose Flight Instructor Certificate has been suspended may not
A. give flight instruction, but may apply for a rating to be added to that certificate.
B. apply for any rating to be added to that certificate during the period of suspension.
C. apply for any Flight Instructor Certificate for a period of 1 year after the date of the suspension.

3.6.3.2.0.a.1 A20
Conviction of an offense involving alcohol or drugs is grounds for
A. permanent revocation of all certificates and ratings.
B. suspension or revocation of any certificate or rating issued under FAR Part 61.
C. denial of an application for any certificate or rating issued under FAR Part 61 for a period of up to 24 months after date of conviction.

3.6.3.2.1.a.1 A20
What is the duration of a Student Pilot Certificate?
A. Indefinite.
B. 12 months after the month in which it was issued.
C. 24 months after the month in which it was issued.

3.6.3.2.2.a.1 A20
What is the duration of a Flight Instructor Certificate?
A. Indefinite, unless suspended or revoked.
B. 24 months after the month in which it was issued or renewed.

C. Indefinite, as long as the holder has a current pilot and medical certificate appropriate to the pilot privileges being exercised.

3.6.3.2.3.a.1 A20
If a Second-Class Medical Certificate was issued to a commercial pilot 13 months ago, during the next 11 months this pilot may
A. not act as pilot in command or carry passengers or property.
B. act as pilot in command and carry passengers or property, but not for compensation or hire.
C. act as pilot in command for compensation or hire, but may not carry passengers or property for compensation or hire.

3.6.3.2.4.a.1 A20
A Third-Class Medical Certificate was issued on May 3. To exercise the privileges of a Private Pilot Certificate, the medical certificate will be valid through
A. May 3, 24 months later.
B. May 31, 12 months later.
C. May 31, 24 months later.

3.6.3.2.5.a.1 A20
A Second-Class Medical Certificate issued January 18 of this year will expire
A. January 18 of next year for private pilot privileges.
B. January 31 of next year for commercial pilot privileges.
C. January 31, 2 years later for commercial pilot privileges.

3.6.3.2.6.a.1 A20
To act as pilot in command of an airplane that has more than 200 horsepower, a person holding a Private or Commercial Pilot Certificate is required to
A. successfully complete a practical test in such an airplane.
B. receive flight instruction in an airplane that has more than 200 horsepower.
C. make three solo takeoffs and landings in an airplane of the same make and model.

3.6.3.2.7.a.1 A20
To act as pilot in command of an airplane with retractable landing gear, flaps, and controllable prop, a person holding a Private or Commercial Pilot Certificate is required to
A. complete a practical test in such an airplane.
B. have made at least three takeoffs and landings in such an airplane in the last 90 days.
C. receive flight instruction in such an airplane and obtain a logbook endorsement of competency.

3.6.3.2.8.a.1 A20
No person may act as pilot in command of a pressurized airplane with a service ceiling or maximum operating altitude, whichever is lower, above 25,000 feet unless that person has
A. completed a physiological training program conducted by the FAA or a military service.
B. received ground and flight training in high altitude operations and a logbook endorsement certifying this training.
C. completed a pilot proficiency check for a pilot or instructor pilot certificate or rating conducted by the FAA after April 15, 1991.

3.6.3.2.9.a.1 A20
Which is applicable to a private pilot with ASEL ratings who has never flown a tailwheel airplane? The pilot
A. may fly solo with no instruction required.
B. must have received instruction and have a logbook endorsement before acting as pilot in command.
C. must have received at least 1 hour of instruction and have a logbook endorsement before carrying passengers.

3.6.3.3.0.a.1 A20
To be eligible (in part) to take an FAA written test, an applicant must show proof of
A. medical qualification appropriate to the certificate being sought.

B. satisfactory completion of the appropriate ground instruction or home study course.
C. meeting the minimum age requirement for the issuance of the certificate being sought not later than 12 months from date of application for the test.

3.6.3.3.1.a.1 A20
A person who has cheated or committed any unauthorized act during a written test may not take another written test within
A. 90 days.
B. 1 year.
C. 2 years.

3.6.3.3.2.a.1 A20
What action may be taken against a person who has cheated on a written test?
A. That person will be required to wait 24 months before taking any written test.
B. Any airman or ground instructor certificate or rating held may be suspended or revoked.
C. That person may be required to wait a maximum of 6 months before retaking the test or any other written test.

3.6.3.3.3.a.1 A20
What class medical certificate, if any, is required for a person adding a rating to a pilot certificate?
A. None.
B. Second-Class.
C. Third-Class.

3.6.3.3.4.a.1 A20
A written statement from an appropriately rated flight instructor certifying that an applicant has received the required instruction in preparation for a practical test must be dated within a minimum of how many days preceding the date of application?
A. 60.
B. 90.
C. 120.

3.6.3.3.5.a.1 A20
To be eligible for a practical test under FAR Part 61, an applicant is required to have passed the appropriate written test within the preceding
A. 6 calendar months.
B. 12 calendar months.
C. 24 calendar months

3.6.3.3.6.a.1 A20
An applicant who holds a Commercial Pilot Certificate with ASEL ratings is seeking a MEL rating at the commercial level. On August 1, 1993, the applicant shows you a second class medical dated January 2, 1992. May the applicant take the practical test?
A. No.
B. Yes.
C. Yes, but at the private pilot skill level.

3.6.3.3.7.a.1 A20
A flight instructor recommendation is not required for an ATP applicant except when applying for
A. a retest.
B. a type rating.
C. the addition of a category rating.

3.6.3.3.8.a.1 A20
What is one requirement for an aircraft furnished for a practical test?

A. All flight instruments must be fully functioning.
B. Must have no prescribed operating limitations that prohibit its use in any required area of operation.
C. Dual flight controls and engine power controls must be operable and easily reached by both pilots in a normal manner.

3.6.3.3.9.a.1 A20
An applicant has failed a pilot written test for the second time. With an endorsement from an authorized instructor, that applicant may apply for a retest after how many days?
A. 5.
B. 10.
C. 30.

3.6.3.4.0.a.1 A20
Your student took a practical test for a pilot certificate on January 10 and failed to meet standards. After being retested on January 13 and failing to meet standards again, when is your student eligible to retest?
A. January 14.
B. February 12.
C. February 13.

3.6.3.4.1.a.1 A20
An applicant who fails a pilot written test for the first time may apply for retesting after
A. waiting for a period of 20 days.
B. receiving 5 hours of ground instruction from an authorized ground instructor.
C. presenting a written statement from an authorized instructor certifying that remedial instruction has been given and the applicant is competent to pass the test.

3.6.3.4.2.a.1 A20
A flight instructor applicant must demonstrate spins in an airplane or glider when
A. the practical test for initial certification is being given.
B. the applicant is being retested for a knowledge or skill deficiency in stall awareness demonstrated during an initial test.
C. the airplane or glider to be used for the practical test is certificated for spins and the applicant is being given an initial practical test.

3.6.3.4.3.a.1 A20
An applicant who fails a practical test for the second time may apply for retesting after
A. 30 days have passed.
B. receiving 5 hours of appropriate instruction.
C. presenting a letter of competency to the examiner signed by a current flight instructor.

3.6.3.4.4.a.1 A20
Which instruction time must be certified by the instructor from whom it was received?
A. Flight instruction.
B. Flight instruction and instrument flight instruction.
C. All flight instruction, flight simulator instruction, and ground instruction.

3.6.3.4.5.a.1 A20
What flight time must be shown, in a reliable record, by a pilot exercising the privileges of a commercial certificate?
A. All flight time.
B. Only the flight time necessary to meet the recent experience requirements.
C. All flight time flown for hire with passengers and/or cargo aboard the aircraft.

3.6.3.4.6.a.1 A20
Which solo operation requires a recreational pilot to carry a logbook with an appropriate endorsement?

A. When flying during the hours of sunrise to sunset.
B. In airspace requiring communications with air traffic control.
C. Any flight up to 50 miles from the airport at which instruction was received.

3.6.3.4.7.a.1 A20
A flight review is not required if a pilot has completed, within the time specified,
A. an industry-sponsored refresher clinic.
B. a pilot proficiency check conducted by the FAA.
C. an instrument competency check conducted by an instructor with the Armed Forces.

3.6.3.4.8.a.1 A20
A flight review will consist of
A. a minimum of 1 hour ground instruction and 1 hour flight instruction.
B. at least 1 hour of flight time to include at least three takeoffs and landings.
C. three takeoffs and landings and a review of those maneuvers necessary for the pilot to demonstrate the appropriate pilot privileges.

3.6.3.4.9.a.1 A20
A flight instructor who has not satisfactorily accomplished a flight review or passed a required proficiency check within the prescribed time is
A. not authorized to fly solo.
B. authorized to fly solo only.
C. not authorized to give instruction except to holders of Recreational Pilot Certificates.

3.6.3.5.0.a.1 A20
A flight review for a glider pilot must consist of at least 1 hour of ground instruction and
A. three takeoffs and landings.
B. 1 hour of flight instruction to include three 360° turns.
C. 1 hour of flight instruction or three instructional flights, each of which includes a 360° turn.

3.6.3.5.1.a.1 A20
What recent flight experience must be met before a commercial airplane pilot may fly solo in an airplane?
A. Three takeoffs and three landings within the preceding 90 days in an airplane.
B. Satisfactorily accomplished a flight review in any aircraft for which rated within the preceding 24 calendar months.
C. Satisfactorily accomplished a flight review within the preceding 24 calendar months, but this review must be in an airplane.

3.6.3.5.2.a.1 A20
To meet the recent flight experience requirements for acting as pilot in command carrying passengers at night, a pilot must have made, within the preceding 90 days and from 1 hour after sunset to 1 hour before sunrise, three takeoffs and three landings to a full stop in
A. the same category of aircraft to be used.
B. the same category and class of aircraft to be used.
C. the same category, class, and, if a type rating is required, the same type of aircraft to be used.

3.6.3.5.3.a.1 A20
A private pilot has completed three takeoffs and three landings to a full stop within the preceding 90 days in a tricycle-gear airplane, single-engine land, and decides to take a passenger for a flight in a conventional-gear airplane, single-engine land. Since these aircraft are of the same category and class, the pilot is current in
A. both airplanes.
B. the tricycle-gear airplane.
C. the conventional-gear airplane.

3.6.3.5.4.a.1 A20

If recency of experience requirements for night flight are not met and official sunset is 1830, the latest time passengers may be carried is
A. 1829.
B. 1859.
C. 1929.

3.6.3.5.5.a.1 A20
The holder of a pilot or instructor certificate who fails to notify the FAA Airmen Certification Branch in writing of a change in permanent mailing address may exercise the privileges of that certificate for how many days after date of change?
A. 30.
B. 60.
C. 90.

3.6.3.5.6.a.1 A20
When a permanent change of address occurs, pilot or instructor privileges may not be exercised unless the FAA Airmen Certification Branch is notified, in writing, within
A. 30 days.
B. 60 days.
C. 90 days.

3.6.3.5.7.a.1 A21
A person seeking a private pilot glider rating is exempt from taking the written examination if that person
A. holds a rating for powered aircraft.
B. holds a pilot certificate for any category.
C. has taken a written examination for any powered rating within the preceding 24 months.

3.6.3.5.8.a.1 A21
A private pilot with an airplane single-engine land rating may act as pilot in command of an airplane towing a glider if, within the preceding 12 months, this pilot has made
A. ten actual or simulated glider tows.
B. three flights as pilot in command of a glider towed by an aircraft.
C. at least six flights as pilot in command of an airplane towing a glider.

3.6.3.5.9.a.1 A22
An applicant who is seeking a Student Pilot Certificate limited to helicopters is required to be at least how old?
A. 16 years.
B. 17 years.
C. 18 years.

3.6.3.6.0.a.1 A22
To be eligible for a Student Pilot Certificate limited to airplanes, an applicant is required to be at least how old?
A. 14 years.
B. 16 years.
C. 17 years.

3.6.3.6.1.a.1 A22
What is the minimum age requirement for the applicant who is seeking a Student Pilot Certificate limited to gyroplane operations?
A. 14 years.
B. 16 years.
C. 18 years.

3.6.3.6.2.a.1 A22

The minimum age requirement for the applicant who is seeking a Student Pilot Certificate limited to glider operations is
A. 14 years.
B. 16 years.
C. 17 years.

3.6.3.6.3.a.1 A22
Which is a required endorsement by an authorized flight instructor for a student pilot to operate an aircraft in solo flight?
A. An endorsement that instruction was given in the make and model of aircraft to be soloed within the preceding 6 months.
B. An endorsement within the preceding 90 days stating that instruction was given in the make and model aircraft to be flown and the student is competent to make a safe solo flight.
C. An endorsement made within the preceding 180 days that instruction was given in the make of aircraft to be soloed and that the instructor found the applicant competent to make a safe flight in that aircraft.

3.6.3.6.4.a.1 A22
Prior to a first solo flight, the flight instructor is required to endorse the student's
A. logbook.
B. pilot certificate.
C. logbook and pilot certificate.

3.6.3.6.5.a.1 A22
A student is required to have his/her pilot certificate endorsed by a flight instructor for each
A. solo flight.
B. solo cross-country flight.
C. make and model of aircraft to be flown solo.

3.6.3.6.6.a.1 A22
Who is responsible for writing and grading the written test that each student must take prior to solo flight?
A. Any certified ground instructor.
B. FAA Airmen Certification Branch in Oklahoma City.
C. Flight instructor who will endorse the student's pilot certificate.

3.6.3.6.7.a.1 A22
What subjects must be covered on the presolo written test?
A. Principles of flight, weather, and aircraft systems.
B. Applicable regulations, flight characteristics, and operational limitations of make and model aircraft to be flown.
C. Density altitude, operations from a controlled airport, and radio communications with appropriate air traffic control facilities.

3.6.3.6.8.a.1 A22
Prior to solo flight, a student must have received flight instruction in
A. ground reference maneuvers.
B. unusual attitude recoveries.
C. basic radio navigation procedures.

3.6.3.6.9.a.1 A22
A student pilot may not operate a balloon in initial solo flight unless that pilot has
A. received a minimum of 5 hours' flight instruction in a balloon.
B. a valid Student Pilot Certificate and logbook endorsement by an authorized flight instructor.
C. made at least 10 free balloon flights under the supervision of an authorized flight instructor.

3.6.3.7.0.a.1 A22
A student pilot whose pilot certificate is not endorsed by a flight instructor to make solo cross-country flights is prohibited from flying solo beyond what distance from the point of departure?

A. 20 NM.
B. 25 NM.
C. 50 NM.

3.6.3.7.1.a.1 A22
Are students authorized to make repeated solo cross-country flights without each flight being logbook endorsed?
A. No; each solo cross-country flight requires a logbook endorsement.
B. Yes; provided the flights take place under stipulated conditions.
C. Yes; but only if the flights remain within 25 NM of the point of departure.

3.6.3.7.2.a.1 A22
One requirement for a student pilot to be authorized to make a solo cross-country flight is an endorsement
A. in the student's logbook that the instructor has given the student cross-country instruction in the model of aircraft to be used.
B. in the student's logbook that the preflight planning and preparation has been reviewed and the student is prepared to make the flight safely.
C. on the Student Pilot Certificate stating the student is competent to make cross-country flights in the category, class, and type of aircraft involved.

3.6.3.7.3.a.1 A22
May repeated solo cross-country flights over the same route be made by a student without receiving an endorsement from a flight instructor for each flight?
A. No; an endorsement is required for each solo cross-country flight.
B. Yes; if the route is no more than 50 NM from the point of departure and instruction was given in both directions over the route.
C. Yes; if the total route is no more than 25 NM from the point of departure and the student has received at least 3 hours of cross-country instruction and logged at least 5 hours of solo cross country flight.

3.6.3.7.4.a.1 A22
To operate an aircraft on a solo flight within Class B airspace, a student must have a logbook endorsement showing that he/she has
A. received flight instruction from any authorized flight instructor on operating within Class B airspace.
B. received ground instruction on and flight instruction in that specific airspace for which solo flight is authorized.
C. within the preceding 90 days, been found to be competent by any flight instructor having knowledge of the student's experience in that specific airspace.

3.6.3.7.5.a.1 A22
Who is authorized to endorse a student pilot logbook authorizing flight in Class B airspace?
A. Any flight instructor.
B. Only the flight instructor who conducted the training.
C. Any flight instructor who has personal knowledge of the flight training received.

3.6.3.7.6.a.1 A22
A Recreational Pilot Certificate may be issued for
A. airships, gliders, and free balloons.
B. airplanes, gyroplanes, and helicopters.
C. airplanes, gliders, helicopters, and gyroplanes.

3.6.3.7.7.a.1 A22
A recreational pilot with less than 400 hours' flight time may not act as pilot in command unless the pilot has
A. logged pilot-in-command time in the last 90 days.
B. logged pilot-in-command time in the last 180 days.
C. received flight instruction from an instructor who certifies the pilot is competent to conduct flights beyond 50 miles.

3.6.3.7.8.a.1 A23
Your student is not interested in flying at night. May he/she take the practical test for a Private Pilot Certificate without any night flight training?
A. No, your student must have logged some night flight training in order to be eligible.
B. No, your student must have logged at least 3 hours of night flight training to include 10 takeoffs and landings in order to be issued a certificate with no limitations.
C. Yes, but after satisfactory completion of the practical test, the certificate will be issued with the limitation "Night Flying Prohibited".

3.6.3.7.9.a.1 A23
Your student, who is preparing for a Private Pilot practical test in an airplane, received 3.5 hours of cross country flight training including flights of 1.9 hours, 1.0 hours, and .6 hours. Is your student eligible to take the practical test?
A. No.
B. Yes.
C. Yes but, if test is satisfactory, certificate will have an ICAO limitation on it.

3.6.3.8.0.a.1 A23
What night flight instruction is required for an unrestricted Private Pilot Certificate with an airplane rating?
A. 3 hours at night, including 10 takeoffs and 10 landings.
B. 1 hour at night, including five takeoffs and five landings.
C. 1 hour at night, including three takeoffs and three landings.

3.6.3.8.1.a.1 A23
With respect to cross-country experience requirements in FAR Part 61, a private pilot-airplane applicant must have a minimum of
A. 3 hours' dual and 5 hours' solo.
B. 3 hours' dual and 10 hours' solo.
C. 5 hours' dual and 10 hours' solo.

3.6.3.8.2.a.1 A23
Your student has received 3.8 hours of night flight instruction including five takeoffs and landings. Is your student eligible to take the Private Pilot practical test?
A. No.
B. Yes, but the pilot certificate would bear the limitation "Night Flying Prohibited".
C. Yes but the pilot certificate would bear the restriction, "Holder does not meet ICAO requirements".

3.6.3.8.3.a.1 A23
What flight time is required for a Private Pilot Certificate with a helicopter rating?
A. A minimum of 40 hours in helicopters with at least 15 hours of solo time.
B. A minimum of 40 hours of flight time in aircraft with at least 15 hours of flight instruction in helicopters.
C. A minimum of 40 hours of flight instruction and solo flight time in aircraft with at least 15 hours of solo time in helicopters.

3.6.3.8.4.a.1 A23
How much solo time in a gyroplane is required to be eligible for a Private Pilot Certificate with a gyroplane rating?
A. 10 hours.
B. 15 hours.
C. 20 hours.

3.6.3.8.5.a.1 A24
What is the minimum age required to be eligible for a Commercial Pilot Certificate?
A. 17.
B. 18.
C. 21.

3.6.3.8.6.a.1 A24
To be eligible for a Commercial Pilot Certificate, one of the requirements is for the applicant to hold at least a valid
A. First-Class Medical Certificate.
B. Second-Class Medical Certificate.
C. Third-Class Medical Certificate.

3.6.3.8.7.a.1 A24
To exercise the privileges of a Commercial Pilot Certificate with a lighter-than-air category, free balloon class rating, the minimum medical requirement is
A. statement from any designated medical examiner certifying the pilot has no known medical defects.
B. signed statement from the pilot certifying no known medical deficiencies exist.
C. Second Class Medical Certificate when carrying passengers for hire.

3.6.3.8.8.a.1 A24
As pilot, what is the minimum flight time in an aircraft an applicant must have for a Commercial Pilot Certificate with an airplane rating?
A. 250 hours.
B. 200 hours.
C. 150 hours.

3.6.3.8.9.a.1 A24
An applicant for a Commercial Pilot Certificate with ASEL ratings presents a logbook with 254 hours total time. Of that, 20 hours are logged as SIC in single-engine airplanes certificated for single pilot operations. You determine this time was accumulated as safety pilot with another pilot who was flying "under the hood". Does the applicant have enough total time to be eligible for the practical test?
A. Yes.
B. No, because SIC time does not count towards hours for certification requirements.
C. No, only one-half of the SIC time can be counted towards certification requirements.

3.6.3.9.0.a.1 A24
Under FAR Part 61, a commercial pilot-airplane applicant is required to have a minimum of how much cross-country experience?
A. 30 hours.
B. 40 hours.
C. 50 hours.

3.6.3.9.1.a.1 A24
What limitation is imposed on a newly certificated commercial airplane pilot if that person does not hold an instrument pilot rating?
A. The carrying of passengers for hire on cross-country flights of more than 50 NM or at night is prohibited.
B. The carrying of passengers for hire on cross-country flights is limited to 50 NM for night flights, but not limited for day flights.
C. The carrying of passengers or property for hire on cross-country flights is limited to 50 NM and the carrying of passengers for hire at night is prohibited.

3.6.3.9.2.a.1 A24
As pilot, how much helicopter flight time should an applicant have for a Commercial Pilot Certificate with a helicopter rating?
A. 50 hours.
B. 100 hours.
C. 150 hours.

3.6.3.9.3.a.1 A24

As pilot, how much gyroplane flight time should an applicant have for a Commercial Pilot Certificate with a gyroplane rating?
A. 150 hours.
B. 100 hours.
C. 25 hours.

3.6.3.9.4.a.1 A24
An applicant for a Commercial Pilot Certificate with a glider rating must have at least
A. 35 glider flights launched by ground tow or 20 launched by aerotow.
B. 25 hours of pilot time, 20 hours in gliders and 100 glider flights as pilot in command, including 25 flights in which 360° turns were made.
C. 200 hours of pilot time in heavier-than-air aircraft, including at least 10 glider flights as pilot in command during which 360° turns were made.

3.6.3.9.5.a.1 A26
What requirement(s) must a certificated airplane or rotorcraft flight instructor meet in order to prepare an applicant for an initial Flight Instructor Certificate?
A. Logged a minimum of 80 hours of flight instructor time.
B. Held a Flight Instructor Certificate for at least 12 months immediately preceding the date the instruction is given.
C. Held a Flight Instructor Certificate for at least 24 months and given a minimum of 200 hours of flight instruction.

3.6.3.9.6.a.1 A26
What requirement(s) must a certificated glider flight instructor meet in order to prepare an applicant for an initial Flight Instructor Certificate rating?
A. Held a Flight Instructor Certificate for 24 months or given 200 hours of flight instruction.
B. Held a Flight Instructor Certificate for 12 months and given a minimum of 80 hours of instruction.
C. Held a Flight Instructor Certificate for at least 24 months and given a minimum of 80 hours of glider instruction.

3.6.3.9.7.a.1 A26
The type and date of each student pilot endorsement given shall be maintained by each flight instructor. For what period of time is this record required to be maintained?
A. 12 months.
B. 24 months.
C. 36 months.

3.6.3.9.8.a.1 A26
A flight instructor who applies for an additional rating on that certificate must have a minimum of how many hours as pilot in command in the category and class of aircraft appropriate to the rating sought?
A. 15.
B. 10.
C. 5.

3.6.3.9.9.a.1 A26
During any 24 consecutive hours, an instructor is limited to how many hours of flight time?
A. 8.
B. 10.
C. 12.

3.6.4.0.0.a.1 A26
To endorse a student pilot for solo cross-country privileges, an instructor is required, in part, to have
A. given that student the required cross-country flight instruction.
B. assurance from another instructor that the student is prepared to conduct the flight safely.
C. at least 5 hours of experience as pilot in command in the make and model aircraft involved.

3.6.4.0.1.a.1 A26
To endorse a student pilot's logbook for solo flight, an instructor is required, in part, to have
A. given that student cross-country flight instruction.
B. given that student flight instruction in the type of aircraft involved.
C. at least 5 hours of experience as pilot in command in the aircraft involved.

3.6.4.0.2.a.1 A26
Certain flight instruction is required for the issuance of a certificate. If that instruction is in a helicopter or multiengine airplane, the instructor is required, in part, to have
A. given at least 200 hours of flight instruction.
B. given at least 25 hours of flight instruction in the particular make and model aircraft.
C. at least 5 hours of experience as pilot in command in the make and model of aircraft involved.

3.6.4.0.4.a.1 A26
The minimum pilot-in-command time requirement for a flight instructor with multiengine privileges to give instruction to a student for a multiengine rating is
A. 5 hours in the make and model of aircraft in which instruction is to be given.
B. 10 hours in the make of aircraft in which the instruction is to be given.
C. 15 hours in the make and model of aircraft in which instruction is to be given.

3.6.4.0.4.a.1 A26
A Flight Instructor Certificate may be renewed by
A. passing both a written and a practical test.
B. successfully completing a flight instructor refresher course within 6 months prior to renewal.
C. providing a record of instruction showing evidence the applicant is a competent flight instructor.

3.6.4.0.5.a.1 A26
The holder of an expired Flight Instructor Certificate may exchange that certificate for a new one by
A. passing the appropriate practical test.
B. presenting a satisfactory record of instruction.
C. successfully completing a flight instructor refresher course.

3.6.4.0.6.a.1 B07
If an in-flight emergency requires immediate action, a pilot in command may
A. deviate from FAR's to the extent required to meet that emergency.
B. not deviate from FAR's unless permission is obtained from air traffic control.
C. deviate from FAR's to the extent required to meet the emergency, but must submit a written report to the Administrator within 24 hours.

3.6.4.0.7.a.1 B07
Under what condition, if any, may a pilot allow a person who is obviously under the influence of intoxicating liquors or drugs to be carried aboard an aircraft?
A. Under no condition.
B. Only if a second pilot is aboard.
C. Only if the person is a medical patient under proper care or in an emergency.

3.6.4.0.8.a.1 B07
A person may not act as a crewmember of a civil aircraft if alcoholic beverages have been consumed by that person within the preceding
A. 8 hours.
B. 12 hours.
C. 24 hours.

3.6.4.0.9.a.1 B07

No person may act as a crewmember of a civil aircraft with a minimum blood alcohol level of
A. any detectable amount.
B. .04 percent or greater.
C. 0.2 percent or greater.

3.6.4.1.0.a.1 B07
An aircraft's operating limitations may be found in the
A. FAA-approved aircraft flight manual.
B. owner's handbook published by the aircraft manufacturer.
C. aircraft flight manual, approved manual material, markings, and placards, or any combination thereof.

3.6.4.1.1.a.1 N/A

3.6.4.1.2.a.1 B08
Which preflight action is required for every flight?
A. Check weather reports and forecasts.
B. Determine runway length at airports of intended use.
C. Determine alternatives if the flight cannot be completed.

3.6.4.1.3.a.1 B08
The preflight action required by regulations relative to alternatives available, if the planned flight cannot be completed, is applicable to
A. IFR flights only.
B. any flight not in the vicinity of an airport.
C. any flight conducted for hire or compensation.

3.6.4.1.4.a.1 B08
Which statement is true regarding the use of seatbelts and shoulder harnesses?
A. Crewmembers must keep seatbelts and shoulder harnesses fastened at all times during movement on the surface.
B. The pilot in command must ensure that each person on board an aircraft is briefed on how to fasten and unfasten seatbelts.
C. Passengers must keep seatbelts fastened at all times during movement on the surface but use of shoulder harnesses is optional.

3.6.4.1.5.a.1 B08
A pilot in a multiengine land airplane is planning to practice IFR procedures under a hood in VMC conditions. The safety pilot must have at least a
A. Student Pilot Certificate.
B. Private Pilot Certificate, with airplane multiengine land rating.
C. Private Pilot Certificate with both airplane and instrument ratings.

3.6.4.1.6.a.1 B08
May an airplane be operated in formation flight while passengers are carried for hire?
A. No; this is not authorized.
B. Yes; if the passengers approve.
C. Yes; provided arrangements have been made with the other pilot(s).

3.6.4.1.7.a.1 B08
If on a night flight, the pilot of aircraft A observes only the green wingtip light of aircraft B, and the airplanes are converging, which aircraft has the right-of-way?
A. Aircraft A; it is to the left of aircraft B.
B. Aircraft B; it is to the right of aircraft A.
C. Aircraft A; it is to the right of aircraft B.

3.6.4.1.8.a.1 B08
When two or more aircraft are approaching an airport for the purpose of landing, the right-of-way belongs to the aircraft
A. that is the least maneuverable.
B. that is either ahead of or to the other's right regardless of altitude.
C. at the lower altitude, but it shall not take advantage of this rule to cut in front of or to overtake another.

3.6.4.1.9.a.1 B08
What action should be taken if a glider and an airplane approach each other at the same altitude and on a head-on collision course?
A. Both should give way to the right.
B. The airplane should give way because it is more maneuverable.
C. The airplane should give way because the glider has the right-of-way.

3.6.4.2.0.a.1 B08
An airplane and an airship are converging. If the airship is left of the airplane's position, which aircraft has the right of way?
A. The airship.
B. The airplane.
C. Each should alter course to the right.

3.6.4.2.1.a.1 B08
An airship has the right of way over which aircraft?
A. Glider.
B. Gyroplane.
C. Aircraft towing another aircraft.

3.6.4.2.2.a.1 B08
When flying beneath the lateral limits of Class B airspace, the maximum indicated airspeed authorized is
A. 156 knots.
B. 200 knots.
C. 250 knots.

3.6.4.2.3.a.1 B08
Unless otherwise authorized, what is the maximum indicated airspeed at which an aircraft may be flown in a satellite airport traffic pattern located within Class B airspace?
A. 200 MPH.
B. 200 knots.
C. 250 knots.

3.6.4.2.4.a.1 B08
Unless otherwise authorized or required by air traffic control, what is the maximum indicated airspeed at which a person may operate an aircraft below 10,000 feet MSL?
A. 200 knots.
B. 250 MPH.
C. 250 knots.

3.6.4.2.5.a.1 B08
The maximum indicated airspeed permitted when operating an aircraft within 4 NM of the primary airport in Class D airspace is
A. 200 MPH.
B. 200 knots.
C. 250 knots.

3.6.4.2.6.a.1 B08
To operate an aircraft over any congested area, a pilot should maintain an altitude of at least
A. 500 feet above the highest obstacle within a horizontal radius of 1,000 feet.
B. 1,000 feet above the highest obstacle within a horizontal radius of 2,000 feet.
C. 2,000 feet above the highest obstacle within a horizontal radius of 1,000 feet.

3.6.4.2.7.a.1 B08
The minimum distance at which an airplane may be operated over a structure which is located in a sparsely populated area is
A. 500 feet above the ground.
B. 500 feet from the structure.
C. 1,000 feet from the structure.

3.6.4.2.8.a.1 B08
Except when necessary for takeoff or landing, what is the minimum safe altitude for a pilot to operate an aircraft anywhere?
A. An altitude of 1,000 feet above the highest obstacle within a horizontal radius of 2,000 feet.
B. An altitude of 500 feet above the surface and no closer than 500 feet to any person, vessel, vehicle, or structure.
C. An altitude allowing, if a power unit fails, an emergency landing without undue hazard to persons or property on the surface.

3.6.4.2.9.a.1 B08
A helicopter may be operated at less than the minimum safe altitudes prescribed by regulations for other aircraft if
A. the operation is conducted without hazard to persons or property.
B. an altitude of at least 500 feet is maintained over other than congested areas.
C. at least 500 feet is maintained above the highest obstacle within a radius of 1,000 feet.

3.6.4.3.0.a.1 B08
What action is appropriate if you deviate from an air traffic control instruction during an emergency and are given priority?
A. Submit a report to the nearest FAA regional office within 48 hours.
B. Submit a report to the manager of the air traffic control facility within 24 hours.
C. If requested, submit a detailed report within 48 hours to the manager of the air traffic control facility.

3.6.4.3.1.a.1 B08
While in flight, a steady red light directed at you from the control tower means
A. continue flight; airport unsafe, do not land.
B. give way to other aircraft; continue circling.
C. return for landing; expect steady green light at the appropriate time.

3.6.4.3.2.a.1 B08
While in flight, an alternating red and green light directed at you from the control tower means
A. exercise extreme caution.
B. give way to other aircraft; continue circling.
C. return for landing; expect steady green light at proper time.

3.6.4.3.3.a.1 B08
You receive a flashing white light from the control tower during run-up prior to takeoff; what action should you take?
A. Taxi clear of the runway in use.
B. Return to your starting point on the airport.
C. None; this light signal is applicable only to aircraft in flight.

3.6.4.3.4.a.1 B08
What is the correct departure procedure at a noncontrolled airport?

A. The FAA-approved departure procedure for that airport.
B. Make all left turns, except a 45° right turn on the first crosswind leg.
C. Departure in any direction consistent with safety, after crossing the airport boundary.

3.6.4.3.5.a.1 B08
A turbine-powered or large airplane is required to enter an airport traffic pattern at an altitude of at least
A. 1,000 feet AGL.
B. 1,500 feet AGL.
C. 2,000 feet AGL.

3.6.4.3.6.a.1 B08
An airport without a control tower lies within the controlled airspace of an airport with an operating tower. According to regulations, two-way radio communications with ATC are required for landing clearance at
A. both airports, as well as to fly through the area.
B. the tower-controlled airport only, as well as to fly through the area.
C. the tower-controlled airport only, but not required to fly through the area.

3.6.4.3.7.a.1 B08
What minimum pilot certificate will permit a pilot to enter all Class B airspace?
A. Private Pilot Certificate.
B. Commercial Pilot Certificate.
C. Student Pilot Certificate with an appropriate endorsement.

3.6.4.3.8.a.1 B08
Which is true regarding VFR operations in Class B airspace?
A. An operating VOR is required.
B. A Private Pilot Certificate is required for all flight within this airspace.
C. Solo student pilots are authorized to fly in Class B airspace if they meet certain requirements.

3.6.4.3.9.a.1 B08
Which equipment is required when operating an aircraft within Class B airspace?
A. A VOR or TACAN receiver.
B. Two-way radio communications.
C. Two-way radio communications and transponder with encoding altimeter.

3.6.4.4.0.a.1 B08
In which type of airspace are VFR flights prohibited?
A. Class A.
B. Class B.
C. Class C.

3.6.4.4.1.a.1 B08
What is the minimum fuel requirement for flight under VFR at night in an airplane? Enough to fly to
A. the first point of intended landing and to fly after that for 20 minutes at normal cruise speed.
B. the first point of intended landing and to fly after that for 30 minutes at normal cruise speed.
C. the first point of intended landing and to fly after that for 45 minutes at normal cruise speed.

3.6.4.4.2.a.1 B08
What is the minimum fuel requirement for flight under VFR during daylight hours in an airplane? Enough to fly to
A. the first point of intended landing and to fly after that for 20 minutes at normal cruise speed.
B. the first point of intended landing and to fly after that for 30 minutes at normal cruise speed.
C. the first point of intended landing and to fly after that for 45 minutes at normal cruise speed.

3.6.4.4.3.a.1 B08
What is the minimum fuel requirement for flight under VFR in a rotorcraft? Enough to fly to
A. the first point of intended landing and to fly after that for 20 minutes at normal cruise speed.
B. the first point of intended landing and to fly after that for 30 minutes at normal cruise speed.
C. the first point of intended landing and to fly after that for 45 minutes at normal cruise speed.

3.6.4.4.4.a.1 B08
What type airspeed at the planned cruise altitude should be entered on a flight plan?
A. True airspeed.
B. Indicated airspeed.
C. Estimated groundspeed.

3.6.4.4.5.a.1 B08
When operating VFR in Class B airspace, what are the visibility and cloud clearance requirements?
A. 3 SM visibility and clear of clouds.
B. 3 SM visibility, 500 feet below, 1,000 feet above, and 2,000 feet horizontal distance from clouds.
C. 1 SM visibility, 500 feet below, 1,000 feet above, and 2,000 feet horizontal distance from clouds.

3.6.4.4.6.a.1 B08
The minimum visibility for VFR flight increases from 3 to 5 SM beginning at an altitude of
A. 10,000 feet MSL.
B. 14,500 feet MSL.
C. 1,200 feet AGL and at or above 10,000 feet MSL.

3.6.4.4.7.a.1 B08
An airplane may be operated in uncontrolled airspace at night below 1,200 feet above the surface under the following conditions:
A. Clear of clouds and 1 mile visibility.
B. Clear of clouds and 3 miles visibility.
C. Less than 3 miles but more than 1 mile visibility in an airport traffic pattern and within one-half mile of the runway.

3.6.4.4.8.a.1 B08
Normally, the vertical limits of Class D airspace extend up to and including how many feet above the surface?
A. 2,500 feet.
B. 3,000 feet.
C. 4,000 feet.

3.6.4.4.9.a.1 B08
During operations within controlled airspace at altitudes of more than 1,200 feet AGL, but less than 10,000 feet MSL, the minimum horizontal distance from clouds requirement for VFR flight is
A. 1 mile.
B. 2,000 feet.
C. 1,000 feet.

3.6.4.5.0.a.1 B08
While in Class G airspace in VFR conditions, what minimum distance from clouds should be maintained when flying more than 1,200 feet AGL, and at or above 10,000 feet MSL?
A. 500 feet below; 1,000 feet above; 1 mile horizontal.
B. 1,000 feet below; 1,000 feet above; 1 mile horizontal.
C. 500 feet below; 1,000 feet above; 2,000 feet horizontal.

3.6.4.5.1.a.1 B08
While in Class E airspace in VFR conditions, what in-flight visibility is required when flying more than 1,200 feet AGL and at or above 10,000 feet MSL?

A. 5 SM.
B. 3 SM.
C. 1 SM.

3.6.4.5.2.a.1 B08
What minimum flight visibility is required when flying a glider above 10,000 feet MSL and more than 1,200 feet AGL?
3 SM.
B. 5 NM.
C. 5 SM.

3.6.4.5.3.a.1 B08
(Refer to figure 45.) What are the visibility and cloud clearance requirements in an airplane at night when conducting takeoffs and landings at McCampbell Airport (area 1)?
A. 3 SM visibility and clear of clouds.
B. 1 SM visibility and clear of clouds if remaining within one-half mile of the airport.
C. Remain clear of clouds and operate at a speed that allows adequate opportunity to see other traffic and obstructions in time to avoid a collision.

3.6.4.5.4.a.1 B08
While in Class G airspace under day VFR conditions, what in-flight visibility is required when flying more than 1,200 feet AGL and less than 10,000 feet MSL?
A. 5 SM.
B. 3 SM.
C. 1 SM.

3.6.4.5.5.a.1 B08
When operating an airplane within Class D airspace under special VFR, the flight visibility is required to be at least
A. 3 SM.
B. 2 SM.
C. 1 SM.

3.6.4.5.6.a.1 B08
No person may operate an airplane within Class D and E airspace between sunset and sunrise under special VFR unless the
A. flight visibility is at least 3 miles.
B. airplane is equipped for instrument flight.
C. flight can be conducted 500 feet below the clouds.

3.6.4.5.7.a.1 B08
Regulations stipulate that, at an airport located within Class E airspace and at which ground visibility is not reported, takeoffs and landings of airplanes under special VFR are
A. not authorized.
B. authorized if the flight visibility is at least 1 SM.
C. authorized only if another airport in that designated airspace reports a ground visibility of 1 SM.

3.6.4.5.8.a.1 B08
Which is required to operate a helicopter within Class E airspace between sunset and sunrise under special VFR?
A. The pilot must possess an instrument rating and have satisfied currency requirements.
B. The helicopter must be equipped for instrument flight and the visibility must be at least 1 mile.
C. The helicopter must be operated at a speed that allows the pilot the opportunity to see and avoid other traffic or obstructions.

3.6.4.5.9.a.1 B08
May a helicopter operate in Class E airspace at night under special VFR?

A. Yes; regulations permit this.
B. No; this is permitted for airplanes only.
C. Yes; but the pilot must be instrument rated and the helicopter must be instrument equipped.

3.6.4.6.0.a.1 B08
When operating under VFR at more than 3,000 feet AGL, cruising altitudes to be maintained are based upon the
A. true course being flown.
B. magnetic course being flown.
C. magnetic heading being flown.

3.6.4.6.1.a.1 B08
Which courses and altitudes are appropriate for VFR aircraft operating more than 3,000 feet AGL, but below 18,000 feet MSL?
A. True course 0° to 179° inclusive, odd thousands plus 500 feet.
B. Magnetic course 0° to 179° inclusive, even thousands plus 500 feet.
C. Magnetic course 180° to 359° inclusive, even thousands plus 500 feet.

3.6.4.6.2.a.1 B11
Regarding certificates and documents, no person may operate an aircraft unless it has within it an
A. Airworthiness Certificate and minimum equipment list (MEL).
B. Airworthiness Certificate, aircraft and engine logbooks, and owner's handbook.
C. Airworthiness Certificate, Registration Certificate, and approved flight manual.

3.6.4.6.3.a.1 B11
Which is required equipment for powered aircraft during VFR night flights?
A. Anticollision light system.
B. Appropriate radio navigational equipment.
C. Artificial horizon and rate-of-turn indicator.

3.6.4.6.4.a.1 N/A

3.6.4.6.5.a.1 B11
What is the maximum distance from an airport that an aircraft engaged in training operations may be operated without an emergency locator transmitter?
A. 25 NM.
B. 50 NM.
C. 100 NM.

3.6.4.6.6.a.1 B11
How long may an aircraft be operated after the emergency locator transmitter has been initially removed for maintenance?
A. 90 days.
B. 30 days.
C. 7 days.

3.6.4.6.7.a.1 B11
When are emergency locator transmitter batteries required to be replaced or recharged?
A. Every 24 months.
B. After 1 cumulative hour of use.
C. After 75 percent of their useful life has expired.

3.6.4.6.7.a.2 B11

How often are emergency locator transmitters required to be inspected?
A. Every 12 months.
B. Every 24 months.
C. After every 100 hours of flight time.

3.6.4.6.8.a.1 B11
From sunset to sunrise, no person may park or move an aircraft in a night-flight operations area of an airport unless the aircraft
A. is in an area marked by obstruction lights.
B. is equipped with an electric landing or taxi light.
C. has lighted aviation red or white anticollision lights.

3.6.4.6.9.a.1 B11
Position lights are required to be displayed on all aircraft in flight from
A. sunset to sunrise.
B. 1 hour before sunset to 1 hour after sunrise.
C. 30 minutes before sunrise to 30 minutes after sunset.

3.6.4.7.0.a.1 B11
An aircraft not equipped with the required position lights must terminate flight
A. at sunset.
B. 30 minutes after sunset.
C. 1 hour after sunset.

3.6.4.7.1.a.1 B11
If a free balloon is not equipped for night flight and official sunset is 1730 EST, the latest a pilot may operate that balloon and not violate regulations is
A. 1629 EST.
B. 1729 EST.
C. 1829 EST.

3.6.4.7.2.a.1 B11
Unless each occupant is provided with supplemental oxygen, no person may operate a civil aircraft of U.S. registry above a cabin pressure altitude of
A. 12,500 feet MSL.
B. 14,000 feet MSL.
C. 15,000 feet MSL.

3.6.4.7.3.a.1 B11
Which cabin pressure altitude allows a pilot to operate an aircraft up to 30 minutes without supplemental oxygen?
A. 12,500 feet MSL.
B. 12,600 feet MSL.
C. 14,100 feet MSL.

3.6.4.7.4.a.1 B11
The primary purpose of a minimum equipment list (MEL) is to
A. provide a list of equipment that must be operational at all times on the aircraft.
B. list the equipment that can be inoperative and still not affect the airworthiness of an aircraft.
C. list the minimum equipment that must be installed in all aircraft as required by airworthiness directives.

3.6.4.7.5.a.1 B11
Authority for approval of a minimum equipment list (MEL) must be obtained from the
A. Administrator.
B. FAA district office.

C. aircraft manufacturer.

3.6.4.7.6.a.1 B11
Which action is appropriate if an aircraft, operating under FAR Part 91 and for which a master minimum equipment list has not been developed, is determined to have an inoperative instrument or piece of equipment that does not constitute a hazard to the aircraft? The item should be
A. removed and repaired prior to the next flight.
B. placarded "inoperative" and repaired during the next inspection.
C. deactivated and placarded "inoperative" but repairs can be deferred indefinitely.

3.6.4.7.7.a.1 B11
How long before the proposed operation should a request be submitted to the controlling ATC facility to operate in Class C airspace without the required altitude reporting transponder?
A. 1 hour.
B. 8 hours.
C. 24 hours.

3.6.4.7.8.a.1 B11
A coded transponder with altitude reporting capability is required for all controlled airspace
A. below 14,500 feet MSL.
B. above 12,500 feet MSL (excluding airspace at or below 2,500 feet AGL).
C. at and above 10,000 feet MSL (excluding airspace at or below 2,500 feet AGL).

3.6.4.7.9.a.1 B11
An altitude reporting coded transponder is required for all airspace
A. from the surface to 10,000 feet MSL within a 10 NM radius of any airport traffic pattern.
B. at and above 10,000 feet MSL and below the floor of Class A airspace (excluding airspace at or below 2,500 feet AGL).
C. within 25 NM of a Class B primary airport from the surface upward to 10,000 feet MSL (excluding airspace below 1,200 feet AGL).

3.6.4.8.0.a.1 B11
What are the requirements, if any, to overfly Class C airspace?
A. None, provided the flight remains above the airspace ceiling.
B. Transponder with automatic altitude reporting capability is required above the airspace ceiling and upward to 10,000 feet MSL.
C. Two-way radio communications must be established with ATC and transponder must be operating at all times.

3.6.4.8.1.a.1 B11
Which operable equipment is required for operating a helicopter in Class C airspace?
A. Two-way radio.
B. Two-way radio and transponder with automatic altitude reporting capability.
C. Two-way radio, VOR, and transponder with automatic altitude reporting capability.

3.6.4.8.2.a.1 B12
What is the minimum altitude and flight visibility required for acrobatic flight?
A. 1,500 feet AGL and 5 miles.
B. 1,500 feet AGL and 3 miles.
C. 3,000 feet AGL and 3 miles.

3.6.4.8.3.a.1 B12
When must each occupant of an aircraft wear an approved parachute?
A. When flying over water beyond gliding distance to the shore.
B. When practicing spins or other flight maneuvers for any certificate or rating.

C. When an intentional maneuver that exceeds 30° noseup or nosedown relative to the horizon is made.

3.6.4.8.4.a.1 B13
Who is primarily responsible for maintaining an aircraft in an airworthy condition?
A. Mechanic.
B. Pilot in command.
C. Owner or operator of the aircraft.

3.6.4.8.5.a.1 B13
Assuring compliance with airworthiness directives is the responsibility of the
FAA certificated mechanic.
B. pilot in command of the aircraft.
C. owner or operator of the aircraft.

3.6.4.8.6.a.1 B13
Completion of an annual inspection and the return of an aircraft to service should always be indicated by
A. conduct of a test flight and the appropriate logbook entry.
B. the appropriate entries in the aircraft maintenance records.
C. the relicensing date on the Registration Certificate.

3.6.4.8.7.a.1 B13
If an aircraft's operation in flight was substantially affected by an alteration or repair, the aircraft documents must show that it was test flown and approved for return to service by an appropriately rated pilot prior to being flown
A. with passengers aboard.
B. for compensation or hire.
C. by instructors and students.

3.6.4.8.8.a.1 B13
An aircraft's last annual inspection was performed on July 12, this year. The next annual inspection will be due no later than
A. July 13, next year.
B. July 31, next year.
C. 12 calendar months after the date shown on the Airworthiness Certificate.

3.6.4.8.9.a.1 B13
Which is prohibited if the aircraft being used has not had a 100-hour inspection or annual inspection within the preceding 100 hours of time in service?
A. Giving flight instruction for hire.
B. Conducting any commercial operation.
C. Carrying passengers, either for hire or not for hire.

3.6.4.9.0.a.1 B13
An aircraft operated for hire with passengers aboard has a 100-hour inspection performed after 90 hours in service. The next 100-hour inspection would be due after
A. 90 hours' time in service.
B. 100 hours' time in service.
C. 110 hours' time in service.

3.6.4.9.1.a.1 B13
If an ATC transponder installed in an aircraft has not been tested, inspected, and found to comply with regulations within a specified period, what is the limitation on its use?
A. Its use is not permitted.
B. It may be used anywhere except in Class A and B airspace.
C. It may be used for VFR flight but not for IFR flight.

3.6.4.9.2.a.1 B13
What is the maximum time period during which a person may use an ATC transponder after it has been tested and inspected?
A. 12 calendar months.
B. 24 calendar months.
C. 36 calendar months.

3.6.4.9.3.a.1 B13
Aircraft maintenance records must include the current status of
A. all appropriate Airworthiness Certificates.
B. life-limited parts of only engine and airframe.
C. life-limited parts of each airframe, engine, propeller, rotor, and appliance.

3.6.4.9.4.a.1 B13
A new maintenance record being used for an aircraft engine rebuilt by the manufacturer must include the previous
A. operating hours of the engine.
B. annual inspections performed on the engine.
C. changes required by airworthiness directives.

3.6.4.9.5.a.1 G10
The NTSB defines a serious injury as any injury which
A. causes severe tendon damage.
B. results in a simple fracture of the nose.
C. involves first degree burns over 5 percent of the body.

3.6.4.9.6.a.1 G11
Notification to the NTSB is required when there has been substantial damage which
A. adversely affects aircraft performance.
B. causes small punctured holes in the skin or fabric.
C. results in more than $25,000 for repairs to the aircraft.

3.6.4.9.7.a.1 G11
NTSB Part 830 requires an immediate notification as a result of which incident?
A. Aircraft collide on the ground.
B. Flight control system malfunction.
C. Damage to property, other than the aircraft, estimated to exceed $10,000.

3.6.4.9.8.a.1 G11
If an aircraft is involved in an accident which results in substantial damage to the aircraft, the nearest NTSB field office shall be notified
A. immediately.
B. within 7 days.
C. within 10 days.

3.6.4.9.9.a.1 G11
The operator of an aircraft that has been involved in an accident is required to file a report within how many days?
A. 3.
B. 7.
C. 10.

3.6.5.0.0.a.1 G13

The operator of an aircraft that has been involved in an incident is required to submit a report to the nearest field office of the NTSB
A. within 7 days.
B. within 10 days.
C. only if requested to do so.

4.6.5.0.1.a.1 H01
The use of a slot in the leading edge of the wing enables an airplane to land at a slower speed because it
A. changes the camber of the wing.
B. delays the stall to a higher angle of attack.
C. decelerates the upper surface boundary layer air.

4.6.5.0.2.a.1 H01
The tendency of an aircraft to develop forces which restore it to its original condition, when disturbed from a condition of steady flight, is known as
A. stability.
B. controllability.
C. maneuverability.

4.6.5.0.3.a.1 H01
Rotor blade rotation during powered flight in a gyroplane is produced by the
A. horizontal component of rotor lift.
B. interaction between engine propeller thrust and rotor blade drag.
C. transfer of engine power through the clutch to the rotor shaft.

4.6.5.0.4.a.1 H01
Why does increasing speed also increase lift?
A. The increased velocity of the relative wind overcomes the increased drag.
B. The increased impact of the relative wind on an airfoil's lower surface creates a greater amount of air being deflected downward.
C. The increased speed of the air passing over an airfoil's upper surface increases the pressure, thus creating a greater pressure differential between the upper and lower surface.

4.6.5.0.5.a.1 H52
The three axes of an aircraft intersect at the
A. center of gravity.
B. center of pressure.
C. midpoint of the mean chord.

4.6.5.0.6.a.1 H52
An airplane would have a tendency to nose up and have an inherent tendency to enter a stalled condition when the center of pressure is
A. below the center of gravity.
B. aft of the center of gravity.
C. forward of the center of gravity.

4.6.5.0.7.a.1 H52
When considering the forces acting upon an airplane in straight-and-level flight at constant airspeed, which statement is correct?
A. Weight always acts vertically toward the center of the Earth.
B. Thrust always acts forward parallel to the relative wind and is greater than drag.
C. Lift always acts perpendicular to the longitudinal axis of the wing and is greater than weight.

4.6.5.0.8.a.1 H55

Adverse yaw during a turn entry is caused by
A. increased induced drag on the lowered wing and decreased induced drag on the raised wing.
B. decreased induced drag on the lowered wing and increased induced drag on the raised wing.
C. increased parasite drag on the raised wing and decreased parasite drag on the lowered wing.

4.6.5.0.9.a.1 H55
When rolling out of a steep-banked turn, what causes the lowered aileron to create more drag than when rolling into the turn?
A. The wing's angle of attack is greater as the rollout is started.
B. The wing being raised is traveling faster through the air than the wing being lowered.
C. The wing being lowered is traveling faster through the air and producing more lift than the wing being raised.

4.6.5.1.0.a.1 H55
How can a pilot increase the rate of turn and decrease the radius at the same time?
A. Shallow the bank and increase airspeed.
B. Steepen the bank and decrease airspeed.
C. Steepen the bank and increase airspeed.

4.6.5.1.1.a.1 H60
Which statement is true concerning the aerodynamic conditions which occur during a spin entry?
A. After a full stall, both wings remain in a stalled condition throughout the rotation.
B. After a partial stall, the wing that drops remains in a stalled condition while the rising wing regains and continues to produce lift, causing the rotation.
C. After a full stall, the wing that drops continues in a stalled condition while the rising wing regains and continues to produce some lift, causing the rotation.

4.6.5.1.2.a.1 H66
The point on an airfoil through which lift acts is the
A. center of gravity.
B. center of pressure.
C. midpoint of the chord.

4.6.5.1.3.a.1 H66
Lift produced by an airfoil is the net force developed perpendicular to the
A. chord.
B. relative wind.
C. longitudinal axis of the aircraft.

4.6.5.1.4.a.1 H66
The angle between the chord line of the wing and the longitudinal axis of the aircraft is known as
A. dihedral.
B. the angle of attack.
C. the angle of incidence.

4.6.5.1.5.a.1 H66
The angle between the chord line of an airfoil and the relative wind is known as the angle of
A. lift.
B. attack.
C. incidence.

4.6.5.1.6.a.1 H66
A line drawn from the leading edge to the trailing edge of an airfoil and equidistant at all points from the upper and lower contours is called the
A. chord line.

B. camber line.
C. mean camber line.

4.6.5.1.7.a.1 H66
The force which imparts a change in the velocity of a mass is called
A. work.
B. power.
C. thrust.

4.6.5.1.8.a.1 H66
During a steady climb, the rate of climb depends on
A. excess power.
B. excess thrust.
C. thrust available.

4.6.5.1.9.a.1 H66
During a steady climb, the angle of climb depends on
A. excess thrust.
B. power available
C. thrust required.

4.6.5.2.0.a.1 H66
Which statement relates to Bernoulli's principle?
A. For every action there is an equal and opposite reaction.
B. An additional upward force is generated as the lower surface of the wing deflects air downward.
C. Air traveling faster over the curved upper surface of an airfoil causes lower pressure on the top surface.

4.6.5.2.1.a.1 H66
An aircraft wing is designed to produce lift resulting from
A. negative air pressure below the wing's surface and positive air pressure above the wing's surface.
B. positive air pressure below the wing's surface and negative air pressure above the wing's surface.
C. a larger center of pressure above the wing's surface and a lower center of pressure below the wing's surface.

4.6.5.2.2.a.1 H66
During flight with zero angle of attack, the pressure along the upper surface of a wing would be
A. equal to atmospheric pressure.
B. less than atmospheric pressure.
C. greater than atmospheric pressure.

4.6.5.2.3.a.1 H66
That portion of the aircraft's total drag created by the production of lift is called
A. induced drag, and is not affected by changes in airspeed.
B. induced drag, and is greatly affected by changes in airspeed.
C. parasite drag, and is greatly affected by changes in airspeed.

4.6.5.2.4.a.1 H66
As airspeed increases in level flight, total drag of an aircraft becomes greater than the total drag produced at the maximum lift/drag speed because of the
A. increase in induced drag.
B. decrease in induced drag.
C. increase in parasite drag.

4.6.5.2.5.a.1 H66

As airspeed decreases in level flight, total drag of an aircraft becomes greater than the total drag produced at the maximum lift/drag speed because of the
A. decrease in induced drag.
B. increase in induced drag.
C. increase in parasite drag.

4.6.5.2.6.a.1 H66
The resistance, or skin friction, due to the viscosity of the air as it passes along the surface of a wing is called
A. form drag.
B. profile drag.
C. parasite drag.

4.6.5.2.7.a.1 H66
Which relationship is correct when comparing drag and airspeed?
A. Induced drag increases as the square of the airspeed.
B. Induced drag varies inversely as the square of the airspeed.
C. Profile drag varies inversely as the square of the airspeed.

4.6.5.2.8.a.1 H66
Which statement describes the relationship of the forces acting on an aircraft in a constant-power and constant-airspeed descent?
A. Thrust is equal to drag; lift is equal to weight.
B. Thrust is equal to drag; weight is greater than lift.
C. Thrust is greater than drag; weight is greater than lift.

4.6.5.2.9.a.1 H66
Which statement is true regarding the forces acting on an airplane in a steady-state climb?
A. The sum of all forward forces is greater than the sum of all rearward forces.
B. The sum of all upward forces is greater than the sum of all downward forces.
C. The sum of all upward forces is equal to the sum of all downward forces.

4.6.5.3.0.a.1 H66
As the angle of bank is increased, the vertical component of lift
A. increases and the sink rate increases.
B. decreases and the sink rate increases.
C. increases and the sink rate decreases.

4.6.5.3.1.a.1 H66
Changes in the center of pressure of a wing affect the aircraft's
A. lift/drag ratio.
B. lifting capacity.
C. aerodynamic balance and controllability.

4.6.5.3.2.a.1 H66
What action is necessary to make an aircraft turn?
A. Yaw the aircraft.
B. Change the direction of lift.
C. Change the direction of thrust.

4.6.5.3.3.a.1 H66
The angle of attack of a wing directly controls the
A. angle of incidence of the wing.
B. amount of airflow above and below the wing.
C. distribution of positive and negative pressure acting on the wing.

4.6.5.3.4.a.1 H66
The angle of attack at which an airplane stalls
A. increases with an increase in engine power.
B. remains constant regardless of gross weight.
C. varies with gross weight and density altitude.

4.6.5.3.5.a.1 H66
Which statement is true relating to the factors which produce stalls?
A. The critical angle of attack is a function of the degree of bank.
B. The stalling angle of attack depends upon the speed of the airflow over the wings.
C. The stalling angle of attack is independent of the speed of airflow over the wings.

4.6.5.3.6.a.1 H66
The critical angle of attack at which a given aircraft stalls is dependent on the
A. gross weight.
B. design of the wing.
C. attitude and airspeed.

4.6.5.3.7.a.1 H66
If the same angle of attack is maintained in ground effect as when out of ground effect, lift will
A. increase, and induced drag will decrease.
B. decrease, and parasite drag will increase.
C. decrease, and parasite drag will decrease.

4.6.5.3.8.a.1 H66
It is possible to fly an aircraft just clear of the ground at a slightly slower airspeed than that required to sustain level flight at higher altitudes. This is the result of
A. interference of the ground surface with the airflow patterns about the aircraft in flight.
B. a cushioning effect of the air as it is trapped between the ground and the descending aircraft.
C. ground interference with the static pressure system which produces false indications on the airspeed indicator.

4.6.5.3.9.a.1 H66
An airplane leaving ground effect will
A. experience a decrease in thrust required.
B. experience a decrease in stability and a noseup change in moments.
C. require a lower angle of attack to attain the same lift coefficient.

4.6.5.4.0.a.1 H66
An airplane is usually affected by ground effect at what height above the surface?
A. Three to four times the airplane's wingspan.
B. Twice the airplane's wingspan above the surface.
C. Less than half the airplane's wingspan above the surface.

4.6.5.4.1.a.1 H66
If severe turbulence is encountered, the aircraft's airspeed should be reduced to
A. maneuvering speed.
B. normal structural cruising speed.
C. the minimum steady flight speed in the landing configuration.

4.6.5.4.2.a.1 H66
If an airplane's gross weight is 3,250 pounds, what is the load acting on this airplane during a level 60° banked turn?
A. 3,250 pounds.

B. 5,200 pounds.
C. 6,500 pounds.

4.6.5.4.3.a.1 H66
An airplane has a normal stalling speed of 60 MPH but is forced into an accelerated stall at twice that speed. What maximum load factor will result from this maneuver?
A. 4 G's.
B. 2 G's.
C. 1 G.

4.6.5.4.4.a.1 H66
(Refer to figure 17.) A positive load factor of 4 at 140 MPH would cause the airplane to
A. stall.
B. break apart.
C. be subjected to structural damage.

4.6.5.4.5.a.1 H66
(Refer to figure 17.) What load factor would be created if positive 30 feet per second gusts were encountered at 130 MPH?
A. 3.8.
B. 3.0.
C. 2.0.

4.6.5.4.6.a.1 H66
(Refer to figure 17.) The horizontal dashed line from point B to point D represents the
A. positive limit load factor.
B. airspeed range for normal operations.
C. maximum structural cruise airspeed range.

4.6.5.4.7.a.1 H66
(Refer to figure 17.) The airspeed indicated by point B is
A. V_A.
B. V_{NE}.
C. V_{NO}.

4.6.5.4.8.a.1 H66
(Refer to figure 17.) The airspeed indicated by point D is
A. V_A.
B. V_{NE}.
C. V_{NO}.

4.6.5.4.9.a.1 H66
(Refer to figure 17.) The airspeed indicated by point C is
A. V_A.
B. V_{NE}.
C. V_{NO}.

4.6.5.5.0.a.1 H66
(Refer to figure 18.) What increase in load factor would take place if the angle of bank were increased from 60° to 80°?
A. 2 G's.
B. 3 G's.
C. 4 G's.

4.6.5.5.1.a.1 H66
(Refer to figure 18.) What is the stall speed of an airplane under a load factor of 4 if the unaccelerated stall speed is 70 knots?
A. 91 knots.
B. 132 knots.
C. 140 knots.

4.6.5.5.2.a.1 H66
(Refer to figure 18.) If, during a steady turn with a 50° bank, a load factor of 1.5 were imposed on an airplane which has an unaccelerated stall speed of 60 knots, at what speed would the airplane first stall?
A. 68 knots.
B. 75 knots.
C. 82 knots.

4.6.5.5.3.a.1 H66
(Refer to figure 18.) A 70 percent increase in stalling speed would imply a bank angle of
A. 67°.
B. 70°.
C. 83°.

4.6.5.5.4.a.1 H66
(Refer to figure 18.) What is the stall speed of an airplane under a load factor of 2 if the unaccelerated stall speed is 100 knots?
A. 115 knots.
B. 129 knots.
C. 140 knots.

4.6.5.5.5.a.1 H66
(Refer to figure 19.) Which statement is true regarding airplane flight at L/D_{max}?
A. Any angle of attack other than that for L/D_{max} increases parasite drag.
B. Any angle of attack other than that for L/D_{max} increases the lift/drag ratio.
C. Any angle of attack other than that for L/D_{max} increases total drag for a given airplane's lift.

4.6.5.5.6.a.1 H66
(Refer to figure 19.) The lift/drag at 2° angle of attack is approximately the same as the lift/drag for
A. 9.75° angle of attack.
B. 10.5° angle of attack.
C. 16.5° angle of attack.

4.6.5.5.7.a.1 H66
(Refer to figure 19.) At which angle of attack does the airplane travel the maximum horizontal distance per foot of altitude lost?
A. 6°.
B. 12.3°.
C. 20°.

4.6.5.5.8.a.1 H66
Which action will result in a stall?
A. Flying at too low an airspeed.
B. Raising the aircraft's nose too high.
C. Exceeding the critical angle of attack.

4.6.5.5.9.a.1 H66
(Refer to figure 20.) At the airspeed represented by point A, in steady flight, the aircraft will

A. have its maximum lift/drag ratio.
B. have its minimum lift/drag ratio.
C. be developing its maximum coefficient of lift.

4.6.5.6.0.a.1 H66
(Refer to figure 20.) At an airspeed represented by point B, in steady flight, the pilot can expect to obtain the aircraft's
A. maximum coefficient of lift.
B. minimum coefficient of lift.
C. maximum glide range in still air.

4.6.5.6.1.a.1 H66
Which aircraft characteristics contribute to spiral instability?
A. Weak static directional stability and weak dihedral effect.
B. Strong static directional stability and weak dihedral effect.
C. Weak static directional stability and strong dihedral effect.

4.6.5.6.2.a.1 H66
The most desirable type of stability for an aircraft to possess is
A. neutral static stability.
B. positive static stability.
C. positive dynamic stability.

4.6.5.6.3.a.1 H66
The tendency of an aircraft to develop forces that further remove the aircraft from its original position, when disturbed from a condition of steady flight, is known as
A. static instability.
B. dynamic instability.
C. positive static stability.

4.6.5.6.4.a.1 H66
If the aircraft's nose initially tends to return to its original position after the elevator control is pressed forward and released, the aircraft displays
A. positive static stability.
B. neutral dynamic stability.
C. negative dynamic stability.

4.6.5.6.5.a.1 H66
If the aircraft's nose initially tends to move farther from its original position after the elevator control is pressed forward and released, the aircraft displays
A. negative static stability.
B. positive static stability.
C. positive dynamic stability.

4.6.5.6.6.a.1 H66
The quality of an aircraft that permits it to be operated easily and to withstand the stresses imposed on it is
A. stability.
B. maneuverability.
C. controllability.

4.6.5.6.7.a.1 H66
The capability of an aircraft to respond to a pilot's inputs, especially with regard to flightpath and attitude, is
A. response.
B. controllability.
C. maneuverability.

4.6.5.6.8.a.1 H66
If the aircraft's nose remains in the new position after the elevator control is pressed forward and released, the aircraft displays
A. neutral static stability.
B. negative static stability.
C. positive static stability.

4.6.5.6.9.a.1 H66
If the airspeed increases and decreases during longitudinal phugoid oscillations, the aircraft
A. will display poor trimming qualities.
B. can be easily controlled by the pilot.
C. is constantly changing angle of attack making it difficult for the pilot to reduce the magnitude of the oscillations.

4.6.5.7.0.a.1 H66
If an aircraft has negative dynamic and positive static stability, this will result in
A. undamped oscillations.
B. divergent oscillations.
C. convergent oscillations.

4.6.5.7.1.a.1 H66
If an increase in power tends to make the nose of an airplane rise, this is the result of the
A. line of thrust being below the center of gravity.
B. center of lift being ahead of the center of gravity.
C. center of lift and center of gravity being collocated.

4.6.5.7.2.a.1 H66
Which subsonic planform provides the best lift coefficient?
A. Tapered wing.
B. Elliptical wing.
C. Rectangular wing.

4.6.5.7.3.a.1 H66
On which wing planform does the stall begin at the wingtip and progress inward toward the wing root?
A. Sweepback wing.
B. Elliptical wing.
C. Moderate taper wing.

4.6.5.7.4.a.1 H66
A rectangular wing, as compared to other wing planforms, has a tendency to stall first at the
A. wingtip providing adequate stall warning.
B. wing root providing adequate stall warning.
C. wingtip providing inadequate stall warning.

4.6.5.7.5.a.1 H66
The purpose of aircraft wing dihedral angle is to
A. increase lateral stability.
B. increase longitudinal stability.
C. increase lift coefficient of the wing.

4.6.5.7.6.a.1 H66
A sweptwing airplane with weak static directional stability and increased dihedral causes an increase in
A. Mach tuck tendency.

B. Dutch roll tendency.
C. longitudinal stability.

4.6.5.7.7.a.1 H66
Aspect ratio of a wing is defined as the ratio of the
A. wingspan to the wing root.
B. wingspan to the mean chord.
C. square of the chord to the wingspan.

4.6.5.7.8.a.1 H66
A wing with a very high aspect ratio (in comparison with a low aspect ratio wing) will have
A. a low stall speed.
B. increased drag at high angles of attack.
C. poor control qualities at low airspeeds.

4.6.5.7.9.a.1 H66
At a constant velocity in airflow, a high aspect ratio wing will have (in comparison with a low aspect ratio wing)
A. increased drag, especially at a low angle of attack.
B. decreased drag, especially at a high angle of attack.
C. increased drag, especially at a high angle of attack.

4.6.5.8.0.a.1 H66
(Refer to figure 21.) Which aircraft has the highest aspect ratio?
A. 2.
B. 3.
C. 4.

4.6.5.8.1.a.1 H66
(Refer to figure 21.) Which aircraft has the lowest aspect ratio?
A. 2.
B. 3.
C. 4.

4.6.5.8.2.a.1 H66
(Refer to figure 21.) Consider only aspect ratio (other factors remain constant). Which aircraft will generate greatest lift?
A. 1.
B. 2.
C. 3.

4.6.5.8.3.a.1 H66
(Refer to figure 21.) Consider only aspect ratio (other factors remain constant). Which aircraft will generate greatest drag?
A. 1.
B. 3.
C. 4.

4.6.5.8.4.a.1 H66
(Refer to figure 22.) While rolling into a right turn, if the inclinometer appears as illustrated in A, the HCL and CF vectors would be acting on the aircraft as illustrated in
A. 2, and more left pedal pressure is needed to center the ball.
B. 2, and more right pedal pressure is needed to center the ball.
C. 4, and more right pedal pressure is needed to center the ball.

4.6.5.8.5.a.1 H66

(Refer to figure 22.) While rolling into a right turn, if the inclinometer appears as illustrated in C, the HCL and CF vectors would be acting on the aircraft as illustrated in
A. 3, and less right pedal pressure is needed to center the ball.
B. 5, and less right pedal pressure is needed to center the ball.
C. 5, and more right pedal pressure is needed to center the ball.

4.6.5.8.6.a.1 H66
(Refer to figure 22.) While rolling out of a left turn, if the inclinometer appears as illustrated in A, the HCL and CF vectors would be acting on the aircraft as illustrated in
A. 4, and more right pedal pressure is needed to center the ball.
B. 4, and more left pedal pressure is needed to center the ball.
C. 2, and more right pedal pressure is needed to center the ball.

4.6.5.8.7.a.1 H66
As a result of gyroscopic precession, it can be said that any
A. pitching around the lateral axis results in a rolling moment.
B. yawing around the vertical axis results in a pitching moment.
C. pitching around the longitudinal axis results in a yawing moment.

4.6.5.8.8.a.1 H66
Propeller slip is the difference between the
A. geometric pitch and blade angle of the propeller.
B. geometric pitch and the effective pitch of the propeller.
C. plane of rotation of the propeller and forward velocity of the aircraft.

4.6.5.8.9.a.1 H66
The distance a propeller actually advances in one revolution is
A. twisting.
B. effective pitch.
C. geometric pitch.

4.6.5.9.0.a.1 H66
Blade angle of a propeller is defined as the angle between the
A. angle of attack and chord line.
B. chord line and plane of rotation.
C. angle of attack and line of thrust.

4.6.5.9.1.a.1 H66
A propeller rotating clockwise, as seen from the rear, creates a spiraling slipstream that tends to rotate the aircraft to the
A. right around the vertical axis, and to the left around the longitudinal axis.
B. left around the vertical axis, and to the right around the longitudinal axis.
C. left around the vertical axis, and to the left around the longitudinal axis.

4.6.5.9.2.a.1 H66
The reason for variations in geometric pitch (twisting) along a propeller blade is that it
A. prevents the portion of the blade near the hub to stall during cruising flight.
B. permits a relatively constant angle of attack along its length when in cruising flight.
C. permits a relatively constant angle of incidence along its length when in cruising flight.

4.6.5.9.3.a.1 H66
With regard to gyroscopic precession, when a force is applied at a point on the rim of a spinning disc, the resultant force acts in which direction and at what point?
A. In the same direction as the applied force, 90 ahead in the plane of rotation.
B. In the opposite direction of the applied force, 90° ahead in the plane of rotation.

C. In the opposite direction of the applied force, at the point of the applied force.

4.6.5.9.4.a.1 H66
The critical engine on most light multiengine airplanes with clockwise rotating propellers is the
A. left engine, because of the P-factor of the left propeller.
B. right engine, because of the P-factor of the left propeller.
C. left engine, because of the P-factor of the right propeller.

4.6.5.9.5.a.1 H66
On a multiengine airplane with engines which rotate clockwise, the critical engine is the
A. left engine, because the right engine center of thrust is closer to the centerline of the fuselage.
B. right engine, because the left engine center of thrust is closer to the centerline of the fuselage.
C. left engine, because the right engine center of thrust is farther away from the centerline of the fuselage.

4.6.5.9.6.a.1 H66
On a multiengine airplane, where the propellers rotate in the same direction, why is the loss of power on one engine more critical than the loss of power on the other engine?
A. The corkscrew pattern of airflow from one propeller is less effective against the airflow from the critical engine.
B. The torque reaction from operation of the critical engine is more severe around the vertical axis as well as the longitudinal axis.
C. The asymmetric propeller thrust or P-factor results in the center of thrust from one engine being farther from the airplane centerline than the center of thrust from the other engine.

4.6.5.9.7.a.1 H70
When the angle of attack of a symmetrical airfoil is increased, the center of pressure will
A. remain unaffected.
B. have very little movement.
C. move aft along the airfoil surface.

4.6.5.9.8.a.1 H70
The rotor blade pitch angle is the acute angle between the blade chord line and the
A. angle of attack.
B. rotor plane of rotation.
C. direction of the relative wind.

4.6.5.9.9.a.1 H71
During flight, if you apply cyclic control pressure which results in a decrease in pitch angle of the rotor blades at a position approximately 90° to your left, the rotor disc will tilt
A. aft.
B. left.
C. right.

4.6.6.0.0.a.1 H71
The lift differential that exists between advancing and retreating main rotor blades is known as
A. translational lift.
B. dissymmetry of lift.
C. translating tendency.

4.6.6.0.1.a.1 H71
Rotor blade flapping action is
A. an undesirable reaction to changes in airspeed and blade angle of attack.
B. an aerodynamic reaction to high speed flight and cannot be controlled by the pilot.
C. a design feature permitting continual changes in the rotor blade angle of attack, compensating for dissymmetry of lift.

4.6.6.0.2.a.1 H71
The combination of lift and centrifugal force produces
A. coning.
B. flapping.
C. Coriolis effect.

4.6.6.0.3.a.1 H71
What will cause an increase in coning?
A. Increase in lift; increase in centrifugal force.
B. Increase in lift; decrease in centrifugal force.
C. Decrease in lift; decrease in centrifugal force.

4.6.6.0.3.a.2 H95
How does an increase in airspeed above normal cruise airspeed affect rotor drag? Rotor drag will
A. increase.
B. decrease.
C. remain the same.

4.6.6.0.4.a.1 H71
The forward speed of a rotorcraft is restricted primarily by
A. dissymmetry of lift.
B. transverse flow effect.
C. high-frequency vibrations.

4.6.6.0.5.a.1 H71
What is dissymmetry of lift?
A. The difference in lift that exists between the advancing blade half and the retreating blade half of the disc area.
B. The difference in lift that exists between the rearward part and the forward part of the rotor disc during forward flight.
C. A term used to differentiate between air flowing downward through the rotor in powered flight and upward through the rotor in autorotative flight.

4.6.6.0.6.a.1 H71
During forward cruising flight at constant airspeed and altitude, the individual rotor blades, when compared to each other, are operating at
A. unequal airspeed, equal angles of attack, and unequal lift moment.
B. unequal airspeed, unequal angles of attack, and equal lift moment.
C. constant airspeed, unequal angles of attack, and unequal lift moment.

4.6.6.0.7.a.1 H71
In forward flight and with the blade-pitch angle constant, the increased lift on the advancing blade will cause it to
A. flap up, causing a decrease in the angle of attack.
B. flap up, causing an increase in the angle of attack.
C. flap down, causing a decrease in the angle of attack.

4.6.6.0.8.a.1 H71
The purpose of lead-lag (drag) hinges on a three-bladed, fully articulated rotor system is to compensate for
A. Coriolis effect.
B. dissymmetry of lift.
C. blade flapping tendency.

4.6.6.0.9.a.1 H71
In certain single-rotor helicopters, the mast is rigged away from the vertical position by approximately 1°. This slight vertical offset is primarily for the purpose of counteracting

A. yaw.
B. drift.
C. torque.

4.6.6.1.0.a.1 H71
As each blade flaps up and down, it produces a shift of the center of its mass. When the blade flaps up, the CG moves closer to its axis of rotation, giving that blade a tendency to
A. accelerate its rotational velocity; this tendency is known as Coriolis effect.
B. stabilize its rotational velocity, thus compensating for dissymmetry of lift.
C. decelerate its rotational velocity; this tendency is known as translating tendency.

4.6.6.1.0.a.2 H96.3
What factor primarily determines the rotor RPM of a gyroplane in flight?
A. Airspeed.
B. Engine RPM.
C. Rotor disc loading.

4.6.6.1.1.a.1 H71
The tendency of a helicopter to drift in the direction of tail rotor thrust during a hover is called
A. Coriolis force.
B. translating tendency.
C. transverse flow effect.

4.6.6.1.2.a.1 H71
When a helicopter experiences a translating tendency, it
A. moves in the direction of tail rotor thrust.
B. gains increased rotor efficiency as air over the rotor system reaches approximately 15 knots.
C. tends to dip slightly to the right as the helicopter approaches approximately 15 knots in a take-off.

4.6.6.1.3.a.1 H71
Most helicopters tend to drift to the right when hovering. What is done to counteract this?
A. The mast is rigged slightly to the left.
B. The direction of tail rotor thrust can be changed by using anti-torque pedals.
C. The cyclic pitch system is rigged forward and, along with gyroscopic precession, this tendency is corrected.

4.6.6.1.4.a.1 H71
In preparing to take off in a gyroplane, your student engages the clutch and prerotates the rotor to takeoff RPM. If brakes are released prior to disengaging the clutch, the gyroplane will turn
A. left because of rotor torque.
B. right because of rotor torque.
C. right because of engine propeller torque.

4.6.6.1.5.a.1 H72
What changes take place regarding lifting force and load factor produced by the rotor system when a gyroplane goes from straight and level flight into a 45° banked turn while maintaining constant altitude?
A. Total lift must increase; load factor will increase.
B. Total lift must increase; load factor will remain constant.
C. Total lift will remain constant; load factor will increase.

4.6.6.1.5.a.2 H96.10
Unloading the rotor on a gyroplane can lead to
A. a power push over.
B. increased rotor RPM.

C. pilot induced oscillation.

4.6.6.1.6.a.1 H72
When a rotorcraft transitions from straight-and-level flight into a 30° bank while maintaining a constant altitude, the total lift force must
A. increase, and the load factor will decrease.
B. increase, and the load factor will increase.
C. remain constant, and the load factor will increase.

4.6.6.1.7.a.1 H73
Can the tail rotor produce thrust to the left?
A. No; only thrust to the right can be produced, causing tail movement to the left.
B. Yes; primarily so that hovering turns can be accomplished to the right.
C. Yes; primarily to counteract drag of the transmission during autorotation.

4.6.6.1.8.a.1 H73
Longitudinal and lateral control of a gyroplane in flight are affected by
A. antitorque pedals.
B. tilting the plane of rotation of the rotor in the direction that control is desired.
C. adjusting the pitch of the rotor blades to the angle and direction that control is desired.

4.6.6.1.9.a.1 H78
The Vne of a helicopter is limited by
A. centrifugal twisting moment of the rotor blades.
B. lateral controllability or retreating blade stall.
C. available horsepower of the engine which may be converted to torque.

4.6.6.2.0.a.1 H78
A gyroplane will have the greatest tendency to roll during
A. horizontal flight at high speed.
B. climbing flight in which forward airspeed decreases.
C. descending flight in which forward airspeed decreases.

4.6.6.2.1.a.1 H80
The rotor RPM may momentarily increase during the flare portion of a flare-type autorotation. This increase in rotor RPM is due to
A. an increased downwash velocity.
B. a decrease in rotor drag brought about by a lack of forward motion.
C. the additional lift derived from the increased angle of attack of the main rotor disc.

4.6.6.2.1.a.2 H97.2
When is rotor downwash most prevalent in certain gyroplanes?
A. During all surface movement.
B. Immediately prior to touchdown after a steep approach.
C. During a vertical takeoff when rotor blades are in a propeller state.

4.6.6.2.2.a.1 N20
Which statement is generally true regarding wing camber of a glider's airfoil?
A. There is no camber on either the upper or lower surface of the wing.
B. The camber is the same on both the upper and lower surface of the wing.
C. The camber is greater on the upper wing surface than it is on the lower surface of the wing.

4.6.6.2.3.a.1 N20
When a slight upward or negative flap deflection is used, the result is
A. increased drag.
B. decreased drag.
C. decreased lift.

4.6.6.2.4.a.1 N20
When a glider is turning in flight, the force that opposes the inward turning force is called
A. adverse yaw.
B. resultant force.
C. centrifugal force.

4.6.6.2.5.a.1 N20
At what bank angle will the resultant of gravity and centrifugal force equal twice a glider's weight?
A. 30°.
B. 45°.
C. 60°.

4.6.6.2.6.a.1 O20
Which will improve the response time of a hot air balloon?
A. Increased weight.
B. Less-dense ambient air.
C. Increased fuel flow through burner.

4.6.6.2.7.a.1 O30
The term 'weigh-off' as used in ballooning means to determine the
A. standard weight and balance of the balloon.
B. static equilibrium of the balloon as loaded for flight.
C. amount of fuel required for ascent to a preselected altitude.

4.6.6.2.8.a.1 O46
The lifting force acting on a hot air balloon is primarily the result of the interior envelope temperature being
A. equal to ambient temperature.
B. greater than ambient temperature.
C. less than surrounding air temperature.

4.6.6.2.9.a.1 O46
The part of a balloon that bears the weight of the balloon and its payload is the
A. load tapes.
B. load cables.
C. envelope material.

4.6.6.3.0.a.1 O46
What causes false lift which sometimes occurs during a balloon launch?
A. Venturi effect of wind on the envelope.
B. Closing the maneuvering vent too rapidly.
C. Excessive temperature within the envelope.

4.6.6.3.1.a.1 O46
In ballooning, when can false lift occur?
A. During launches near obstacles.
B. Just after a balloon begins to accelerate during initial ascent.
C. When a balloon lifts off and the relative wind suddenly increases.

4.6.6.3.2.a.1 P01
What causes a gas balloon to start a descent if a cold air mass is encountered and the envelope becomes cooled?
A. Contraction of the gas.
B. A temperature differential.
C. A barometric pressure differential.

4.6.6.3.3.a.1 P01
During flight in an airship, vertical equilibrium is established when
A. pressure height is reached.
B. buoyancy equals airship weight.
C. buoyancy is greater than airship weight.

4.6.6.3.4.a.1 P01
An airship will float in the air when buoyant force
A. equals horizontal equilibrium existing between propeller thrust and airship drag.
B. equals the difference between airship weight and the weight of the volume of air being displaced.
C. is less than the difference between airship weight and the weight of the air volume being displaced.

4.6.6.3.5.a.1 P01
If an airship is either light or heavy in flight, the unbalanced condition must be overcome
A. by valving air.
B. aerodynamically.
C. by releasing ballast.

4.6.6.3.6.a.1 P01
An airship descending through a temperature inversion will
A. become heavier as superheat is lost.
B. show no change in superheat as altitude is lost.
C. become progressively lighter and increasingly more difficult to drive down.

4.6.6.3.7.a.1 P02
The four principal forces acting on an airship in flight are
A. buoyancy, drag, gravity, and thrust.
B. lift, drag, temperature, and pressure.
C. gravity, compression, buoyancy, and equilibrium.

4.6.6.3.8.a.1 P02
An airship with a small fineness ratio has a hull form that will introduce
A. greater nose pressures.
B. lower pressure variations from nose to tail.
C. more frictional drag due to the plump shape of the hull.

4.6.6.3.9.a.1 P04
What are the two most significant effects of positive superheat?
A. Improved fineness ratio and pressure height.
B. Increased static lift and decreased pressure height.
C. Increased dynamic lift and decreased ballonet capacity.

4.6.6.4.0.a.1 P13
Critical factors affecting flight characteristics and controllability of an airship are
A. lift and drag.
B. static and dynamic trim.
C. temperature and atmospheric density.

5.6.6.4.1.a.1 H02
Excessively high engine temperatures, either in the air or on the ground, will
A. increase fuel consumption and may increase power due to the increased heat.
B. result in damage to heat-conducting hoses and warping of cylinder cooling fans.
C. cause loss of power, excessive oil consumption, and possible permanent internal engine damage.

5.6.6.4.2.a.1 H02
If the engine oil temperature and cylinder head temperature gauges have exceeded their normal operating range, you may have been
A. operating with the mixture set too rich.
B. using fuel that has a higher-than-specified fuel rating.
C. operating with too much power and with the mixture set too lean.

5.6.6.4.3.a.1 H02
To properly purge water from the fuel system of an aircraft equipped with fuel tank sumps and a fuel strainer quick drain, it is necessary to drain fuel from the
A. fuel strainer drain.
B. lowest point in the fuel system.
C. fuel strainer drain and the fuel tank sumps.

5.6.6.4.4.a.1 H02
If the grade of fuel used in an aircraft engine is lower than that specified, it may cause
A. detonation.
B. lower cylinder head temperatures.
C. a decrease in power which could overstress internal engine components.

5.6.6.4.5.a.1 H02
What is the main reason fuel tank vents must be open? To allow
A. proper air pressure within the tanks for maintaining a steady fuel flow.
B. excess fuel to drain overboard when heat expands the volume of fuel within the tanks.
C. fuel fumes to escape from the tanks, thus eliminating the possibility of the tanks exploding.

5.6.6.4.6.a.1 H02
Which statement is true regarding fouling of the spark plugs of an aircraft engine?
A. Spark plug fouling results from operating with an excessively rich mixture.
B. Carbon fouling of the spark plugs is caused primarily by operating an engine at excessively high cylinder head temperatures.
C. Excessive heat in the combustion chamber of a cylinder causes oil to form on the center electrode of a spark plug and this fouls the plug.

5.6.6.4.7.a.1 H02
When refueling aircraft, which precaution would be adequate for eliminating the potential hazard of static electricity?
A. Ensure that battery and ignition switches are off.
B. Connect a ground wire from the fuel truck to ground.
C. Connect a ground wire between the aircraft, fuel truck, fuel nozzle, and ground.

5.6.6.4.8.a.1 H02
As flight altitude increases, what will occur if no leaning is made with the mixture control?
A. The volume of air entering the carburetor decreases and the amount of fuel decreases.
B. The density of air entering the carburetor decreases and the amount of fuel increases.
C. The density of air entering the carburetor decreases and the amount of fuel remains constant.

5.6.6.4.9.a.1 H02
When the pilot leans the mixture control, what is being accomplished?
A. The volume of air entering the carburetor is being reduced.
B. The volume of air entering the carburetor is being increased.
C. The amount of fuel entering the combustion chamber is being reduced.

5.6.6.5.0.a.1 H02
The main purpose of the mixture control is to
A. increase the air supplied to the engine.
B. adjust the fuel flow to obtain the proper air/fuel ratio.
C. decrease the fuel supplied to the engine as the aircraft descends.

5.6.6.5.1.a.1 H02
Proper mixture control and better economy in the operation of a fuel injected engine can be achieved best by use of
A. a fuel-flow gauge.
B. an exhaust gas temperature indicator.
C. the recommended manifold and RPM setting for a particular altitude.

5.6.6.5.2.a.1 H02
Fuel/air ratio is the ratio between the
A. volume of fuel and volume of air entering the cylinder.
B. weight of fuel and weight of air entering the cylinder.
C. weight of fuel and weight of air entering the carburetor.

5.6.6.5.3.a.1 H02
Detonation in an aircraft engine is most likely to occur whenever the
A. fuel/air ratio is such that the mixture burns extremely slow.
B. engine is operated under conditions which cause the fuel mixture to burn instantaneously.
C. fuel being used is of a higher grade than recommended by the engine manufacturer.

5.6.6.5.4.a.1 H02
Detonation occurs at high power settings when the
A. fuel mixture explodes instead of burning progressively and evenly.
B. fuel mixture is ignited too early by red-hot carbon deposits in the cylinder.
C. intake valve opens before the previous charge of fuel has finished burning in the cylinder.

5.6.6.5.5.a.1 H02
Float-type carburetor systems, compared to fuel injection systems, are generally considered to be
A. more susceptible to icing than a fuel injection unit.
B. more susceptible to impact icing than a fuel injection unit.
C. less susceptible to icing than a fuel injection unit only when visible moisture is present.

5.6.6.5.6.a.1 H02
The operating principle of float-type carburetors is based on the
A. measurement of the fuel flow into the induction system.
B. difference in air pressure at the venturi throat and the throttle valve.
C. increase in air velocity in the throat of a venturi causing a decrease in air pressure.

5.6.6.5.7.a.1 H02
One advantage of fuel injection systems over carburetor systems is
A. easier hot-engine starting.
B. better fuel distribution to the cylinders.
C. less difficulty with hot weather vapor locks during ground operations.

5.6.6.5.8.a.1 H02
The presence of carburetor ice in an aircraft equipped with a fixed-pitch propeller can be verified by applying carburetor heat and noting
A. a decrease in RPM and then a constant RPM indication.
B. a decrease in RPM and then a gradual increase in RPM.
C. an increase in RPM and then a gradual decrease in RPM.

5.6.6.5.9.a.1 H02
The first indication of carburetor icing in an aircraft equipped with a constant-speed propeller would most likely be a
A. decrease in RPM.
B. decrease in manifold pressure.
C. rough running engine followed by loss of RPM.

5.6.6.6.0.a.1 H02
The first indication of carburetor ice in an aircraft with a fixed-pitch propeller is
A. a decrease in RPM.
B. a decrease in manifold pressure.
C. an increase in manifold pressure.

5.6.6.6.1.a.1 H02
The low temperature that causes carburetor ice in an engine equipped with a float-type carburetor is normally the result of the
A. compression of air at the carburetor venturi.
B. freezing temperature of the air entering the carburetor.
C. vaporization of fuel and expansion of air in the carburetor.

5.6.6.6.2.a.1 H02
Concerning carburetor icing, which statement is true?
A. Carburetor icing will form in a carburetor whenever the ambient temperature is below freezing 32 °F (0 °C).
B. Carburetor icing would most likely form when the air temperature is between 20 °F and 70 °F with visible moisture or high humidity.
C. The first indication of carburetor icing in an aircraft equipped with a fixed-pitch propeller is an increase in RPM, followed by a decrease in RPM.

5.6.6.6.3.a.1 H02
Running a fuel tank dry before switching tanks is not a good practice because
A. any foreign matter in the tank will be pumped into the fuel system.
B. the engine-driven fuel pump is lubricated by fuel and operating on a dry tank may cause pump failure.
C. the engine-driven fuel pump or electric fuel boost pump draw air into the fuel system and cause vapor lock.

5.6.6.6.4.a.1 H02
Which statement is true regarding propeller efficiency? Propeller efficiency is the
A. ratio of thrust horsepower to brake horsepower.
B. actual distance a propeller advances in one revolution.
C. difference between the geometric pitch of the propeller and its effective pitch.

5.6.6.6.5.a.1 H02
When operating an aircraft with a constant-speed propeller, which procedure places the least stress on cylinder components?
A. When power settings are being increased, increase manifold pressure before RPM.
B. When power settings are being decreased, reduce manifold pressure before RPM.
C. Whether power settings are being increased or decreased, RPM is adjusted before manifold pressure.

5.6.6.6.6.a.1 H02
To absorb maximum engine power and to develop maximum thrust, a constant-speed propeller should be adjusted to a blade angle which will produce a
A. large angle of attack and low RPM.
B. large angle of attack and high RPM.
C. small angle of attack and high RPM.

5.6.6.6.7.a.1 H02
During which stroke of a reciprocating engine is the gaseous mixture expanding within the cylinder?
A. Power.
B. Intake.
C. Compression.

5.6.6.6.8.a.1 H02
Concerning the advantages of an aircraft generator or alternator, select the true statement.
A. A generator always provides more eletrical current than an alternator.
B. An alternator provides more electrical power at lower engine RPM than a generator.
C. A generator charges the battery during low engine RPM; therefore, the battery has less chance to become fully discharged, as often occurs with an alternator.

5.6.6.6.9.a.1 H02
If the ground wire between the magneto and the ignition switch becomes disconnected, the most noticeable result will be that the engine
A. will run very rough.
B. cannot be started with the switch in the ON position.
C. cannot be shut down by turning the switch to the OFF position.

5.6.6.7.0.a.1 H03
In the Northern Hemisphere, a magnetic compass will normally indicate a turn toward the north if
A. a left turn is entered from a west heading.
B. an aircraft is decelerated while on an east or west heading.
C. an aircraft is accelerated while on an east or west heading.

5.6.6.7.1.a.1 H03
In the Northern Hemisphere, if an aircraft is accelerated or decelerated, the magnetic compass will normally indicate
A. a turn momentarily, with changes in airspeed on any heading.
B. a turn toward the south while accelerating on a west heading.
C. correctly when on a north or south heading while either accelerating or decelerating.

5.6.6.7.2.a.1 H03
Deviation error of the magnetic compass is caused by
A. northerly turning error.
B. certain metals and electrical systems within the aircraft.
C. the difference in location of true north and magnetic north.

5.6.6.7.3.a.1 H03
In the Northern Hemisphere, which would be correct about starting the rollout from a turn using a magnetic compass? Start the rollout
A. after the compass indication passes south by a number of degrees approximately equal to the latitude minus the normal rollout lead.
B. before the compass indication reaches south by a number of degrees approximately equal to the latitude over which the turn is made plus the pilot's normal lead.
C. after the compass indication passes south by a number of degrees approximately equal to the magnetic variation of the area over which the turn is made plus the pilot's normal lead.

5.6.6.7.4.a.1 H03
What should be the indication on the magnetic compass as you roll into a standard rate turn to the right from a south heading in the Northern Hemisphere?
A. The compass will initially indicate a turn to the left.
B. The compass will indicate a turn to the right, but at a faster rate than is actually occurring.
C. The compass will remain on south for a short time, then gradually catch up to the magnetic heading of the airplane.

5.6.6.7.5.a.1 H03
Which statement is true about magnetic deviation of a compass?
A. Deviation is the same for all aircraft in the same locality.
B. Deviation varies for different headings of the same aircraft.
C. Deviation is different in a given aircraft in different localities.

5.6.6.7.6.a.1 H03
Which instrument would be affected by excessively low pressure in the airplane's vacuum system?
A. Heading indicator.
B. Airspeed indicator.
C. Pressure altimeter.

5.6.6.7.7.a.1 H03
Pitot-static system errors are generally the greatest in which range of airspeed?
A. Low airspeed.
B. High airspeed.
C. Maneuvering speed.

5.6.6.7.8.a.1 H03
During power-off stalls with flaps full down, the stall occurs and the pointer on the airspeed indicator shows a speed less than the minimum limit of the white arc on the indicator. This is most probably due to
A. a low density altitude.
B. a malfunction in the pitot-static system.
C. installation error in the pitot-static system.

5.6.6.7.9.a.1 H03
If a pitot tube is clogged, which instrument would be affected?
A. Altimeter.
B. Airspeed indicator.
C. Vertical speed indicator.

5.6.6.8.0.a.1 H03
If the static pressure tubes are broken inside a pressurized cabin during a high-altitude flight, the altimeter would probably indicate
A. sea level.
B. lower than actual flight altitude.
C. higher than actual flight altitude.

5.6.6.8.1.a.1 H03
Which statement is true about the effect of temperature changes on the indications of a sensitive altimeter?
A. Warmer-than-standard temperatures will place the aircraft lower than the altimeter indicates.
B. Colder-than-standard temperatures will place the aircraft lower than the altimeter indicates.
C. Colder-than-standard temperatures will place the aircraft higher than the altimeter indicates.

5.6.6.8.2.a.1 H03

A possible result of using the emergency alternate source of static pressure inside the cabin of an unpressurized airplane is the
A. airspeed indicator may indicate less than normal.
B. altimeter may indicate an altitude lower than the actual altitude being flown.
C. altimeter may indicate an altitude higher than the actual altitude being flown.

5.6.6.8.3.a.1 H51
Prior to starting the engine, the manifold pressure gauge usually indicates approximately 29" Hg. This is because the
A. pointer on the gauge is stuck at the full-power indication.
B. throttle is closed, trapping high air pressure in the manifold.
C. pressure within the manifold is the same as atmospheric pressure.

5.6.6.8.4.a.1 H51
What energy source is used to drive the turbine of a turbocharged airplane?
A. Ignition system.
B. Engine compressor.
C. Engine exhaust gases.

5.6.6.8.5.a.1 H51
What is the primary advantage of a constant-speed propeller?
A. To maintain a specific engine speed.
B. To obtain a pitch setting that is suitable for each flight situation and power setting.
C. To obtain and maintain a selected pitch angle of the blades regardless of the flight situation or power setting.

5.6.6.8.6.a.1 H51
During climbing flight using a turbocharged airplane, the manifold pressure will remain approximately constant until the
A. engine's critical altitude is reached.
B. airplane's service ceiling is reached.
C. waste gate is fully open and the turbine is operating at minimum speed.

5.6.6.8.7.a.1 H51
In addition to an added safety factor, dual ignition systems also provide
A. better combustion.
B. increased spark plug life.
C. shorter engine warmup periods.

5.6.6.8.8.a.1 H51
(Refer to figure 23.) Which is a fowler flap?
A. 2.
B. 3.
C. 4.

5.6.6.8.9.a.1 H51
(Refer to figure 23.) Which is a slotted flap?
A. 1.
B. 3.
C. 4.

5.6.6.9.0.a.1 H51
(Refer to figure 23.) Which is a split flap?
A. 2.
B. 3.
C. 4.

5.6.6.9.1.a.1 H51
Which type of flap creates the greatest change in pitching moment?
A. Plain.
B. Split.
C. Fowler.

5.6.6.9.2.a.1 H51
Which type of flap creates the least change in pitching moment?
A. Split.
B. Fowler.
C. Slotted.

5.6.6.9.3.a.1 H51
Which type of flap is characterized by large increases in lift coefficient with minimum changes in drag?
A. Split.
B. Fowler.
C. Slotted.

5.6.6.9.4.a.1 H70
During the transition from prerotation to flight, all rotor blades change pitch
A. simultaneously to the same angle of incidence.
B. simultaneously but to different angles of incidence.
C. to the same degree at the same point in the cycle of rotation.

5.6.6.9.5.a.1 H74
Which statement is true concerning rotor systems?
A. The main rotor blades of a semirigid rotor system can flap and feather as a unit.
B. The horizontal flapping hinge on a fully articulated rotor system enables the main rotor blades to hunt.
C. Dampers are normally incorporated in a fully articulated rotor system to prevent excessive motion about the spanwise axis of each rotor blade.

5.6.6.9.6.a.1 H74
The main rotor blades of a fully-articulated rotor system can
A. flap and feather collectively.
B. flap, drag, and feather independently.
C. flap and drag independently, but can feather collectively only.

5.6.6.9.7.a.1 H74
What is the primary purpose of the freewheeling unit?
A. It allows the engine to be started without driving the main rotor system.
B. It provides disengagement of the engine from the rotor system for autorotation purposes.
C. It provides speed reduction between the engine, main rotor system, and tail rotor system.

5.6.6.9.8.a.1 H74
What is the primary purpose of the clutch?
A. It allows the engine to be started without driving the main rotor system.
B. It provides disengagement of the engine from the rotor system for autorotation.
C. It transmits engine power to the main rotor, tail rotor, generator/alternator, and other accessories.

5.6.6.9.9.a.1 H78
A one-per-revolution vibration in a gyroplane indicates which condition?
A. Rotor blades out of balance.
B. One rotor blade out of track.

C. Possible onset of retreating blade stall.

5.6.6.9.9.a.2 H95
What should help prevent aircraft induced oscillation on a gyroplane?
A. Adding a horizontal stabilizer.
B. Increasing cyclic control sensitivity.
C. Lowering the center of gravity below the thrust line.

5.6.7.0.0.a.1 H78
Low-frequency vibrations are normally associated with the
A. engine.
B. main rotor.
C. tail rotor.

5.6.7.0.0.a.2 H95
Low speed blade flap on a gyroplane is a result of
A. taxiing too fast.
B. rotor blade pitch set too high.
C. the rotor blades being too heavy.

5.6.7.0.1.a.1 H78
In most helicopters, what is one cause of in-flight medium frequency vibrations?
A. Control system out of rig.
B. Improper rigging of tail rotor.
C. Defective bearings in main transmission.

5.6.7.0.2.a.1 H78
A high-frequency vibration that suddenly occurs during flight could be an indication of a defective
A. transmission.
B. ignition system.
C. freewheeling unit.

5.6.7.0.3.a.1 H78
A high-frequency vibration in flight would most likely indicate potential trouble in the
A. main rotor system.
B. engine in most helicopters.
C. tail rotor due to improper rigging.

5.6.7.0.4.a.1 H79
When operating a helicopter in conditions favorable to carburetor icing, the carburetor heat control should be
A. adjusted so the carburetor air temperature gauge indicates in the green arc.
B. ON when practicing power-off maneuvers such as autorotations but OFF at all other times.
C. OFF during takeoffs, approaches, and landings; other times, adjusted to keep carburetor air temperature in the green arc.

5.6.7.0.5.a.1 I04
An electrical system failure (battery and alternator) occurs during flight. In this situation, you would
A. experience avionics equipment failure.
B. probably experience failure of the engine ignition system, fuel gauges, aircraft lighting system, and avionics equipment.
C. probably experience engine failure due to the loss of the engine-driven fuel pump and also experience failure of the radio equipment, lights, and all instruments that require alternating current.

5.6.7.0.6.a.1 K13
The amount of water absorbed in aviation fuels will
A. remain the same regardless of temperature changes.
B. increase as the temperature of the fuel increases.
C. increase as the temperature of the fuel decreases.

5.6.7.0.7.a.1 L15
What precautions should be taken with respect to aircraft oxygen systems?
A. Ensure that only medical oxygen has been used to replenish oxygen containers.
B. Prohibit smoking while in an aircraft equipped with a portable oxygen system.
C. Ensure that industrial oxygen has not been used to replenish the system.

5.6.7.0.8.a.1 L15
What type of oxygen system is most commonly found in general aviation aircraft?
A. Demand.
B. Continuous flow.
C. Pressure demand.

5.6.7.0.9.a.1 L15
What type of oxygen should be used to replenish an aircraft oxygen system?
A. Medical.
B. Aviation.
C. Industrial.

5.6.7.1.0.a.1 L52
Which statement is true regarding preheating of an aircraft during cold-weather operations?
A. The cockpit, as well as the engine, should be preheated.
B. The cockpit area should not be preheated with portable heaters.
C. Hot air should be blown directly at the engine through the air intakes.

5.6.7.1.1.a.1 L52
Crankcase breather lines of an aircraft engine should receive special attention during preflight in cold weather because they are susceptible to being clogged by
A. ice in the breather lines.
B. congealed oil from the crankcase.
C. moisture from the outside air which has frozen.

5.6.7.1.2.a.1 L57
If both the ram-air input and drain hole of the pitot system are blocked, what airspeed indication can be expected?
A. Decrease of indicated airspeed during a climb.
B. Zero indicated airspeed until blockage is removed.
C. No variation of indicated airspeed in level flight even if large power changes are made.

5.6.7.1.3.a.1 N03
For a winch tow, which is an advantage of the CG hook over the nose hook?
A. A shallower climb can be used during launch.
B. Glider is less likely to pitch up if the towline breaks.
C. Likelihood of applying too much back-stick pressure is reduced.

5.6.7.1.4.a.1 N03
Which is true regarding glider tow hooks?
A. Use of a CG hook for aerotows would cause a glider to pitch up.
B. Use of a CG hook for winch tows would cause a glider to pitch up.

C. Use of a nose hitch for aerotows increases the climb attitude and release altitude.

5.6.7.1.5.a.1 N20
The primary purpose of spoilers on gliders is to
A. decrease lift.
B. decrease stall speed.
C. control speed at steep glide angles.

5.6.7.1.6.a.1 N22
The advantage of total energy compensators is that this system
A. adds the effect of stick thermals to the total energy produced by thermals.
B. reduces climb and dive errors on variometer indications caused by airspeed changes.
C. compensates for air pressure changes while climbing or descending.

5.6.7.1.7.a.1 N22
Which is true concerning total energy compensators?
A. The instrument responds only to up and down air currents.
B. The instrument indicates the average rate of climb in a thermal.
C. The instrument reacts to climbs and descents like a conventional rate-of-climb indicator.

5.6.7.1.8.a.1 N28
What is the purpose of the rebreather bag on an oxygen mask in a continuous-flow system?
A. Helps to conserve oxygen.
B. Allows excess oxygen to be expelled during use.
C. Controls amount of oxygen that each individual breathes through the mask.

5.6.7.1.9.a.1 N30
What would be the approximate tensile strength of a rope with a 1,000 pound tensile strength if a knot develops in it?
A. 500 pounds.
B. 800 pounds.
C. 1,000 pounds.

5.6.7.2.0.a.1 N30
What is the minimum allowable strength of a towline used for the aerotow of a glider having a certificated gross weight of 1,040 pounds?
A. 780 pounds.
B. 832 pounds.
C. 1,300 pounds.

5.6.7.2.1.a.1 O02
The best way to determine burner BTU availability is the
A. burner sound.
B. tank quantity.
C. fuel pressure gauge.

5.6.7.2.2.a.1 O02
The valve located on each tank that indicates the tank is filled to 80 percent capacity is the
A. main tank valve.
B. vapor-bleed valve.
C. fuel pressure valve.

5.6.7.2.3.a.1 O20
Why should propane lines be bled after each use?

A. Fire may result from spontaneous combustion.
B. Heat may expand the propane and rupture the lines.
C. If the temperature is below freezing, the propane may freeze.

5.6.7.2.4.a.1 O24
How should a balloon fuel system be checked for leaks prior to flight?
A. Look, listen, and smell.
B. Check for unusual discoloration on burner coils.
C. Cover all fittings and hoses with soapy water and look for small bubbles.

5.6.7.2.5.a.1 O46
The purpose of the preheating coil used in hot air balloons is to
A. prevent ice from forming in the fuel lines.
B. warm the fuel tanks for more efficient fuel flow.
C. vaporize the fuel for more efficient burner operation.

5.6.7.2.6.a.1 O46
Why is nylon line best for tethering a balloon?
A. It does not stretch under tension.
B. It is not flexible and therefore can withstand tension without breaking.
C. It stretches under tension, but recovers to normal size when tension is removed, giving it excellent shock-absorbing qualities.

5.6.7.2.7.a.1 O46
Propane is used in a balloon fuel system because it
A. is slow to vaporize.
B. provides natural pressure for fuel movement.
C. contains methanol for clean burning and improved performance.

5.6.7.2.8.a.1 O46
Why should methanol be added to propane fuel?
A. Helps detect leaks in the fuel system.
B. Helps prevent moisture from forming in the fuel system.
C. Increases pressure and boiling temperature for operations in colder climates.

5.6.7.2.9.a.1 O46
While in flight, ice begins forming on the outside of the fuel tank in use. This could indicate
A. water in the fuel.
B. a broken dip tube.
C. a leak in the fuel line.

5.6.7.3.0.a.1 O46
Why should special precautions be taken when filling propane bottles?
A. Propane is very cold and may cause freeze burns.
B. During transfer, propane reaches a high temperature and can cause severe burns.
C. Propane is under high pressure when transferred from storage tanks to propane bottles.

5.6.7.3.1.a.1 P05
The main advantage of internal suspension in an airship is that it
A. increases stability.
B. provides better load distribution.
C. absorbs side and longitudinal forces.

5.6.7.3.2.a.1 P11
When operating an airship with the ballonet air valves in the automatic forward position, the aft valve lock should not be engaged with either aft damper open because
A. ballonet over-inflation and rupture could occur.
B. the airship will enter an excessive nose-high attitude.
C. envelope pressure will increase, causing possible damage to the air lines.

5.6.7.3.3.a.1 P11
If the gas in an airship envelope shows a steady loss of purity and the percentage of fullness in the envelope increases, what is, most likely, the problem?
A. Rip in a ballonet.
B. Defective helium valve.
C. Small rip in bottom of envelope.

5.6.7.3.4.a.1 P11
What is one indication of a serious envelope rip in an airship?
A. Drop in air pressure.
B. Increase in gas pressure.
C. Difficulty in controlling altitude.

5.6.7.3.5.a.1 P11
To prevent loss of air from ballonets when airspeed and engines are inadequate to maintain pressure, the
A. pilot should close dampers.
B. pilot should turn on electric blowers.
C. airship is equipped with check valves in the air scoops to maintain pressure.

6.6.7.3.6.a.1 H03
What airspeed indicator marking identifies the maximum structural cruising speed of an aircraft?
A.
Red radial line.
B. Upper limit of the green arc.
C. Upper limit of the yellow arc.

6.6.7.3.6.a.2 H78
How does temperature and weight affect the Vne of a helicopter?
A. Vne increases as temperature and weight increase.
B. Vne decreases as temperature and weight increase.
C. Vne decreases as temperature increases and weight decreases.

6.6.7.3.7.a.1 H03
What does the lower limit of the white arc on an airspeed indicator represent?
A. Minimum controllable airspeed with flaps extended.
B. Power-off stall speed in a landing configuration.
C. Power-off stall speed in a specified configuration.

6.6.7.3.8.a.1 H03
What does the lower limit of the green arc on an airspeed indicator represent?
A. Power-off stall speed in a landing configuration.
B. Power-off stall speed in a specified configuration.
C. Minimum controllable airspeed with gear and flaps retracted.

6.6.7.3.9.a.1 H03
Which airspeed is identified by color coding on an airspeed indicator?
A. Design maneuvering speed.

B. Maximum structural cruising speed.
C. Maximum gear operation or extended speed.

6.6.7.4.0.a.1 H03
What is an important airspeed limitation not color coded on airspeed indicators?
A. Maneuvering speed.
B. Never-exceed speed.
C. Maximum flaps-extended speed.

6.6.7.4.1.a.1 H04
(Refer to figure 24.) Determine the density altitude.

Airport elevation 5,515 ft
OAT 85° F
Altimeter setting 29.40" Hg
A. 6,000 feet.
B. 8,400 feet.
C. 9,050 feet.

6.6.7.4.2.a.1 H04
(Refer to figure 24.) Determine the density altitude.

Airport elevation 3,795 ft
OAT 75 °F
Altimeter setting 29.70" Hg
A. 6,200 feet.
B. 5,900 feet.
C. 3,900 feet.

6.6.7.4.3.a.1 H04
(Refer to figure 24.) Determine the density altitude.

Airport elevation 3,450 ft
OAT 95 °F
Altimeter setting 30.40" Hg
A. 7,200 feet.
B. 6,650 feet.
C. 5,950 feet.

6.6.7.4.4.a.1 H04
Density altitude increases with
A. an increase in temperature only.
B. increases in pressure, temperature, and moisture content of the air.
C. increases in temperature and moisture content of the air, and a decrease in pressure.

6.6.7.4.5.a.1 H04
What would increase the density altitude at a given airport?
A. An increase in air temperature.
B. A decrease in relative humidity.
C. An increase in atmospheric pressure.

6.6.7.4.6.a.1 H04
Which statement is true regarding takeoff performance with high density altitude conditions?
A. The acceleration rate will increase since the lighter air creates less drag.
B. The acceleration rate is slower because the engine and propeller efficiency is reduced.

C. A higher-than-normal indicated airspeed is required to produce sufficient lift since the air is less dense.

6.6.7.4.7.a.1 H04
If the atmospheric pressure and temperature remain the same, how would an increase in humidity affect takeoff performance?
A. Longer takeoff distance; the air is more dense.
B. Longer takeoff distance; the air is less dense.
C. Shorter takeoff distance; the air is more dense.

6.6.7.4.8.a.1 H04
As altitude increases, the indicated airspeed at which a given airplane stalls in a particular configuration will
A. remain the same as at low altitude.
B. decrease as the true airspeed increases.
C. increase because the air density decreases.

6.6.7.4.9.a.1 H04
What effect does an uphill runway slope have upon takeoff performance?
A. Decreases takeoff speed.
B. Increases takeoff distance.
C. Decreases takeoff distance.

6.6.7.5.0.a.1 H04
(Refer to figure 25.) The gear is down and flaps are set at 15°. If the angle of bank is 20°, what would be the indicated stall speed?
A. 77 MPH.
B. 81 MPH.
C. 89 MPH.

6.6.7.5.1.a.1 H04
(Refer to figure 25.) If the bank angle is 60° with gear and flaps up, what would be the indicated stall speed?
A. 110 MPH.
B. 117 MPH.
C. 121 MPH.

6.6.7.5.2.a.1 H04
(Refer to figure 25.) What would be the indicated stall speed during a 40° bank with the gear down and flaps set at 45°?
A. 81 MPH.
B. 83 MPH.
C. 89 MPH.

6.6.7.5.3.a.1 H04
(Refer to figure 26.) Determine the ground run required for takeoff.

Temperature 71 °F
Pressure altitude 3,500 ft
Weight 2,600 lb
Headwind 25 MPH
A. 183 feet.
B. 223 feet.
C. 311 feet.

6.6.7.5.4.a.1 H04
(Refer to figure 26.) Determine the ground run required for takeoff.

Temperature 77 °F
Pressure altitude 2,000 ft
Weight 2,200 lb
Headwind 20 MPH
A. 106 feet.
B. 216 feet.
C. 310 feet.

6.6.7.5.5.a.1 H04
(Refer to figure 26.) Determine the takeoff distance required to clear a 50-foot obstacle.

Temperature 72 °F
Pressure altitude 3,200 ft
Weight 2,300 lb
Headwind 15 MPH
A. 606 feet.
B. 668 feet.
C. 754 feet.

6.6.7.5.6.a.1 H04
(Refer to figure 26.) Determine the takeoff distance required to clear a 50-foot obstacle.

Temperature 62 °F
Pressure altitude 6,000 ft
Weight 2,700 lb
Headwind 15 MPH
A. 995 feet.
B. 1,041 feet.
C. 1,145 feet.

6.6.7.5.7.a.1 H04
(Refer to figure 27.) The indicated airspeed that would give the greatest gain in altitude in a unit of time at 3,200 feet is determined to be
A. 93 MPH.
B. 94 MPH.
C. 112 MPH.

6.6.7.5.8.a.1 H04
(Refer to figure 27.) What indicated airspeed at 3,000 feet would result in the greatest increase in altitude for a given distance?
A. 94 MPH.
B. 113 MPH.
C. 115 MPH.

6.6.7.5.9.a.1 H04
(Refer to figure 27.) To maintain the best rate of climb, the indicated speed should be
A. maintained at a constant value during the climb.
B. adjusted to maintain the specified rate of climb.
C. reduced approximately .8 MPH per 1,000 feet of altitude.

6.6.7.6.0.a.1 H04
In a propeller-driven airplane, maximum range occurs at
A. minimum drag required.
B. minimum power required.
C. maximum lift/drag ratio.

6.6.7.6.1.a.1 H04
(Refer to figure 28.) Determine the approximate total distance required to clear a 50-foot obstacle.

Temperature 20 °C
Pressure altitude 1,000 ft
Surface sod
Weight 5,300 lb
Wind 15 kts headwind
A. 1,724 feet.
B. 1,816 feet.
C. 2,061 feet.

6.6.7.6.2.a.1 H04
(Refer to figure 28.) Determine the approximate total distance required to clear a 50-foot obstacle.

Temperature 77 °F
Pressure altitude 2,500 ft
Surface asphalt
Weight 5,500 lb
Wind 2 kts tailwind
A. 2,228 feet.
B. 2,294 feet.
C. 2,462 feet.

6.6.7.6.3.a.1 H04
(Refer to figure 28.) Determine the approximate total distance required to clear a 50-foot obstacle.

Temperature 35 °C
Pressure altitude 3,000 ft
Surface sod
Weight 5,100 lb
Wind 20 kts headwind
A. 1,969 feet.
B. 2,023 feet.
C. 2,289 feet.

6.6.7.6.4.a.1 H04
(Refer to figure 29.) What is the approximate glide distance?

Height above terrain 5,500 ft
Tailwind 10 kts
A. 11 miles.
B. 12 miles.
C. 13 miles.

6.6.7.6.5.a.1 H04
(Refer to figure 29.) What is the approximate glide distance?

Height above terrain 10,500 ft
Tailwind 20 kts
A. 24 miles.
B. 26 miles.
C. 28 miles.

6.6.7.6.6.a.1 H04
(Refer to figure 29.) What is the approximate glide distance?

Height above terrain 7,500 ft
Headwind 30 kts
A. 11.5 miles.
B. 16.5 miles.
C. 21.5 miles.

6.6.7.6.7.a.1 H04
(Refer to figure 30.) Determine the approximate crosswind component.

Landing Rwy 30
Wind 020° at 15 kts
A. 4 knots.
B. 15 knots.
C. 22 knots.

6.6.7.6.8.a.1 H04
(Refer to figure 30.) Determine the approximate crosswind component.

Landing Rwy 03
Wind 060° at 35 kts
A. 12 knots.
B. 18 knots.
C. 22 knots.

6.6.7.6.9.a.1 H04
(Refer to figure 30.) Determine the approximate crosswind component.

Landing Rwy 22
Wind 260° at 23 kts
A. 10 knots.
B. 15 knots.
C. 17 knots.

6.6.7.7.0.a.1 H04
(Refer to figure 30.) Using a maximum demonstrated crosswind component equal to 0.2 V_{SO}, what is a pilot able to determine?

V_{SO} 70 kts
Landing Rwy 35
Wind 300° at 20 kts
A. Headwind component is excessive.
B. Headwind component exceeds the crosswind component.
C. Maximum demonstrated crosswind component is exceeded.

6.6.7.7.1.a.1 H04
(Refer to figure 30.) Using a maximum demonstrated crosswind component equal to 0.2 V_{SO}, what is a pilot able to determine?

V_{SO} 60 kts
Landing Rwy 12
Wind 150° at 20 kts
A. Headwind component is excessive.
B. Crosswind component is within safe limits.
C. Maximum demonstrated crosswind component is exceeded.

6.6.7.7.2.a.1 H04
(Refer to figure 30.) Using a maximum demonstrated crosswind component equal to 0.2 V_{SO}, what is a pilot able to determine?

V_{SO} 65 kts
Landing Rwy 17
Wind 200° at 30 kts
A. Crosswind component is within safe limits.
B. Crosswind component exceeds the headwind component.
C. Maximum demonstrated crosswind component is exceeded.

6.6.7.7.3.a.1 H04
(Refer to figure 31.) What is the total landing distance over a 50-foot obstacle?

Temperature 50 °F
Pressure altitude 4,000 ft
Weight 3,000 lb
Headwind 22 kts
A. 1,250 feet.
B. 1,175 feet.
C. 1,050 feet.

6.6.7.7.4.a.1 H04
(Refer to figure 31.) Determine the approximate ground roll.

Temperature 85 °F
Pressure altitude 6,000 ft
Weight 2,800 lb
Headwind 14 kts
A. 742 feet.
B. 1,280 feet.
C. 1,480 feet.

6.6.7.7.5.a.1 H04
(Refer to figure 31.) What is the total landing distance over a 50-foot obstacle?

Temperature 90 °F
Pressure altitude 2,000 ft
Weight 3,400 lb
Headwind 10 kts
A. 1,650 feet.
B. 1,575 feet.
C. 1,475 feet.

6.6.7.7.6.a.1 H04
(Refer to figure 32.) How should the 1,000-pound weight be shifted to balance the plank on the fulcrum?
A. 15 inches to the right.
B. 5 inches to the right.
C. 5 inches to the left.

6.6.7.7.7.a.1 H04
(Refer to figure 32.) How should the 500-pound weight be shifted to balance the plank on the fulcrum?
A. 10 inches to the left.
B. 10 inches to the right.
C. 30 inches to the right.

6.6.7.7.8.a.1 H04
(Refer to figure 33.) How should the 250-pound weight be shifted to balance the plank on the fulcrum?
A. 2 inches to the left.
B. 2 inches to the right.
C. 2.5 inches to the left.

6.6.7.7.9.a.1 H04
(Refer to figure 33.) How should the 200-pound weight be shifted to balance the plank on the fulcrum?
A. 2.5 inches to the left.
B. 2 inches to the right.
C. 2 inches to the left.

6.6.7.8.0.a.1 H04
(Refer to figure 34.) How should the 500-pound weight be shifted to balance the plank on the fulcrum?
A. 1 inch to the left.
B. 1 inch to the right.
C. 4.5 inches to the right.

6.6.7.8.1.a.1 H04
(Refer to figure 34.) How should the 250-pound weight be shifted to balance the plank on the fulcrum?
A. 8.4 inches to the right.
B. 2 inches to the right.
C. 2 inches to the left.

6.6.7.8.2.a.1 H04
(Refer to figure 35.) If 50 pounds of weight is located at point X and 100 pounds at point Z, how much weight must be located at point Y to balance the plank?
A. 30 pounds.
B. 50 pounds.
C. 300 pounds.

6.6.7.8.3.a.1 H04
(Refer to figure 35.) If 50 pounds of weight is located at point X and 100 pounds at point Y, how much weight must be located at point Z to balance the plank?
A. 150 pounds.
B. 100 pounds.
C. 50 pounds.

6.6.7.8.4.a.1 H04
(Refer to figure 35.) If 50-pound weights are located at points X, Y, and Z, how would point Z have to be shifted to balance the plank?
A. 25 inches to the left.
B. 2.5 inches to the left.
C. 2.5 inches to the right.

6.6.7.8.5.a.1 H04
Based on this information, the CG would be located how far aft of datum?

Weight A 120 lb at 15" aft of datum
Weight B 200 lb at 117" aft of datum
Weight C 75 lb at 195" aft of datum
A. 100.8 inches.
B. 109.0 inches.
C. 121.7 inches.

6.6.7.8.6.a.1 H04
Based on this information, the CG would be located how far aft of datum?

Weight D 160 lb at 45" aft of datum
Weight E 170 lb at 145" aft of datum
Weight F 105 lb at 185" aft of datum
A. 86.0 inches.
B. 117.8 inches.
C. 125.0 inches.

6.6.7.8.7.a.1 H04
Based on this information, the CG would be located how far aft of datum?

Weight X 130 lb at 17" aft of datum
Weight Y 110 lb at 110" aft of datum
Weight Z 75 lb at 210" aft of datum
A. 89.1 inches.
B. 95.4 inches.
C. 106.9 inches.

6.6.7.8.8.a.1 H04
What is the maximum weight that could be added at Station 130.0 without exceeding the aft CG limit?

Total weight 2,900 lb
CG location Station 115.0
Aft CG limit Station 116.0
A. 14 pounds.
B. 140 pounds.
C. 207 pounds.

6.6.7.8.9.a.1 H04
What would be the new CG location if 135 pounds of weight were added at Station 109.0?

Total weight 2,340 lb
CG location Station 103.0
A. Station 103.3.
B. Station 104.2.
C. Station 109.3.

6.6.7.9.0.a.1 H04
How much weight could be added at Station 160 without exceeding the aft CG limit?

Aircraft weight 8,300 lb
CG location Station 90.0
Aft CG limit Station 90.5
A. 59.7 pounds.
B. 16.5 pounds.
C. 13.9 pounds.

6.6.7.9.1.a.1 H04
How much weight could be added at Station 120 without exceeding the aft CG limit?

Aircraft weight 9,500 lb
CG location Station 90.0
Aft CG limit Station 90.5
A. 61.0 pounds.

B. 110.5 pounds.
C. 161.0 pounds.

6.6.7.9.2.a.1 H04
What is the maximum weight that could be added at Station 150.0 without exceeding the aft CG limit?

Aircraft weight 5,000 lb
CG location Station 80.0
Aft CG limit Station 80.5
A. 70.0 pounds.
B. 69.5 pounds.
C. 35.9 pounds.

6.6.7.9.3.a.1 H04
What is the location of the CG if 90 pounds are removed from Station 140?

Aircraft weight 6,230 lb
CG location Station 79
A. 79.9.
B. 78.1.
C. 77.9.

6.6.7.9.4.a.1 H04
What is the location of the CG if 146 pounds are removed from Station 150?

Aircraft weight 7,152 lb
CG location Station 82
A. 83.4.
B. 81.3.
C. 80.6.

6.6.7.9.5.a.1 H04
What is the location of the CG if 60 pounds are removed from Station 70?

Aircraft weight 8,420 lb
CG location Station 85
A. 85.1.
B. 84.9.
C. 84.1.

6.6.7.9.6.a.1 H04
How much weight must be shifted from Station 150.0 to Station 30.0 to move the CG to exactly the aft CG limit?

Total weight 7,500 lb
CG location Station 80.5
Aft CG limit Station 79.5
A. 68.9 pounds.
B. 65.8 pounds.
C. 62.5 pounds.

6.6.7.9.7.a.1 H04
Could 100 pounds of weight be shifted from Station 130.0 to Station 30.0 without exceeding the forward CG limit?

Total weight 2,800 lb
CG location Station 120.0
Forward CG limit Station 117.0

A. No; the new CG would be located at Station 116.89.
B. No; the new CG would be located at Station 116.42.
C. Yes; the new CG would be located at Station 117.89.

6.6.7.9.8.a.1 H04
Could 100 pounds of weight be shifted from Station 30.0 to Station 120.0 without exceeding the aft CG limit?

Total weight 4,750 lb
CG location Station 115.8
Aft CG limit Station 118.0
A. Yes; the CG would remain at Station 115.8.
B. No; the new CG would be located at Station 118.15.
C. Yes; the new CG would be located at Station 117.69.

6.6.7.9.9.a.1 H04
(Refer to figure 36.) Determine the condition of the airplane:

Pilot and copilot 375 lb
Aft passengers 245 lb
Baggage 65 lb
Fuel 70 gal
A. 185 pounds under allowable gross weight; CG is located within limits.
B. 162 pounds under allowable gross weight; CG is located within limits.
C. 162 pounds under allowable gross weight; CG is located aft of the aft limit.

6.6.8.0.0.a.1 H04
(Refer to figure 36.) Determine the condition of the airplane:

Pilot and copilot 400 lb
Aft passengers 240 lb
Baggage 20 lb
Fuel 75 gal
A. 157 pounds under allowable gross weight; CG is located within limits.
B. 180 pounds under allowable gross weight; CG is located within limits.
C. 180 pounds under allowable gross weight, but CG is located aft of the aft limit.

6.6.8.0.1.a.1 H04
(Refer to figure 36.) Determine the condition of the airplane:

Front
1st person 160 lb
2nd person 156 lb
Rear (aft position)
1st person 130 lb
2nd person 147 lb
Baggage 50 lb
Fuel 75 gal
A. 163 pounds under allowable gross weight; CG 82 inches aft of datum.
B. 197 pounds under allowable gross weight; CG 84.5 inches aft of datum.
C. 197 pounds under allowable gross weight; CG located outside aft limits.

6.6.8.0.2.a.1 H10
If the nosewheel of an airplane moves aft during gear retraction, how would this aft movement affect the CG location of that airplane? It would
A. cause the CG location to move aft.
B. have no effect on the CG location.
C. cause the CG location to move forward.

6.6.8.0.3.a.1 H10
If the landing gear on an airplane moves forward during retraction, the total moments will
A. increase.
B. decrease.
C. remain the same.

6.6.8.0.4.a.1 H10
The center of gravity of an aircraft is computed along the
A. lateral axis.
B. vertical axis.
C. longitudinal axis.

6.6.8.0.5.a.1 H12
The center of gravity of an aircraft can be determined by
A. dividing total arms by total moments.
B. dividing total moments by total weight.
C. multiplying total arms by total weight.

6.6.8.0.6.a.1 H60
Which characteristic of a spin is not a characteristic of a steep spiral?
A. Stalled wing.
B. High rate of rotation.
C. Rapid loss of altitude.

6.6.8.0.7.a.1 H66
In a twin-engine airplane, the single-engine service ceiling is the maximum density altitude at which V_{YSE} will produce
A. 50 feet per minute rate of climb.
B. 100 feet per minute rate of climb.
C. 500 feet per minute rate of climb.

6.6.8.0.8.a.1 H66
When one engine fails on a twin-engine airplane, the resulting performance loss
A. may reduce the rate of climb by 80 percent or more.
B. reduces cruise indicated airspeed by 50 percent or more.
C. is approximately 50 percent since 50 percent of the normally available thrust is lost.

6.6.8.0.9.a.1 H66
What is the significance of the blue radial line on the airspeed indicator of a light multiengine airplane and when is it to be used? It indicates the
A. minimum speed at which the airplane is controllable when the critical engine is suddenly made inoperative and should be used at all altitudes when an engine is inoperative.
B. speed which will provide the maximum altitude gain in a given time when one engine is inoperative and should be used for climb and final approach during engine-out operations.
C. speed which will provide the greatest height for a given distance of forward travel when one engine is inoperative and should be used for all climbs during engine-out operations.

6.6.8.1.0.a.1 H66
When operating a light multiengine airplane at V_{MC}, the pilot should expect performance to be sufficient to maintain
A. heading.
B. heading and altitude.
C. heading, altitude, and be able to climb at 50 feet per minute.

6.6.8.1.1.a.1 H66
For an airplane with reciprocating, non-turbocharged engines, V_{MC}
A. decreases with altitude.
B. increases with altitude.
C. is not affected by altitude.

6.6.8.1.2.a.1 H66
Which is true regarding the operation of a multiengine airplane with one engine inoperative?
A. Banking toward the operating engine increases V_{MC}.
B. Banking toward the inoperative engine increases V_{MC}.
C. V_{MC} is a designed performance factor which must be proven during type certification and will not change as long as the ball is centered with appropriate rudder pressure.

6.6.8.1.3.a.1 H66
Which condition causes V_{MC} to be the highest?
A. CG is at the most forward allowable position.
B. CG is at the most rearward allowable position.
C. Gross weight is at the maximum allowable value.

6.6.8.1.4.a.1 H66
Maximum gliding distance of an aircraft is obtained when
A. parasite drag is the least.
B. induced drag and parasite drag are equal.
C. induced drag equals the coefficient of lift.

6.6.8.1.5.a.1 H66
How does increased weight affect the takeoff distance of an airplane?
A. The airplane will accelerate more slowly with the same power output, but the same airspeed is required to generate necessary lift for takeoff.
B. The airplane will accelerate more slowly with the same power output, and a higher airspeed is required to generate necessary lift for takeoff.
C. Every airplane has the same acceleration factor with the same power output, but a higher airspeed is needed to overcome the increased ground effect.

6.6.8.1.6.a.1 H66
An aircraft is loaded with the CG aft of the aft limit. What effect will this have on controllability?
A. Stall and spin recovery may be difficult or impossible.
B. A stall will occur at a lower airspeed, but recovery will be easier because of reduced wing loading.
C. A stall will occur at a higher indicated airspeed due to the greater downloading on the elevator.

6.6.8.1.7.a.1 H66
The stalling speed of an aircraft will be highest when the aircraft is loaded with a
A. high gross weight and aft CG.
B. low gross weight and forward CG.
C. high gross weight and forward CG.

6.6.8.1.8.a.1 H66
An aircraft is loaded with the CG at the aft limit. What are the performance characteristics compared with the CG at the forward limit?
A. The aft CG provides the highest stall speed and cruising speed.
B. The aft CG provides the lowest stalling speed, the highest cruising speed, and least stability.
C. Cruising speed is lower because of more induced drag created by the elevator or stabilizer being required to provide more lift with an aft CG.

6.6.8.1.9.a.1 H66
If the CG of an aircraft is moved from the aft limit to beyond the forward limit, how will it affect the cruising and stalling speed?
A. Increase both the cruising speed and stalling speed.
B. Decrease both the cruising speed and stalling speed.
C. Decrease the cruising speed and increase the stalling speed.

6.6.8.2.0.a.1 H66
When an aircraft's forward CG limit is exceeded, it will affect the flight characteristics of the aircraft by producing
A. improved performance since it reduces the induced drag.
B. higher stalling speeds and more longitudinal stability.
C. very light elevator control forces which make it easy to inadvertently overstress the aircraft.

6.6.8.2.1.a.1 H66
As the CG moves aft, an aircraft becomes
A. less stable and less controllable.
B. less stable, yet easier to control.
C. more stable and controllable as long as the aft CG is not exceeded.

6.6.8.2.2.a.1 H66
What is characteristic of the indicated airspeed if the CG is at the most forward allowable position and constant power and altitude are maintained?
A. There is no relationship between CG location and indicated airspeed.
B. Indicated airspeed will be less than it would be with the CG in the most rearward allowable position.
C. Indicated airspeed will be greater than it would be with the CG in the most rearward allowable position.

6.6.8.2.3.a.1 H66
To maintain level flight in an airplane which is loaded with the CG at the forward limit, an additional download must be imposed on the horizontal stabilizer. This in turn produces
A. an additional load which the wing must support.
B. a lesser load that must be supported by the wing.
C. a decrease in drag and results in a faster airspeed.

6.6.8.2.4.a.1 H66
Under which condition is a forward CG most critical?
A. On takeoff.
B. On landing.
C. When in an unusual attitude.

6.6.8.2.5.a.1 H66
As the CG location is changed, recovery from a stall becomes progressively
A. less difficult as the CG moves rearward.
B. more difficult as the CG moves rearward.
C. more difficult as the CG moves either forward or rearward.

6.6.8.2.6.a.1 H66
What is the effect of center of gravity on the spin characteristics of an aircraft?
A. A flat spin may develop if the CG is too far aft.
B. If the CG is too far forward, spin entry will be difficult.
C. If the CG is too far aft, spins can become high-speed spirals.

6.6.8.2.7.a.1 H76
If the CG is located aft of allowable limits, the pilot may find it impossible to
A. raise the nose, if necessary, during flight in gusty wind conditions.

B. recognize this out-of-balance condition when hovering in strong headwinds.
C. fly in the upper allowable airspeed range due to insufficient forward cyclic control.

6.6.8.2.7.a.2 H95
How does a negative G maneuver affect a gyroplane's rotor RPM?
A. Increases rapidly.
B. Remains the same.
C. Decreases rapidly.

6.6.8.2.8.a.1 H76
While hovering immediately after lift-off, an excessive amount of forward cyclic is required to maintain the desired position over the ground. If flight is continued, this situation will be
A. aggravated if the fuel tanks are located aft of the CG.
B. unimproved regardless of the location of the fuel tanks.
C. aggravated if the fuel tanks are located forward of the CG.

6.6.8.2.9.a.1 H76
A helicopter is loaded in such a manner that the CG is located aft of the aft allowable CG limit. Which statement is true about this hazardous situation?
A. In case of an autorotation, sufficient aft cyclic control may not be available to flare properly.
B. This out-of-balance situation would be easily recognized when hovering in a strong headwind.
C. Should the helicopter pitch up due to gusty winds during high-speed flight, there may not be sufficient forward cyclic control available to lower the nose.

6.6.8.3.0.a.1 H77
The most favorable combination of conditions for rotorcraft performance is
A. low density altitude, low gross weight, and moderate to strong wind.
B. low density altitude, high gross weight, and calm to light wind.
C. high density altitude, low gross weight, and moderate to strong wind.

6.6.8.3.1.a.1 H77
If all other factors remain the same, an increase in relative humidity will
A. decrease the hovering ceiling because the air is less dense.
B. increase the hovering ceiling because the air is more dense.
C. decrease the hovering ceiling because the air is more dense.

6.6.8.3.2.a.1 H78
As altitude increases, the V_{NE} of most helicopters
A. increases.
B. decreases.
C. remains the same.

6.6.8.3.2.a.2 H95
When does the vortex ring state mode of flight cause a problem for a gyroplane?
A. Just prior to landing
B. During a steep descent.
C. After a pushover from a steep climb.

6.6.8.3.3.a.1 H78
(Refer to figure 37.) Blade tip stall is most likely to occur in what area?
A. 4 at low forward airspeed.
B. 2 at high forward airspeed.
C. 1 at high forward airspeed.

6.6.8.3.3.a.2 H96.10
Which may lead to a power push-over in a gyroplane?
A. Low speed.
B. High speed.
C. Decreasing power too quickly.

6.6.8.3.4.a.1 H79
Which technique is recommended during hot weather operations in a helicopter?
A. Descend rapidly during approaches.
B. During takeoff, accelerate slowly into forward flight.
C. During takeoff, accelerate quickly into forward flight.

6.6.8.3.5.a.1 H92
Which is true concerning gyroplane operations?
A. Rotor RPM will decrease during a vertical descent.
B. A gyroplane can take off from any area in which it can safely land.
C. If altitude permits, a gyroplane can safely descend vertically or move backward with respect to ground references during a descent.

6.6.8.3.5.a.2 H96.10
How does lowering the seat on a gyroplane affect the flight characteristics?
A. Thrust line will be lower.
B. Airspeed at which a power pushover could occur would be lower.
C. Gyroplane should be more stable both in flight and on the ground.

6.6.8.3.6.a.1 N21
The best lift/drag ratio of a glider occurs when parasite drag is
A. equal to total drag.
B. equal to induced drag.
C. less than induced drag.

6.6.8.3.7.a.1 N21
The best lift/drag ratio of a glider is a value that
A. varies depending upon the weight being carried.
B. remains constant regardless of airspeed changes.
C. remains constant and is independent of the weight being carried.

6.6.8.3.8.a.1 N21
Which is true about the effect on a glider's performance by the addition of ballast or weight?
A. The glide ratio at a given airspeed will increase.
B. A higher airspeed is required to obtain the same glide ratio as when lightly loaded.
C. The heavier the glider is loaded, the less the glide ratio will be at all airspeeds.

6.6.8.3.9.a.1 N31
GIVEN:

Maximum auto winch tow speed	69 MPH
Surface wind	5 MPH
Wind gradient	5 MPH

What should the auto winch speed be when a glider reaches an altitude of 200 feet?
A. 44 MPH.
B. 49 MPH.
C. 59 MPH.

6.6.8.4.0.a.1 N34
(Refer to figure 38.) A glider is flying from A to C. With a normal L/D ratio of 20:1 and a constant airspeed of 40 MPH, what minimum altitude AGL is needed at B to arrive over C at 800 feet AGL with no sinking air?
A. 3,520 feet.
B. 4,320 feet.
C. 6,080 feet.

6.6.8.4.1.a.1 O03
What constitutes the payload of a balloon?
A. Weight of the balloon and equipment.
B. Total weight of passengers, cargo, and fuel.
C. Difference between empty weight and maximum certified gross weight.

6.6.8.4.2.a.1 O03
(Refer to figure 39.) Determine the maximum payload for a balloon flying at 1,500 feet at an ambient temperature of 87 °F.
A. 515 pounds.
B. 565 pounds.
C. 585 pounds.

6.6.8.4.3.a.1 O03
(Refer to figure 39.) What is the maximum altitude for a balloon if the gross weight is 1,060 pounds and standard temperature exists at all altitudes?
A. 4,000 feet.
B. 5,000 feet.
C. 7,000 feet.

6.6.8.4.4.a.1 O03
(Refer to figure 39.) What is the maximum altitude for a balloon if the gross weight is 960 pounds and the ambient temperature is 76 °F?
A. 2,000 feet.
B. 2,500 feet.
C. 4,000 feet.

6.6.8.4.5.a.1 O03
(Refer to figure 39.) Determine the maximum weight allowable for a pilot and passengers for a balloon flight at approximately 1,000 feet with a temperature of 68 °F. Launch with 20 gallons of propane.
A. 601 pounds.
B. 620 pounds.
C. 705 pounds.

6.6.8.4.6.a.1 O03
(Refer to figure 39.) Determine the maximum weight allowable for a pilot and passengers for a balloon flight at approximately 2,000 feet with a standard temperature. Launch with 20 gallons of propane.
A. 631 pounds.
B. 641 pounds.
C. 701 pounds.

6.6.8.4.7.a.1 O20
What is the weight of propane?
A. 4.2 pounds per gallon.
B. 6.0 pounds per gallon.
C. 7.5 pounds per gallon.

6.6.8.4.8.a.1 O20
What effect does ambient temperature have on propane tank pressure?
A. It has no effect.
B. As temperature decreases, propane tank pressure decreases.
C. As temperature decreases, propane tank pressure increases.

6.6.8.4.9.a.1 O20
Propane is preferred over butane for fuel in hot air balloons because
A. it develops higher pressure.
B. it has a higher boiling point.
C. butane is very explosive under pressure.

6.6.8.5.0.a.1 O46
Burner efficiency of a hot air balloon decreases approximately what percent for each 1,000 feet above MSL?
A. 4 percent.
B. 8 percent.
C. 15 percent.

6.6.8.5.1.a.1 P01
How does an airship pilot know when pressure height has been reached?
A. Liquid in the gas and air manometers will rise above normal levels.
B. Liquid in the gas manometer will rise and liquid in the air manometer(s) will fall below normal levels.
C. Liquid in the gas manometer will fall and liquid in the air manometer(s) will rise above normal levels.

6.6.8.5.2.a.1 P04
When an airship is at pressure height and superheat increases, constant pressure must be maintained by valving
A. gas from the envelope.
B. air from the envelope.
C. air from the ballonets.

6.6.8.5.3.a.1 P04
The maximum altitude an airship can reach under any given atmospheric condition and return safely to the surface is determined by
A. ballonet capacity.
B. the disposable weight.
C. ballonet capacity and disposable weight.

6.6.8.5.4.a.1 P04
Below pressure height, each 5 °F of positive superheat amounts to approximately
A. 1 percent of net lift.
B. 1 percent of static lift.
C. 2 percent of gross lift.

6.6.8.5.5.a.1 P04
The difference between the weight of the air being displaced and the weight of the lifting gas is
A. gross lift.
B. useful lift.
C. design lift.

7.6.8.5.6.a.1 H06
GIVEN:

Departure path straight out
Takeoff time 1030 DST
Winds during climb 180° at 30 kts
True course during climb 160°
Airport elevation 1,500 ft
True airspeed 125 kts
Rate of climb 500 ft/min

What would be the distance and time upon reaching 8,500 feet MSL?
A. 20 NM and 1047 DST.
B. 23 NM and 1044 DST.
C. 25 NM and 1047 DST.

7.6.8.5.7.a.1 H06
GIVEN:

Departure path straight out
Takeoff time 1435Z
Winds during climb 175° at 25 kts
True course during climb 155°
Airport elevation 2,000 ft
True airspeed 130 kts
Rate of climb 500 ft/min

What would be the distance and time upon reaching 8,000 feet MSL?
A. 27 NM and 1455Z.
B. 24 NM and 1452Z.
C. 21 NM and 1447Z.

7.6.8.5.8.a.1 H06
GIVEN:

Distance 340 SM
True course 260°
Wind 245° at 45 kts
True airspeed 135 MPH
Rate of fuel consumption 12.7 gal/hr

What would be the approximate groundspeed and amount of fuel consumed?
A. 74 knots; 50.1 gallons.
B. 84 MPH; 51.2 gallons.
C. 90 MPH; 47.3 gallons.

7.6.8.5.9.a.1 H06
GIVEN:

Distance 200 SM
True course 320°
Wind 215° at 25 kts
True airspeed 128 MPH
Rate of fuel consumption 19 gal/hr

What would be the approximate groundspeed and amount of fuel consumed?
A. 132 MPH; 28.9 gallons.
B. 127 MPH; 33.3 gallons.
C. 115 knots; 31.5 gallons.

7.6.8.6.0.a.1 H06

GIVEN:

Usable fuel at takeoff	36 gal
Fuel consumption rate	12.4 gal/hr
Constant groundspeed	140 kts
Flight time since takeoff	48 min

According to FAR Part 91, how much farther can an airplane be flown under day VFR?
A. 294 NM.
B. 224 NM.
C. 189 NM.

7.6.8.6.1.a.1 H06
GIVEN:

Usable fuel at takeoff	36 gal
Fuel consumption rate	12.4 gal/hr
Constant groundspeed	140 kts
Flight time since takeoff	48 min

According to FAR Part 91, how much farther can an airplane be flown under night VFR?
A. 189 NM.
B. 224 NM.
C. 294 NM.

7.6.8.6.2.a.1 H06
GIVEN:

Usable fuel at takeoff	40 gal
Fuel consumption rate	12.2 gal/hr
Constant groundspeed	120 kts
Flight time since takeoff	1 hr 30 min

According to FAR Part 91, how much farther can an airplane be flown under night VFR?
A. 216 NM.
B. 156 NM.
C. 121 NM.

7.6.8.6.3.a.1 H06
GIVEN:

Usable fuel at takeoff	40 gal
Fuel consumption rate	12.2 gal/hr
Constant groundspeed	120 kts
Flight time since takeoff	1 hr 30 min

According to FAR Part 91, how much farther can a rotorcraft be flown under day VFR?
A. 215 NM.
B. 176 NM.
C. 121 NM.

7.6.8.6.4.a.1 H06
If fuel consumption is 15.3 gallons per hour and groundspeed is 167 knots, how much fuel is required for an aircraft to travel 620 NM?
A. 63 gallons.
B. 60 gallons.
C. 57 gallons.

7.6.8.6.5.a.1 H06
If an aircraft is consuming 91 pounds of fuel per hour and groundspeed is 168 knots, how much fuel is required to travel 457 NM?
A. 291 pounds.
B. 265 pounds.
C. 248 pounds.

7.6.8.6.6.a.1 H06
On a cross-country flight, point A is crossed at 1500 hours and the plan is to reach point B at 1530 hours. Use the following information to determine the indicated airspeed required to reach point B on schedule.

Distance between A and B 70 NM
Forecast wind 310° at 15 kts
Pressure altitude 8,000 ft
Ambient temperature -10 °C
True course 270°

The required indicated airspeed would be approximately
A. 126 knots.
B. 137 knots.
C. 152 knots.

7.6.8.6.7.a.1 H06
On a cross-country flight, point X is crossed at 1015 and arrival at point Y is expected at 1025. Use the following information to determine the indicated airspeed required to reach point Y on schedule.

Distance between X and Y 27 NM
Forecast wind 240° at 30 kts
Pressure altitude 5,500 ft
Ambient temperature +05 °C
True course 100°

The required indicated airspeed would be approximately
A. 162 knots.
B. 140 knots.
C. 128 knots.

7.6.8.6.8.a.1 H06
On a cross-country flight, point X is crossed at 1550 and the plan is to reach point Y at 1620. Use the following information to determine the indicated airspeed required to reach point Y on schedule.

Distance between X and Y 70 NM
Forecast wind 115° at 25 kts
Pressure altitude 9,000 ft
Ambient temperature -05 °C
True course 088°

The required indicated airspeed would be approximately
A. 138 knots.
B. 143 knots.
C. 162 knots.

7.6.8.6.9.a.1 H06
How far will an aircraft travel in 2-1/2 minutes with a groundspeed of 98 knots?
A. 2.45 NM.
B. 3.35 NM.
C. 4.08 NM.

7.6.8.7.0.a.1 H06
How far will an aircraft travel in 3-1/2 minutes if its groundspeed is 165 knots?
A. 5.8 NM.
B. 9.6 NM.
C. 12.8 NM.

7.6.8.7.1.a.1 H06
After 141 miles are flown from the departure point, the aircraft's position is located 11 miles off course. If 71 miles remain to be flown, what approximate total correction should be made to converge on the destination?
A. 8°.
B. 11°.
C. 14°.

7.6.8.7.2.a.1 H06
After 150 miles are flown from the departure point, the aircraft's position is located 8 miles off course. If 160 miles remain to be flown, what approximate total correction should be made to converge on the destination?
A. 6°.
B. 9°.
C. 12°.

7.6.8.7.3.a.1 H06
After 240 miles are flown from the departure point, the aircraft's position is located 25 miles off course. If 100 miles remain to be flown, what approximate total correction should be made to converge on the destination?
A. 15°.
B. 21°.
C. 30°.

7.6.8.7.4.a.1 H06
If a true heading of 135° results in a ground track of 130° and a true airspeed of 135 knots results in a groundspeed of 140 knots, the wind would be from
A. 019° and 12 knots.
B. 200° and 13 knots.
C. 246° and 13 knots.

7.6.8.7.5.a.1 H06
If a true heading of 350° results in a ground track of 335° and a true airspeed of 140 knots results in a groundspeed of 115 knots, the wind would be from
A. 015° and 30 knots.
B. 035° and 40 knots.
C. 290° and 40 knots.

7.6.8.7.6.a.1 H06
If a true heading of 230° results in a ground track of 250° and a true airspeed of 160 knots results in a groundspeed of 175 knots, the wind would be from
A. 135° and 59 knots.
B. 165° and 60 knots.
C. 343° and 60 knots.

7.6.8.7.7.a.1 H07
Which statement about longitude and latitude is true?
A. Lines of longitude are parallel to the Equator.
B. Lines of longitude cross the Equator at right angles.
C. The 0° line of latitude passes through Greenwich, England.

7.6.8.7.8.a.1 H07
When planning a distance flight, true course measurements on a Sectional Aeronautical Chart should be made at a meridian near the midpoint of the course because the
A. values of isogonic lines change from point to point.
B. angles formed by lines of longitude and the course line vary from point to point.
C. angles formed by isogonic lines and lines of latitude vary from point to point.

7.6.8.7.9.a.1 H07
(Refer to figure 40.) The line from point A to point B of the wind triangle represents
A. true heading and airspeed.
B. true course and groundspeed.
C. groundspeed and true heading.

7.6.8.8.0.a.1 H07
(Refer to figure 40.) The line from point C to point B of the wind triangle represents
A. airspeed and heading.
B. groundspeed and true course.
C. true heading and groundspeed.

7.6.8.8.1.a.1 H07
(Refer to figure 40.) The line from point C to point A of the wind triangle represents
A. wind direction and velocity.
B. true course and groundspeed.
C. true heading and groundspeed.

7.6.8.8.2.a.1 H07
When converting from true course to magnetic heading, a pilot should
A. subtract easterly variation and right wind correction angle.
B. add westerly variation and subtract left wind correction angle.
C. subtract westerly variation and add right wind correction angle.

7.6.8.8.3.a.1 H07
When converting from magnetic course to true course, a pilot should
A. add easterly variation regardless of heading.
B. add westerly variation regardless of heading.
C. subtract easterly variation when on a heading of 360°.

7.6.8.8.4.a.1 H07
When converting from true heading to true course, a pilot should
A. add right wind correction angle.
B. add left deviation correction angle.
C. subtract right wind correction angle.

7.6.8.8.5.a.1 H07
The angular difference between true north and magnetic north is
A. magnetic deviation.
B. magnetic variation.
C. compass acceleration error.

7.6.8.8.6.a.1 H07
GIVEN:

True course 258°
Variation 10° E
Indicated airspeed 142 kts
Ambient temperature +05 °C
Pressure altitude 6,500 ft
Forecast wind 350° at 30 kts

Under these conditions, the magnetic heading and groundspeed would be approximately
A. 260° and 155 knots.
B. 270° and 157 knots.
C. 280° and 155 knots.

7.6.8.8.7.a.1 H07
GIVEN:

True course 330°
Variation 15° E
Indicated airspeed 160 kts
Ambient temperature -10 °C
Pressure altitude 4,500 ft
Forecast wind 090° at 25 kts

Under these conditions, the magnetic heading and groundspeed would be approximately
A. 323° and 177 knots.
B. 332° and 166 knots.
C. 340° and 177 knots.

7.6.8.8.8.a.1 H07
GIVEN:

True course 238°
Variation 3° W
Indicated airspeed 160 kts
Ambient temperature -15 °C
Pressure altitude 8,500 ft
Forecast wind 160° at 25 kts

Under these conditions, the magnetic heading and groundspeed would be approximately
A. 224° and 171 knots.
B. 233° and 171 knots.
C. 241° and 178 knots.

7.6.8.8.9.a.1 H07
(Refer to figure 41.) If a magnetic heading of 050° is maintained and you are receiving ADF indication 5, what will be the relative bearing to the station when you intercept the 180° magnetic bearing to the station?
A. 130°.
B. 230°.
C. 310°.

7.6.8.9.0.a.1 H07
(Refer to figure 41.) If a magnetic heading of 170° is maintained and you are receiving ADF indication 1, what will be the relative bearing to the station when you intercept the 090° magnetic bearing to the station?
A. 260°.
B. 270°.
C. 280°.

7.6.8.9.1.a.1 H07

(Refer to figure 41.) If on a magnetic heading of 030° and receiving ADF indication 5, to what heading should the aircraft be turned to intercept the 150° bearing from the station at a 30° angle?
A. 210°.
B. 180°.
C. 120°.

7.6.8.9.2.a.1 H07
(Refer to figure 41.) If on a magnetic heading of 270° and receiving ADF indication 2, to what heading should the aircraft be turned to intercept the 350° bearing from the station at a 20° angle?
A. 190°.
B. 290°.
C. 330°.

7.6.8.9.3.a.1 H07
(Refer to figure 41.) If on a magnetic heading of 240° and receiving ADF indication 2, what would be the magnetic bearing to the station?
A. 180°.
B. 240°.
C. 360°.

7.6.8.9.4.a.1 H07
(Refer to figure 41.) If on a magnetic heading of 310° and receiving ADF indication 3, what would be the magnetic bearing to the station?
A. 085°.
B. 135°.
C. 315°.

7.6.8.9.5.a.1 H07
(Refer to figure 41.) If on a magnetic heading of 045°, which ADF indicator would show a magnetic bearing to the station of 090°?
A. 1.
B. 4.
C. 5.

7.6.8.9.6.a.1 H07
(Refer to figure 41.) If on a magnetic heading of 090°, which ADF indicator would show a magnetic bearing to the station of 180°?
A. 2.
B. 4.
C. 6.

7.6.8.9.7.a.1 H07
(Refer to figure 41.) If on a magnetic heading of 120°, which ADF indicator would show a magnetic bearing to the station of 210°?
A. 1.
B. 3.
C. 4.

7.6.8.9.8.a.1 H07
The normal usable range of an L class VOR below 18,000 feet is
A. 25 NM.
B. 40 NM.
C. 100 NM.

7.6.8.9.9.a.1 H07
The normal usable range of a T class VOR below 12,000 feet is
A. 100 NM.
B. 40 NM.
C. 25 NM.

7.6.9.0.0.a.1 H07
(Refer to figure 42.) At which aircraft position(s) would you receive OMNI indication V?
A. 2 only.
B. 6 only.
C. 5 and 8.

7.6.9.0.1.a.1 H07
(Refer to figure 42.) At which aircraft position(s) would you receive OMNI indication X?
A. 1 and 3.
B. 3 and 7.
C. 7 only.

7.6.9.0.2.a.1 H07
(Refer to figure 42.) At which aircraft position(s) would you receive OMNI indication U?
A. 1 and 2.
B. 2 only.
C. 6 only.

7.6.9.0.3.a.1 H07
(Refer to figure 42.) Which OMNI indication would you receive for aircraft 8?
A. T.
B. V.
C. W.

7.6.9.0.4.a.1 H07
(Refer to figure 42.) Which OMNI indications would you receive for aircraft 5 and 7?
A. T and X.
B. V and X.
C. W and Z.

7.6.9.0.5.a.1 H61
When diverting to an alternate airport because of an emergency, pilots should
A. rely upon radio as the primary method of navigation.
B. complete all plotting, measuring, and computations involved before diverting.
C. apply rule-of-thumb computations, estimates, and other appropriate shortcuts to divert to the new course as soon as possible.

7.6.9.0.6.a.1 I04
(Refer to figure 43.) Which RMI indicator shows your position to be northwest of the station?
A. 2.
B. 3.
C. 6.

7.6.9.0.7.a.1 I04
(Refer to figure 43.) Which RMI indicator shows you crossing the 115° radial?
A. 2.
B. 5.
C. 8.

7.6.9.0.8.a.1 I04
(Refer to figure 43.) RMI indicator 2 shows the magnetic bearing to the station to be
A. 295°.
B. 125°.
C. 115°.

7.6.9.0.9.a.1 I04
(Refer to figure 43.) Which RMI indicator shows you outbound on the 315° radial?
A. 1.
B. 4.
C. 9.

7.6.9.1.0.a.1 I07
In reference to low frequency radio wave propagation, the distance between the transmitting antenna and the point where the sky wave first returns to the ground is called the
A. skip zone.
B. ground wave.
C. skip distance.

7.6.9.1.1.a.1 I07
Which distance is commonly displayed by a DME indicator?
A. Slant-range distance in statute miles.
B. Slant-range distance in nautical miles.
C. The distance from the aircraft to a point at the same altitude directly above the VORTAC.

7.6.9.1.2.a.1 I07
Which DME indication should you receive when you are directly over a VORTAC site at approximately 6,000 feet AGL?
A. 0.
B. 1.
C. 1.3.

7.6.9.1.3.a.1 I07
The slant-range error of a DME is greatest at
A. low altitude directly over the facility.
B. high altitude directly over the facility.
C. high altitude and high range from the facility.

7.6.9.1.4.a.1 I07
In an RNAV mode, the lateral deflection of the CDI indicates
A. degrees left or right of course.
B. statute miles left or right of course.
C. nautical miles left or right of course.

7.6.9.1.5.a.1 I08
If you are 30 miles from the NDB transmitter and the ADF indicates 3° off course, how many miles off course are you?
A. 1.5.
B. 3.
C. 6.

7.6.9.1.6.a.1 I08
Which statement is true regarding tracking a desired bearing when using ADF during crosswind conditions?
A. To track outbound, heading corrections should be made away from the ADF pointer.

B. When on the desired track inbound with the proper drift correction established, the ADF pointer will be deflected to the windward side of the nose position.
C. When on the desired track outbound with the proper drift correction established, the ADF pointer will be deflected to the windward side of the tail position.

7.6.9.1.7.a.1 I08
The ADF is tuned to a nondirectional radio beacon and the relative bearing changes from 090° to 100° in 1.5 minutes' elapsed time. The time en route to the station would be
A. 6 minutes.
B. 9 minutes.
C. 15 minutes.

7.6.9.1.8.a.1 I08
The ADF indicates a 5° wingtip bearing change in 2.5 minutes' elapsed time. If the true airspeed is 125 knots, the distance to the station would be
A. 31.2 NM.
B. 56.5 NM.
C. 62.5 NM.

7.6.9.1.9.a.1 I08
While maintaining a magnetic heading of 060° and a true airspeed of 130 knots, the 150° radial of a VOR is crossed at 1137 and the 140° radial at 1145. The approximate time and distance to the station would be
A. 38 minutes and 82 NM.
B. 42 minutes and 91 NM.
C. 48 minutes and 104 NM.

7.6.9.2.0.a.1 I08
While maintaining a magnetic heading of 180° and a true airspeed of 130 knots, the 270° radial of a VOR is crossed at 1037 and the 260° radial at 1042. The approximate time and distance to the station would be
A. 30 minutes and 65 NM.
B. 42 minutes and 104 NM.
C. 44 minutes and 96 NM.

7.6.9.2.1.a.1 J01
NDB's normally operate in the frequency range of
A. 190 to 535 Khz.
B. 400 to 1020 Hz.
C. 962 to 1213 Mhz.

7.6.9.2.2.a.1 J01
When using a VOT to check the accuracy of a VOR receiver with an RMI, what should the RMI indicate if no error exists?
A. 180° FROM.
B. 180° TO.
C. 360° TO.

7.6.9.2.3.a.1 J01
When using a VOT to check the accuracy of a VOR receiver, with the CDI centered, what should the OBS indicate if no error exists?
A. 360° TO, 270° FROM.
B. 180° FROM, 360° TO.
C. 180° TO, 360° FROM.

7.6.9.2.4.a.1 J01

A particular VORTAC station is undergoing routine maintenance. This is evidenced by
A. removal of the identification feature.
B. removal of the voice feature of the TACAN.
C. transmitting a series of dashes after each identification signal.

7.6.9.2.5.a.1 J01
The three individual navigation services provided by a VORTAC facility are
A. UHF VOR azimuth, VHF TACAN azimuth, and VHF TACAN distance information.
B. VHF VOR azimuth, UHF TACAN azimuth, and UHF TACAN distance information.
C. VHF VOR azimuth, VHF TACAN azimuth, and UHF TACAN distance information.

7.6.9.2.6.a.1 J01
Which statement is true concerning the operation of DME?
A. DME operates in the VHF frequency band.
B. Distance information received from DME is the actual horizontal distance from the station.
C. DME coded identification is transmitted once for each three or four times that the VOR coded identification is transmitted.

7.6.9.2.7.a.1 J01
Up to 199 NM at line-of-sight altitudes, the accuracy of DME systems is better than
A. 1 mile or 6 percent of the distance, whichever is less.
B. 1 mile or 3 percent of the distance, whichever is greater.
C. one-half mile or 3 percent of the distance, whichever is greater.

7.6.9.2.8.a.1 J08
Within the contiguous United States, the floor of Class A airspace is
A. 14,500 feet MSL.
B. 18,000 feet MSL.
C. 18,000 feet AGL.

7.6.9.2.9.a.1 J08
With certain exceptions, Class E airspace extends upward from either 700 feet or 1,200 feet AGL to, but does not include,
A. 10,000 feet MSL.
B. 14,500 feet MSL.
C. 18,000 feet MSL.

7.6.9.3.0.b.1 J08
When a control tower, located on an airport within Class D airspace ceases operation for the day, what happens to the airspace designation?
A. The airspace designation will not change.
B. The airspace remains Class D airspace as long as an approved weather observer or ASOS is available.
C. Without an approved weather observer or ASOS being available, the airspace becomes Class G airspace beginning at the surface.

7.6.9.3.1.a.1 J08
The vertical limit of Class D airspace will normally be designated at
A. the base of the Class E airspace.
B. up to, and including, 2,500 feet AGL.
C. up to, but not including, 3,000 feet AGL.

7.6.9.3.2.a.1 J08
Class E airspace within the contiguous United States extends upward from either 700 feet or 1,200 feet AGL to, but not including
A. 3,000 feet MSL.

B. 14,500 feet MSL.
C. the base of the overlying controlled airspace.

7.6.9.3.3.a.1 J08
(Refer to figure 44.) Where does the floor of controlled airspace begin over Saginaw Airport (area 1)?
A. Surface.
B. 700 feet AGL.
C. 4,000 feet MSL.

7.6.9.3.4.a.1 J08
(Refer to figure 44.) The airspace overlying Addison Airport (area 4) is classified as
A. Class B from the surface to 10,000 feet MSL.
B. Class D from the surface to 3,100 feet MSL.
C. Class D from the surface to 10,000 feet MSL.

7.6.9.3.5.a.1 J08
(Refer to figure 44.) What altitude should be selected to avoid operating in Class B airspace on a flight from Northwest Airport (area 2) to McKinney Airport (area 5)?
A. 2,500 feet MSL.
B. 3,000 feet MSL.
C. 3,500 feet MSL.

7.6.9.3.6.a.1 J11
(Refer to figure 44.) What minimum avionics equipment is necessary to operate in the airspace up to 3,000 feet MSL over Northwest Airport (area 2)?
A. None required.
B. Transponder and encoding altimeter.
C. Two-way radio communications equipment, transponder, and encoding altimeter.

7.6.9.3.7.a.1 J08
(Refer to figure 44.) When, if ever, are two-way radio communications required while enroute from Lancaster Airport (area 3) direct to McKinney Airport (area 5) at 2,700 feet MSL?
A. None required.
B. When entering the Class B airspace.
C. Immediately after takeoff since the airport is located within Class B airspace.

7.6.9.3.8.a.1 J14
(Refer to figure 44.) Select the correct statement concerning special VFR operations at Addison Airport (area 4).
A. Special VFR operations are not permitted.
B. These operations are permitted at all times.
C. Airplanes are prohibited from conducting special VFR operations.

7.6.9.3.9.a.1 J37
(Refer to figure 44.) Select the correct statement concerning the Dallas-Fort Worth VORTAC (area 6).
A. The VORTAC frequency has TWEB capability.
B. The VORTAC and DFW Intl. ATIS are both on the same frequency.
C. A pilot may receive transmissions from Dallas FSS over the VORTAC frequency.

7.6.9.4.0.a.1 J37
(Refer to figure 44.) Select the correct statement concerning the obstruction 7 SM west of McKinney Airport (area 5).
A. The obstruction is unlighted.
B. The obstruction has high-intensity lights.
C. The elevation of the top of the obstruction is 729 feet AGL.

7.6.9.4.1.a.1 J37
(Refer to figure 44.) A balloon departs Saginaw Airport (area 1) and drifts northeast towards Northwest Airport (area 2). What maximum elevation figure would assure obstruction clearance during the flight?
A. 1,500 feet MSL.
B. 1,700 feet MSL.
C. 1,900 feet MSL.

7.6.9.4.2.a.1 J08
(Refer to figure 45.) Where does the floor of controlled airspace begin over McCampbell Airport (area 1)?
A. Surface.
B. 717 feet AGL.
C. 1,217 feet MSL.

7.6.9.4.3.a.1 J08
(Refer to figure 45.) The controlled airspace located at the Corpus Christi VORTAC (area 5) begins at
A. the surface.
B. 700 feet AGL.
C. 1,200 feet MSL.

7.6.9.4.4.a.1 J08
(Refer to figure 45.) When are two-way radio communications required on a flight from Bishop Airport (area 4) to McCampbell Airport (area 1) at an altitude of 2,000 feet MSL?
A. Entering the Corpus Christi Class C airspace.
B. Leaving and entering the alert areas and entering Corpus Christi Class C airspace.
C. Leaving and entering the alert areas, entering the Corpus Christi Class C airspace, and passing through the NAS Corpus Christi Class D airspace.

7.6.9.4.5.a.1 J08
(Refer to figure 45.) Assuming owner permission, what minimum avionics equipment is required for operation into Cuddihy Airport (area 8)?
A. Two-way radio communications equipment.
B. None, if altitude remains at or below 1,200 feet MSL.
C. Two-way radio communications equipment and transponder with encoding altimeter.

7.6.9.4.6.a.1 J09
(Refer to figure 45.) The airspace beginning at the surface overlying NAS Kingsville (area 2) is
A. an Alert Area.
B. Class D airspace.
C. a military operations area (MOA).

7.6.9.4.7.a.1 J09
(Refer to figure 45.) What are the requirements for operating in the alert area (area 6) just west of Corpus Christi International Airport (area 3)?
A. Contact with approach control on frequency 120.9 is required.
B. Prior permission must be obtained from the controlling agency.
C. There are no requirements, but pilots should be extremely cautious due to extensive student training.

7.6.9.4.8.a.1 J11
(Refer to figure 45.) While on a flight from Alice Airport (area 7) to McCampbell Airport (area 1) at 5,500 feet MSL, when, if ever, is a transponder required?
A. Transponder is not required.
B. Required when overflying the Corpus Christi Class C airspace.
C. Required when leaving and entering the alert areas and overflying the Corpus Christi Class C airspace.

7.6.9.4.9.a.1 J37
(Refer to figure 45.) What is the elevation of the top of the obstruction located just northwest of McCampbell Airport (area 1)?
A. 294 feet AGL.
B. 353 feet MSL.
C. 382 feet MSL.

7.6.9.5.0.a.1 J08
(Refer to figure 46.) Where does the floor of controlled airspace begin over Half Moon Bay Airport (area 1)?
A. Surface.
B. 700 feet AGL.
C. 5,000 feet MSL.

7.6.9.5.1.a.1 J08
(Refer to figure 46.) When are two-way radio communications required on a flight from Gnoss Airport (area 5) to Livermore Airport (area 6) at an altitude of 3,500 feet AGL? When entering
A. the Class B airspace.
B. the Livermore Airport Class D airspace.
C. both the Class B airspace and the Livermore Airport Class D airspace.

7.6.9.5.2.a.1 J08
(Refer to figure 46.) What is the height of the Class D airspace over Livermore Airport (area 6)?
A. 2,900 feet MSL.
B. 3,000 feet AGL.
C. Base of the overlying Class B airspace.

7.6.9.5.3.a.1 J08
(Refer to figure 46.) While on a flight from Livermore Airport (area 6) to Gnoss Airport (area 5), you contact San Francisco Approach Control and request clearance through the Class B airspace. The controller states "Radar contact, standby". What are you authorized to do?
A. You may enter the airspace since the controller advised you "Radar contact".
B. You may enter the airspace since you have established two-way radio communications.
C. You may not enter the airspace until you have received authorization from ATC.

7.6.9.5.4.a.1 J08
(Refer to figure 46.) At what altitude does the Class B airspace begin over Hayward Airport (area 4)?
A. 1,500 feet MSL.
B. 2,100 feet MSL.
C. 3,000 feet MSL.

7.6.9.5.5.a.1 J08
(Refer to figure 46.) What is the ceiling of the Class C airspace surrounding San Jose International Airport (area 2)?
A. 4,000 feet AGL.
B. 4,000 feet MSL.
C. 8,000 feet MSL.

7.6.9.5.6.a.1 J11
(Refer to figure 46.) The minimum avionics equipment necessary to operate in the airspace above 8,000 feet MSL over San Francisco International Airport (area 7) is
A. transponder and encoding altimeter.
B. two-way radio communications equipment.
C. two-way radio communications equipment, transponder, and encoding altimeter.

7.6.9.5.7.a.1 J37
(Refer to figure 46.) What does the figure 2^4 (area 7) indicate?
A. Maximum elevation figure for that quadrangle.
B. Minimum safe altitude when approaching San Francisco.
C. Height above ground of the tallest obstruction for that quadrangle.

7.6.9.5.8.a.1 J37
(Refer to figure 46.) A balloon launched at Meadowlark Airport (area 3) drifts northward to Rio Vista Airport (area 8). What maximum elevation figure would assure obstruction clearance during the flight?
A. 2,200 feet MSL.
B. 4,200 feet MSL.
C. 4,800 feet MSL.

7.6.9.5.9.a.1 J08
(Refer to figure 47.) What is the normal radius of the outer area (area B)?
A. 10 NM.
B. 20 NM.
C. 25 NM.

7.6.9.6.0.a.1 J08
(Refer to figure 47.) What is the radius of the inner circle (circle C)?
A. 5 miles.
B. 10 miles.
C. 15 miles.

7.6.9.6.1.a.1 J08
(Refer to figure 47.) What is the radius of the outer circle (circle A)?
A. 5 miles.
B. 10 miles.
C. 15 miles.

7.6.9.6.2.a.1 J08
(Refer to figure 47.) Which altitude (box 2) is applicable to the base of the outer circle?
A. 700 feet AGL.
B. 1,200 feet MSL.
C. 1,200 feet AGL.

7.6.9.6.3.a.1 J08
(Refer to figure 47.) Which altitude (box 1) is applicable to the vertical extent of the inner and outer circles?
A. 3,000 feet AGL.
B. 3,000 feet above airport.
C. 4,000 feet above airport.

7.6.9.6.4.a.1 J08
What minimum avionics equipment is required for operation within Class C airspace?
A. Two-way communications.
B. Two-way communications and transponder with automatic altitude reporting capability.
C. Two-way communications, transponder with automatic altitude reporting capability, and VOR.

7.6.9.6.5.a.1 J08
To operate an aircraft within Class C airspace from a satellite airport without an operating control tower, a pilot must
A. monitor ATC until clear of the Class C airspace.
B. contact ATC as soon as practicable after takeoff.
C. secure prior approval from ATC before takeoff at the airport.

7.6.9.6.6.a.1 J08
All operations within Class C airspace must be
A. in compliance with ATC clearances and instructions.
B. on a flight plan filed prior to arrival or departure.
C. in an aircraft equipped with a transponder with automatic altitude reporting capability.

7.6.9.6.7.a.1 N/A

7.6.9.6.8.a.1 N/A

7.6.9.6.9.a.1 J09
Flight through a restricted area should not be accomplished unless the pilot has
A. filed an IFR flight plan.
B. received prior authorization from the controlling agency.
C. received prior permission from the commanding officer of the nearest military base.

7.6.9.7.0.a.1 J09
Warning areas are established in
A. mountainous areas.
B. international airspace.
C. the vicinity of military bases.

7.6.9.7.1.a.1 J09
A military operations area (MOA) is airspace of defined vertical and lateral limits established for the purpose of
A. separating certain military training activities from IFR traffic.
B. military services conducting VFR low altitude navigation, tactical training, and flight testing.
C. denoting the existence of unusual hazards to aircraft, such as artillery firing, aerial gunnery, or guided missiles.

7.6.9.7.2.a.1 J09
When operating VFR in a military operations area (MOA), a pilot
A. must operate only when military activity is not being conducted.
B. should exercise extreme caution when military activity is being conducted.
C. must obtain a clearance from the controlling agency prior to entering the MOA.

7.6.9.7.3.a.1 J09
A balloon flight through a military operations area (MOA) is
A. never permitted.
B. permitted anytime, but caution should be exercised because of military activity.
C. permitted at certain times, but only with prior permission from the appropriate authority.

7.6.9.7.4.b.1 J10
Local Airport Advisory service is usually available at all airports
A. with operating control towers.
B. where a Flight Service Station is located on the airport.
C. located in Class C airspace and within 10 NM of the primary airport.

7.6.9.7.5.a.1 J10
If a military training route has flights operating at or below 1,500 feet AGL, it will be designated by
A. VR and a three digit number only.
B. IR or VR and a four digit number.
C. IR or VR and a three digit number.

8.6.9.7.6.a.1 H54
To help prevent overturning when taxiing light tricycle-gear airplanes (especially high-wing type) in strong quartering tailwinds, the
A. elevator should be placed in the up position.
B. elevator should be placed in the down position.
C. aileron on the downwind side should be placed in the down position.

8.6.9.7.7.a.1 H54
Which aileron position should you generally use when taxiing in strong quartering headwinds?
A. Neutral.
B. Aileron up on the side from which the wind is blowing.
C. Aileron down on the side from which the wind is blowing.

8.6.9.7.8.a.1 H54
When taxiing with strong quartering tailwinds, which aileron position should be used?
A. Neutral.
B. Aileron up on the side from which the wind is blowing.
C. Aileron down on the side from which the wind is blowing.

8.6.9.7.9.a.1 H54
Why should an airplane be headed into the wind for the pretakeoff check?
A. To prevent the need for more brake pressure to keep the airplane from moving forward.
B. To obtain more accurate operating indications and to minimize engine overheating during run-up.
C. To prevent excessive load factors which could occur during run-up if a crosswind condition exists.

8.6.9.8.0.a.1 H55
Select the four flight fundamentals involved in maneuvering an aircraft.
A. Aircraft power, pitch, bank, and trim.
B. Starting, taxiing, takeoff, and landing.
C. Straight-and-level flight, turns, climbs, and descents.

8.6.9.8.1.a.1 H55
During level turns in side-by-side airplanes, which is characteristic of student performance?
A. Diving during right turns because the nose appears to rise during entry into these turns.
B. Diving during left turns because the nose appears to rise during entry into these turns.
C. Climbing during left turns because the nose appears to descend during entry into these turns.

8.6.9.8.2.a.1 H55
During the entry to a right turn, the nose of the aircraft swings slightly to the left before it swings along the horizon to the right. This is a
A. slipping entry, caused by excessive right rudder pressure.
B. skidding entry; more right rudder pressure and less right aileron pressure should have been applied.
C. slipping entry; more right rudder pressure should have been applied for the amount of aileron pressure being used.

8.6.9.8.3.a.1 H55
What will cause the nose of an aircraft to move in the direction of the turn before the bank starts in a turn entry?
A. Rudder being applied too late.
B. Rudder being applied too soon.
C. Failure to apply back elevator pressure.

8.6.9.8.4.a.1 H55
How should a student be taught to correct for a nose-low attitude during a steep turn?

A. Apply back elevator pressure to attain the desired pitch attitude.
B. Reduce the angle of bank, then apply back elevator pressure to attain the desired pitch attitude.
C. Apply back elevator pressure to attain the desired pitch attitude, then reduce the angle of bank.

8.6.9.8.5.a.1 H55
While holding a constant angle of bank in a coordinated turn, the displacement of the turn needle will
A. increase as airspeed decreases.
B. increase as airspeed increases.
C. remain constant regardless of airspeed.

8.6.9.8.6.a.1 H55
During a 30° banked turn, what effect would a reduction in airspeed have on the rate and radius of turn?
A. The rate would increase; the radius would decrease.
B. The rate would decrease; the radius would increase.
C. The rate would decrease; the radius would decrease.

8.6.9.8.7.a.1 H55
During a level turn, increasing the airspeed while maintaining a constant load factor would result in
A. a decrease in radius of turn.
B. an increase in radius of turn.
C. an increase in centrifugal force.

8.6.9.8.8.a.1 H55
Which is the best technique for minimizing the wing-load factor when flying in severe turbulence?
A. Control airspeed with power, maintain wings level, and accept variations of altitude.
B. Control airspeed as closely as possible with elevator and power, and accept variations of bank and altitude.
C. Set power and trim to obtain an airspeed at or below maneuvering speed, maintain wings level, and accept variations of airspeed and altitude.

8.6.9.8.9.a.1 H57
When explaining the techniques used for making short- and soft-field takeoffs, it would be correct to state that
A. during soft-field takeoffs, lift-off should be made as soon as possible.
B. during soft-field takeoffs, lift-off should be made only when best angle-of-climb speed is attained.
C. during short-field takeoffs, lift-off should be attempted only after best rate-of-climb speed is attained.

8.6.9.9.0.a.1 H57
The indicated lift-off airspeed for short-field takeoffs in a particular aircraft will normally be
A. the same as for soft- or rough-field takeoffs.
B. greater than for soft- or rough-field takeoffs.
C. greater under tailwind conditions than required under headwind conditions.

8.6.9.9.1.a.1 H58
To minimize the side loads placed on the landing gear during touchdown, the pilot should keep the
A. direction of motion of the aircraft parallel to the runway.
B. longitudinal axis of the aircraft parallel to the direction of its motion.
C. downwind wing lowered sufficiently to eliminate the tendency for the aircraft to drift.

8.6.9.9.2.a.1 H58
Under normal conditions, a proper crosswind landing on a runway requires that, at the moment of touchdown, the
A. direction of motion of the aircraft and its longitudinal axis be parallel to the runway.
B. downwind wing be lowered sufficiently to eliminate the tendency for the aircraft to drift.
C. direction of motion of the aircraft and its lateral axis be perpendicular to the runway.

8.6.9.9.3.a.1 H58
During a power approach to a short-field landing, the correct airspeed may be verified by
A. the ability to land on a predetermined spot.
B. little or no floating during the landing flare.
C. the ability to maintain a constant angle of descent.

8.6.9.9.4.a.1 H58
What is the correct procedure to follow if an aircraft is in the region of reverse command during a landing approach?
A. Increase angle of attack and power.
B. Decrease angle of attack and power.
C. Decrease angle of attack and increase power.

8.6.9.9.5.a.1 H58
Which can result when operating in the region of reverse command?
A. It is not possible to climb.
B. Increased nose-up pitch does not affect rate of descent.
C. increased nose-up pitch causes increased rate of descent.

8.6.9.9.6.a.1 H58
If an emergency situation requires a downwind landing, pilots should expect a faster
A. airspeed at touchdown, a longer ground roll, and better control throughout the landing roll.
B. groundspeed at touchdown, a longer ground roll, and the likelihood of overshooting the desired touchdown point.
C. groundspeed at touchdown, a shorter ground roll, and the likelihood of undershooting the desired touchdown point.

8.6.9.9.7.a.1 H58
On final approach to landing, a faster-than-normal indicated airspeed should be used when
A. turbulent conditions exist.
B. ambient temperatures are above 90 °F.
C. landing at airports above 5,000 feet MSL with above standard temperature conditions.

8.6.9.9.8.a.1 H58
If poor aircraft controllability is experienced during an emergency go-around with full flaps, the cause is most probably due to
A. excessive airspeed with full flaps extended.
B. the high-power, low-airspeed situation with the airplane trimmed for a full-flap configuration.
C. a reduction in the angle of attack with full flaps to the point where the aircraft control is greatly impaired.

8.6.9.9.9.a.1 H58
A go-around from a poor landing approach should
A. not be attempted unless circumstances make it absolutely necessary.
B. generally be preferable to last minute attempts to prevent a bad landing.
C. not be attempted after the landing flare has been initiated regardless of airspeed.

8.7.0.0.0.a.1 H58
During go-arounds from a full-flap approach in conventional airplanes, which procedure should be used if the flight manual does not specify differently?
A. Start retracting the flaps first, then retract the gear.
B. Retract the gear first and adjust flaps only after reaching a safe altitude.
C. Retract the gear first since it has a far greater adverse effect on aircraft performance than do flaps.

8.7.0.0.1.a.1 H58
One reason a student tends to round out high during landing is
A. changing focus gradually.
B. focusing on references too far ahead.

C. focusing on references that are too close or looking directly down.

8.7.0.0.2.a.1 H58
What could be a result of a student focusing too far ahead during a landing approach?
A. Reactions will be either too abrupt or too late.
B. Rounding out too high and developing an excessive sink rate.
C. Difficulty in judging the closeness of the ground resulting in a nose-first touchdown.

8.7.0.0.3.a.1 H58
Immediately after takeoff, a downwind turn close to the ground is not good practice because it
A. decreases the rate of climb significantly.
B. causes an increase in the speed at which rotor stall occurs.
C. increases the hazards involved should an emergency landing become necessary.

8.7.0.0.4.a.1 H58
On a power-off final approach, a pilot establishes a glide attitude which is too flat. The proper recovery procedure for the subsequent high rate of descent is to
A. increase rotor lift by applying aft cyclic pressure.
B. increase power, and if altitude permits, lower the nose.
C. lower the nose immediately, but do not increase the power since this will again raise the nose.

8.7.0.0.5.a.1 H59
What normally results from excessive airspeed on final approach?
A. Bouncing.
B. Floating.
C. Ballooning.

8.7.0.0.6.a.1 H59
What normally results from misjudging the rate of sink during a landing?
A. Floating.
B. Ballooning.
C. Poor directional control.

8.7.0.0.7.a.1 H59
What procedure should be used to correct for slight ballooning during landing?
A. Decrease power.
B. Decrease angle of attack.
C. Hold a constant landing attitude.

8.7.0.0.8.a.1 H60
To properly compensate for a crosswind during straight-and-level cruising flight, the pilot should
A. hold rudder pressure toward the wind.
B. establish a proper heading into the wind by coordinated use of the controls.
C. hold aileron pressure toward the wind and hold opposite rudder pressure to prevent a turn.

8.7.0.0.9.a.1 H60
When beginning a rectangular course, the determining factor in deciding the distance from the field boundary at which an aircraft should be flown is the
A. windspeed.
B. size of the rectangular area chosen.
C. steepness of the bank desired in the turns.

8.7.0.1.0.a.1 H60

(Refer to figure 48.) In flying the rectangular course, when would the aircraft be turned less than 90°?
A. Corners 1 and 4.
B. Corners 1 and 2.
C. Corners 2 and 4.

8.7.0.1.1.a.1 H60
(Refer to figure 48.) In flying the rectangular course, when would the aircraft be turned more than 90°?
A. Corners 2 and 3.
B. Corners 1 and 3.
C. Corners 2 and 4.

8.7.0.1.2.a.1 H60
(Refer to figure 48.) In flying the rectangular course, when should the aircraft bank vary from a steep bank to a medium bank?
A. Corner 1.
B. Corner 3.
C. Corners 2 and 3.

8.7.0.1.3.a.1 H60
(Refer to figure 48.) In flying the rectangular course, which would describe the proper angle of bank?
A. Corner 1 shallow, corner 2 medium, corner 3 steep, and corner 4 shallow.
B. Corner 1 shallow, corner 2 medium to steep, corner 3 steep, and corner 4 medium to shallow.
C. Corner 1 shallow to medium, corner 2 medium to steep, corner 3 steep to medium, and corner 4 medium to shallow.

8.7.0.1.4.a.1 H60
(See figure 49.) At which points will the wing (lateral axis) be in alignment with the pylon during turns around a point?
A. 1 and 5.
B. 3 and 7.
C. 1, 3, 5, and 7.

8.7.0.1.5.a.1 H60
(Refer to figure 49.) If you instruct a student to practice turns around a point using a bank that is not to exceed 45° at its steepest point, it would be best to start at which of the positions shown?
A. 3.
B. 7.
C. 3 or 7.

8.7.0.1.6.a.1 H60
During turns around a point, an imaginary line from the pilot's eye and parallel to the lateral axis should point to the pylon when the aircraft is abeam the point headed directly
A. crosswind.
B. downwind only.
C. upwind or downwind.

8.7.0.1.7.a.1 H60
(Refer to figure 49.) The groundspeed will be equal in which positions?
1 and 5.
B. 1 and 5, 2 and 4, 6 and 8.
C. 1 and 5, 2 and 8, 4 and 6.

8.7.0.1.8.a.1 H60
(Refer to figure 49.) The angle of bank will be most nearly equal in which positions?
A. 3 and 7.
B. 1 and 5.

C. 4 and 6.

8.7.0.1.9.a.1 H60
(Refer to figure 49.) Which position will require the steepest bank?
A. 1.
B. 5.
C. 7.

8.7.0.2.0.a.1 H60
(Refer to figure 50.) In which positions will the groundspeeds be equal?
A. 2 and 5.
B. 1 and 6, 2 and 5.
C. 1 and 6, 2 and 5, 3 and 4.

8.7.0.2.1.a.1 H60
(Refer to figure 50.) During S-turn practice, which positions require the steeper angle of bank?
A. 4 and 5.
B. 3 and 4.
C. 2 and 5.

8.7.0.2.2.a.1 H60
(Refer to figure 50.) Proper execution of S-turns across a road requires that the aircraft be crabbed into the wind the greatest amounts at which points?
A. 3 and 4.
B. 2 and 5.
C. 1 and 6.

8.7.0.2.3.a.1 H60
(Refer to figure 51.) While practicing S-turns, a consistently smaller half-circle is made on one side of the road than on the other, and this turn is not completed before crossing the road or reference line. This would most likely occur in turn
A. 1-2-3 because the bank is decreased too rapidly during the latter part of the turn.
B. 4-5-6 because the bank is increased too rapidly during the early part of the turn.
C. 4-5-6 because the bank is increased too slowly during the latter part of the turn.

8.7.0.2.4.a.1 H60
In properly coordinated eights-on-pylons, if the reference point is behind the pylon, it means the
A. angle of bank is too shallow.
B. airplane is above the pivotal altitude.
C. airplane is below the pivotal altitude.

8.7.0.2.5.a.1 H60
The pivotal altitude for eights-on-pylons is dependent primarily upon the
A. groundspeed.
B. true airspeed.
C. distance from the pylon.

8.7.0.2.6.a.1 H60
If the wing moves behind the pylon during properly coordinated eights-on-pylons, the airplane is
A. flying too fast.
B. below pivotal altitude.
C. above pivotal altitude.

8.7.0.2.7.a.1 H60

(Refer to figure 52.) While performing eights-on-pylons, the turn-and-slip indicator appears as shown in "2". The pilot must
A. increase altitude to obtain the correct pivotal altitude, and correct the skidding turn.
B. decrease altitude to obtain the correct pivotal altitude, and correct the slipping turn.
C. decrease the bank to hold the reference point on the pylon without slipping, because the radius of turn is too small.

8.7.0.2.8.a.1 H60
(Refer to figure 52.) Misuse of rudder in attempting to hold the pylon during the performance of eights-on-pylons will result in which turn-and-slip indication?
A. "2" if above or below pivotal altitude.
B. "1" if below pivotal altitude; "2" if above pivotal altitude.
C. "1" if above pivotal altitude; "2" if below pivotal altitude.

8.7.0.2.9.a.1 H60
The objective of a cross-control stall demonstration is to
A. emphasize the hazard of an excessive slip during a landing approach.
B. teach the proper recovery technique should this type of stall occur during final approach.
C. show the effect of improper control technique and emphasize the importance of coordinated control when making turns.

8.7.0.3.0.a.1 H60
Two distinct flight situations should be covered when teaching slow flight. These are the establishment and maintenance of
A. airspeeds appropriate for landing approaches, and flight at reduced airspeeds.
B. an airspeed which gives a stall warning indication, and an airspeed at which complete recovery can be made from stalls.
C. an airspeed at which the airplane is operating on the back side of the power curve, and an airspeed at which the elevator control can be held full-back with no further loss of control.

8.7.0.3.1.a.1 H60
The primary purpose of practicing operations at reduced airspeeds is to enable students to
A. safely fly airport traffic patterns at various airspeeds.
B. develop proficiency at anticipating the onset of power-on stalls.
C. become familiar with appropriate control techniques for such speeds, and the rapidity with which control effectiveness can be lost.

8.7.0.3.2.a.1 H60
If an accelerated stall occurs in a steep turn, how will the aircraft respond?
A. The inside wing stalls first because it is flying at a higher angle of attack.
B. The outside wing stalls first because it is flying at a higher angle of attack.
C. In a slip, the high wing stalls first; in a skid, the low wing stalls first; in coordinated flight, both wings stall at the same time.

8.7.0.3.3.a.1 H60
If an accelerated stall occurs during a steep turn, in which direction would the aircraft tend to roll?
A. Toward the inside of the turn.
B. Toward the outside of the turn.
C. The direction of roll depends on whether the airplane is slipping, skidding, or in coordinated flight.

8.7.0.3.4.a.1 H60
Students should be taught that throughout a level, 720° steep turn to the right, the rudder is normally used to
A. prevent yawing.
B. control the rate of turn.
C. hold the aircraft in the turn once it is established.

8.7.0.3.5.a.1 H60
If inadequate right rudder is used during a climbing right turn, what may occur if the aircraft stalls?
A. A spin to the left.
B. A tendency to yaw to the right.
C. A tendency to roll to the right.

8.7.0.3.6.a.1 H60
Which is a correct spin recovery technique?
A. Apply forward elevator control followed by aileron opposite the spin.
B. Apply full forward elevator control followed by a coordinated rollout.
C. Reduce power to idle, apply opposite rudder and forward elevator control.

8.7.0.3.7.a.1 H60
Pilots who initiate a chandelle with a bank that is too steep will most likely
A. stall before completing the maneuver.
B. turn more than 180° before completing the rollout.
C. perform a comparatively level steep turn with a nose-high rollout at the 180° point.

8.7.0.3.8.a.1 H60
What may occur if the initial bank is too shallow when performing a chandelle?
A. Completing the maneuver with excessive airspeed.
B. Stalling the aircraft before reaching the 180° point.
C. Completing the maneuver with too low a pitch attitude.

8.7.0.3.9.a.1 H60
When performing a chandelle, where should maximum pitch occur?
A. 45° point.
B. 90° point.
C. 180° point.

8.7.0.4.0.a.1 H60
Which best describes pitch and bank during the first 90° of a chandelle?
A. Changing pitch and bank.
B. Constant pitch and bank.
C. Constant bank and changing pitch.

8.7.0.4.1.a.1 H60
Which best describes pitch and bank during the second 90° of a chandelle?
A. Changing pitch and bank.
B. Constant pitch and changing bank.
C. Constant bank and changing pitch.

8.7.0.4.2.a.1 H60
When performing a lazy eight, where should the maximum pitchup attitude occur?
A. 45° point.
B. 90° point.
C. 180° point.

8.7.0.4.3.a.1 H60
When performing a lazy eight, when should the aircraft be at minimum airspeed?
A. 45° point.
B. 90° point.
C. 180° point.

8.7.0.4.4.a.1 H60
When performing a lazy eight, where should the maximum pitchdown attitude occur?
A. 90° point.
B. 135° point.
C. 180° point.

8.7.0.4.5.a.1 H60
When performing a lazy eight, when should the maximum altitude occur?
A. 45° point.
B. 90° point.
C. 180° point.

8.7.0.4.6.a.1 H60
What should occur at the 90° point of a lazy eight?
A. Airspeed and altitude should be the same as at entry.
B. Maximum pitch attitude, minimum airspeed, and minimum bank.
C. Steepest bank, minimum airspeed, maximum altitude, and level pitch attitude.

8.7.0.4.7.a.1 H60
What would cause the 45° point to be reached before the maximum pitchup attitude during a lazy eight?
A. Beginning with too slow a rate of roll.
B. Beginning with too rapid a rate of roll.
C. Allowing the airspeed to remain too high causing the rate of turn to increase.

8.7.0.4.8.a.1 H60
Which is the most probable result if a pilot initiates the climbing turn portions of the lazy eight with banks that are too steep?
A. Completing each 180° change of direction with a net gain of altitude.
B. Attaining a pitch attitude that is too steep and stalling at the top of the climbing turn.
C. Turning at a rate too fast for the rate of climb and therefore, completing each 180° change of direction with excessive airspeed.

8.7.0.4.9.a.1 H60
At what point in a lazy eight is it most likely necessary to exert opposing aileron and rudder pressures in order to maintain coordinated flight?
A. At the point of slowest speed.
B. At the point of fastest speed.
C. At the point of lowest pitch attitude.

8.7.0.5.0.a.1 H60
(Refer to figure 52.) During practice of lazy eights, the most probable cause of the uncoordinated situation at the completion of 90° of turn (indicated by the turn-and-slip indicator shown in "1") is the
A. application of cross-control pressure.
B. use of too much right rudder control pressure.
C. failure to constantly adjust control pressures for torque and airspeed.

8.7.0.5.1.a.1 H66
Which would likely result in a slipping turn?
A. Not holding bottom rudder in a turn.
B. Increasing the rate of turn without using rudder.
C. Increasing the rate of turn without increasing bank.

8.7.0.5.2.a.1 H66
Choose the true statement pertaining to a slip or skid in an airplane.
A. A skid occurs when the rate of turn is too slow for the amount of bank being used.
B. In a left climbing turn, if insufficient right rudder is applied to compensate for the increased torque effect, a slip will result.
C. In a right descending turn, if excessive left rudder is applied to compensate for the decreased torque effect, a slip will result.

8.7.0.5.3.a.1 H71
During the full-flare portion of a power-off landing, the rotor RPM tends to
A. increase initially.
B. decrease initially.
C. decrease during high density altitude days, and increase during low density altitude days.

8.7.0.5.4.a.1 H73
During a climbing turn, the engine RPM is at the desired setting, but the manifold pressure is higher than desired. To maintain the desired engine RPM and correct the manifold pressure, what initial control action should be taken?
A. Decrease the collective pitch only.
B. Decrease the collective pitch and decrease the throttle.
C. Decrease the collective pitch and increase the throttle.

8.7.0.5.5.a.1 H73
The collective pitch control should be used to
1. correct for loss of lift during level turns at altitude.
2. maintain desired engine power.
3. correct a high rotor RPM during autorotations from altitude.

The correct statement(s) is(are)
A. 2.
B. 1 and 2.
C. 1, 2, and 3.

8.7.0.5.6.a.1 H73
The antitorque pedals should be used to
1. maintain heading during cruise flight.
2. correct for loss of torque during autorotations.
3. maintain heading during crosswind takeoffs and approaches.

The correct statements are
A. 2 and 3.
B. 1 and 3.
C. 1, 2, and 3.

8.7.0.5.7.a.1 H78
What are the major indications of an incipient retreating blade stall situation, in order of occurrence?
A. Low-frequency vibration, pitchup of the nose, and a tendency for the aircraft to roll.
B. High-frequency vibration, pitchdown of the nose, and a tendency for the aircraft to roll.
C. Slow pitchup of the nose, high-frequency vibration, and a tendency for the aircraft to roll.

8.7.0.5.8.a.1 H78
When operating at high forward airspeed, retreating blade stall is more likely to occur under conditions of
A. high gross weight, high RPM, and smooth air.
B. high gross weight, low RPM, and turbulent air.
C. low gross weight, high RPM, and high density altitude.

8.7.0.5.9.a.1 H78
Which is true concerning retreating blade stall?
A. Aircraft will pitch up and roll to the right at the onset of the stall.
B. Nose of the aircraft will pitch down and may roll in either direction at the onset of the stall.
C. When operating at high forward airspeeds, turbulent air or steep and abrupt turns can cause a retreating blade stall.

8.7.0.6.0.a.1 H78
At the onset of retreating blade stall vibration, the pilot should
A. restrict use of all controls until vibration dissipates.
B. lower collective pitch, increase rotor RPM, reduce forward airspeed, and minimize maneuvering.
C. lower collective pitch, decrease rotor RPM, increase forward airspeed, and minimize maneuvering.

8.7.0.6.1.a.1 H78
Ground resonance is most likely to occur when
A. there is a sudden change in velocity of the plane of rotation.
B. a series of shocks cause the rotor system to become out of balance.
C. initial ground contact is made with a combination of high gross weight and low RPM.

8.7.0.6.2.a.1 H78
What action should be taken if ground resonance is encountered during a landing attempt?
A. Attempt to make a takeoff regardless of RPM situation.
B. Close throttle immediately and raise collective pitch to dampen vibrations.
C. Make an immediate takeoff if RPM is in proper range; otherwise, close throttle, and lower collective pitch.

8.7.0.6.3.a.1 H78
The addition of power in a settling-with-power situation produces an
A. increase of airspeed.
B. even greater rate of descent.
C. increase in cyclic control effectiveness.

8.7.0.6.4.a.1 H78
Recovery from settling with power should be initiated by
A. decreasing forward airspeed and/or partially raising the collective pitch.
B. increasing forward airspeed and/or partially lowering the collective pitch.
C. increasing forward airspeed and/or partially raising the collective pitch.

8.7.0.6.5.a.1 H78
Under which situation is a helicopter most likely to enter the condition known as settling with power?
A. While maintaining altitude with a forward airspeed of less than 10 MPH.
B. While maintaining forward cruise airspeed with a rate of descent in excess of 300 feet per minute.
C. While maintaining a forward airspeed of less than 10 MPH with a rate of descent in excess of 300 feet per minute.

8.7.0.6.6.a.1 H78
If complete power failure occurs while at cruising altitude, the collective pitch should be lowered, as necessary, to
A. uncouple the main rotor system from the engine.
B. engage the freewheeling unit so that proper rotor RPM can be maintained.
C. reduce the pitch on all main rotor blades so that proper rotor RPM can be maintained.

8.7.0.6.7.a.1 H79
Which situation would require the highest power setting to hover?
A. Headed downwind in moderate windspeeds.
B. Headed crosswind in moderate windspeeds.
C. Over tall grass in zero wind conditions.

8.7.0.6.8.a.1 H79
The antitorque system fails during cruising flight and a powered approach landing is commenced. If the helicopter yaws to the right just prior to touchdown, what could the pilot do to help swing the nose to the left?
A. Increase the throttle.
B. Decrease the throttle.
C. Increase collective pitch.

8.7.0.6.9.a.1 H79
What corrective action should be taken if the antitorque system should fail while at a hover?
A. Close the throttle and autorotate.
B. Apply left pedal as necessary to stop the torque-induced turn to the right.
C. Lower the collective pitch to reduce the load on the main rotor blades.

8.7.0.7.0.a.1 H80
To taxi on the surface in a safe and efficient manner, helicopter pilots should use the
A. cyclic pitch to control starting, taxi speed, and stopping.
B. collective pitch to control starting, taxi speed, and stopping.
C. cyclic pitch to maintain heading during crosswind conditions.

8.7.0.7.1.a.1 H80
To taxi on the surface in a safe efficient manner, one should use the cyclic pitch to
A. control taxi speed.
B. maintain heading during crosswind conditions.
C. correct for drift during crosswind conditions.

8.7.0.7.2.a.1 H80
If excessive right pedal is applied during an autorotative turn to the right, the nose of the helicopter will tend to
A. pitch up and the rotor RPM will tend to increase.
B. pitch down and the rotor RPM will tend to increase.
C. pitch down and the rotor RPM will tend to decrease.

8.7.0.7.3.a.1 H80
Using right pedal to assist a right turn during an autorotative descent will probably result in what actions?
A. Pitchup of the nose, increase in rotor RPM, decrease in sink rate, and decrease in indicated airspeed.
B. Pitchdown of the nose, increase in the rotor RPM, increase in sink rate, and decrease in indicated airspeed.
C. Pitchdown of the nose, decrease in the rotor RPM, increase in sink rate, and increase in indicated airspeed.

8.7.0.7.4.a.1 H80
Choose the most correct statement pertaining to slips and skids during helicopter flight.
A. A skid occurs when too much pedal is applied in the direction opposite the turn.
B. A skid occurs when the rate of turn is too slow for the amount of bank being used.
C. In a right descending turn, if insufficient right pedal is applied to compensate for the decreased torque effect, a slip will result.

8.7.0.7.5.a.1 H80
After attaining effective translational lift during a normal takeoff, additional forward cyclic is required as the airspeed increases. Why is this action required?
A. To counteract gyroscopic precession.
B. To counteract the increase in lift which would result in the nose rising.
C. To counteract the dissymmetry of lift which causes the helicopter to roll to the left.

8.7.0.7.6.a.1 H80
During a normal approach to a hover, the cyclic pitch control is used primarily to

A. maintain heading.
B. control rate of closure.
C. control angle of descent.

8.7.0.7.7.a.1 H80
Which statement best describes the function of the controls during a powered approach to hover?
A. Collective pitch primarily controls angle of descent; cyclic pitch primarily controls groundspeed.
B. Cyclic pitch primarily controls angle of descent and groundspeed; collective pitch primarily controls rate of descent.
C. Collective pitch primarily controls angle of descent; rotor RPM primarily controls rate of descent; cyclic pitch primarily controls groundspeed.

8.7.0.7.8.a.1 H80
When autorotating during high density altitude or strong gusty wind conditions, a slightly higher-than-normal airspeed is recommended because the
A. resulting slower rate of descent will allow more time for the pilot to estimate the touchdown point.
B. resulting glide angle will approximate that of a slightly reduced airspeed under conditions of light loads, low density altitude, or calm wind.
C. lower rotor speed will cause the rate of descent to approximate that of a slightly increased rotor speed under conditions of light loads, low density altitude, or calm wind.

8.7.0.7.9.a.1 H80
During a flare autorotative descent and landing, additional right pedal is required to maintain heading after initial collective pitch is applied. This action is necessary because of
A. gyroscopic precession.
B. the reduction in rotor RPM.
C. translating tendency of helicopters during autorotation.

8.7.0.8.0.a.1 H80
During a running takeoff in a crosswind, which describes proper control technique?
A. Pedals control both heading and direction of movement.
B. Heading is maintained with cyclic; direction of movement (groundpath or track) is maintained with pedals.
C. Heading is maintained with pedals; direction of movement (groundpath or track) is maintained with cyclic.

8.7.0.8.1.a.1 H80
When making a slope landing, the cyclic pitch control should be used to
A. lower the downslope skid to the ground.
B. hold the upslope skid against the slope.
C. place the rotor disc parallel to the slope.

8.7.0.8.2.a.1 H80
The steepness of the slope on which a helicopter with skid-type landing gear can land is most dependent on
A. its gross weight.
B. the position of the CG.
C. the amount of lateral cyclic travel available.

8.7.0.8.3.a.1 H80
As the upslope skid touches the ground during a slope landing, the
A. cyclic pitch control should remain stationary to keep the aircraft from moving.
B. collective pitch control should be used to lower the downslope skid to the ground.
C. collective pitch should remain stationary and the cyclic pitch control should be used to lower the downslope skid to the ground.

8.7.0.8.4.a.1 H80
Normal rotor RPM should be maintained during a running landing primarily to ensure

A. sufficient forward speed is available.
B. adequate directional control until the helicopter stops.
C. sufficient lift is available in case of an emergency.

8.7.0.8.5.a.1 H80
Which statement pertaining to rapid decelerations is most accurate?
A. The primary purpose of this maneuver is to lose effective translational lift.
B. The rotor RPM will normally tend to increase during the entry and tend to decrease during the completion of the maneuver.
C. The nose of the helicopter will normally tend to yaw to the right during the entry and tend to yaw to the left during the completion of the maneuver.

8.7.0.8.6.a.1 H80
If altitude is gained during a rapid deceleration, it is primarily because
A. the maneuver was initiated at too high an airspeed.
B. rotor RPM is allowed to increase too much as the collective pitch is lowered.
C. aft cyclic is increased too rapidly for the rate of decrease of the collective pitch.

8.7.0.8.7.a.1 H80
The proper action to initiate a rapid deceleration is to apply
A. forward cyclic while raising the collective and applying right pedal.
B. left cyclic while raising the collective and applying left pedal.
C. aft cyclic while lowering the collective and applying right pedal.

8.7.0.8.8.a.1 H80
Which is true about an autorotative descent?
A. Generally, only the cyclic control is used to make turns.
B. Collective pitch should be used to control rate of descent.
C. Rotor RPM will tend to decrease if a tight turn is made with a heavily loaded helicopter.

8.7.0.8.9.a.1 H80
When performing a touchdown autorotation, what action is most appropriate?
A. Anti-torque pedals should remain neutral after ground contact.
B. Skids should be in a longitudinally level attitude at touchdown.
C. Aft cyclic application after touchdown is desirable to decrease ground run.

8.7.0.9.0.a.1 H81
When conducting a confined area operation, the primary purpose of the high reconnaissance is to determine
A. suitability of the area for landing.
B. height of obstructions surrounding the area.
C. if the area will be large enough to permit a safe takeoff after landing.

8.7.0.9.1.a.1 H81
During a pinnacle approach to a rooftop heliport under conditions of turbulence and high wind, the pilot should make a
A. shallow approach, maintaining a constant line of descent with cyclic applications.
B. normal approach, maintaining a slower-than-normal rate of descent with cyclic applications.
C. steeper-than-normal approach, maintaining the desired angle of descent with collective applications.

8.7.0.9.2.b.1 H95
Which is true concerning taxi procedures in a gyroplane?
A. Keeping the rotor system level creates less lift and more stability.
B. Cyclic stick should be positioned slightly aft of neutral when taxiing.
C. Rotor blades should not be turning when taxiing over a rough surface.

8.7.0.9.3.a.1 H97.2
Which statement is true concerning a gyroplane?
A. Rotor RPM will remain constant during changes in airspeed while descending.
B. A gyroplane is capable of getting into a settling-with-power situation much the same way as a helicopter.
C. A gyroplane can safely descend vertically or move backward with respect to ground references during a descent if altitude permits.

8.7.0.9.3.a.2 H96.9
Which is true concerning operation of a gyroplane?
A. Like a helicopter, vertical descents to a safe landing are possible.
B. Altitude permitting, flying behind the power curve is not a problem.
C. Rotor RPM remains constant during changes in airspeed while descending.

8.7.0.9.4.b.1 H95
When landing a gyroplane in crosswind conditions, proper technique requires that the
A. longitudinal axis be parallel to the runway.
B. direction of motion and heading coincide with runway direction.
C. lateral axis of the gyroplane be parallel to the gyroplane's direction of motion.

8.7.0.9.5.b.1 H97.11
In which takeoff situation would a gyroplane with jump takeoff capability have an advantage?
A. Soft field.
B. Short field.
C. High elevation.

8.7.0.9.6.a.1 H97.11
In order to maintain level flight (laterally) as airspeed increases on climbout after takeoff in a gyroplane, the pilot will have to increase
A. rudder pressure to the left.
B. cyclic pressure to the right.
C. rudder and cyclic pressure to the left.

8.7.0.9.7.b.1 H97.11
Rotor torque is a concern in gyroplanes only during
A. prerotation or clutch engagement.
B. maneuvers requiring high rotor RPM.
C. maximum performance climbs and go-arounds requiring higher engine RPM.

8.7.0.9.7.a.2 H95
What should be the first step in correcting pilot induced oscillation in a gyroplane?
A. Reduce power.
B. Establish a climb.
C. Apply positive forward cyclic.

8.7.0.9.7.a.3 H95
Which pilot action will help reduce pilot induced oscillation in a gyroplane?
A. Avoid flight at high speeds.
B. Increase power if nose pitches down.
C. Prior to a climb, increase pitch attitude before increasing power.

8.7.0.9.7.a.4 H96.10
What should be the first action taken if a gyroplane begins to oscillate in flight?
A. Reduce power.

B. Unload rotor system.
C. Apply aft cyclic pressure to increase pitch and reduce airspeed.

8.7.0.9.7.a.5 H96.10
Which will help prevent pilot induced oscillation in a gyroplane?
A. Adding a horizontal point of reference.
B. Decreasing loading on the rotor blades.
C. Raising the center of thrust above the center of fuselage drag.

8.7.0.9.8.a.1 I05
Which instrument provides the most pertinent information (primary) for pitch control in straight-and-level flight?
A. Altimeter.
B. Attitude indicator.
C. Airspeed indicator.

8.7.0.9.9.a.1 I05
What instrument(s) is (are) supporting bank instrument(s) when entering a constant airspeed climb from straight-and-level flight?
A. Heading indicator.
B. Turn coordinator and heading indicator.
C. Attitude indicator and turn coordinator.

8.7.1.0.0.a.1 I05
Which instruments are considered primary and supporting for bank, respectively, when establishing a level standard rate turn?
A. Turn coordinator and heading indicator.
B. Attitude indicator and turn coordinator.
C. Turn coordinator and attitude indicator.

8.7.1.0.1.a.1 I05
If an airplane is in an unusual flight attitude and the attitude indicator has exceeded its limits, which instruments should be relied upon to determine pitch attitude before recovery?
A. Airspeed indicator and altimeter.
B. Turn indicator and vertical speed indicator.
C. Vertical speed indicator and airspeed indicator.

8.7.1.0.2.a.1 I05
Which is the correct sequence for recovery from a spiraling, nose-low, increasing airspeed, unusual flight attitude?
A. Increase pitch attitude, reduce power, and level wings.
B. Reduce power, correct bank attitude, and raise nose to a level attitude.
C. Reduce power, raise nose to a level attitude, and correct bank attitude.

8.7.1.0.3.a.1 J03
The visual glidepath of a 2-bar VASI provides safe obstruction clearance within plus or minus 10° of the extended runway centerline and to a distance of how many miles from the runway threshold?
A. 4 NM.
B. 6 NM.
C. 10 NM.

8.7.1.0.4.a.1 J03
Which indications would a pilot see while approaching to land on a runway served by a 2-bar VASI?
A. If below the glidepath, the near bars will be red and the far bars white.
B. If on the glidepath, the near bars will appear red and the far bars will appear white.
C. If departing to the high side of the glidepath, the far bars will change from red to pink to white.

8.7.1.0.5.a.1 J03
When on the upper glidepath of a 3-bar VASI what would be the colors of the lights?
A. All three sets of lights would be white.
B. The near bar is white and the middle and far bars are red.
C. The near and middle bars are white and the upper bar is red.

8.7.1.0.6.a.1 J03
An on-glidepath indication from a tri-color VASI is
A. a green light signal.
B. a white light signal.
C. an amber light signal.

8.7.1.0.7.a.1 J03
An above-glidepath indication from a tri-color VASI is
A. a pink light signal.
B. a white light signal.
C. an amber light signal.

8.7.1.0.8.a.1 J03
A slightly low indication on a PAPI glidepath is indicated by
A. four red lights.
B. one red light and three white lights.
C. one white light and three red lights.

8.7.1.0.9.a.1 J03
A series of continuous red lights in the runway centerline lighting indicates that
A. 3,000 feet of runway remain.
B. 1,000 feet of runway remain.
C. one-half of the runway remains.

8.7.1.1.0.a.1 J03
An airport has pilot controlled lighting but runways without approach lights. How many times should you key your microphone to turn on the MIRL at medium intensity?
A. 5 clicks.
B. 3 clicks.
C. None, the MIRL is left on all night.

8.7.1.1.1.a.1 J03
A military airfield can be identified by
A. a white and red rotating beacon.
B. white flashing sequence lights (strobes).
C. a green and dual-peaked white rotating beacon.

8.7.1.1.2.a.1 N/A

8.7.1.1.3.a.1 J05
The numbers 8 and 26 on the approach ends of the runway indicate that the runway is orientated approximately
A. 008° and 026° true.
B. 080° and 260° true.
C. 080° and 260° magnetic.

8.7.1.1.4.a.1 J05
What does a series of arrows painted on the approach end of a runway signify?
A. That area is restricted solely to taxi operations.
B. That portion of the runway is not suitable for landing.
C. That portion of the runway is the designated touchdown zone.

8.7.1.1.5.a.1 J05
When approaching taxiway holding lines from the side with the continuous lines, the pilot
A. may continue taxiing.
B. should not cross the lines without ATC clearance.
C. should continue taxiing until all parts of the aircraft have crossed the lines.

8.7.1.1.6.a.1 J05
(Refer to figure 53.) If you were making an approach to a helicopter landing area that was marked for public use, which diagram would you most likely see?
A. 1.
B. 2.
C. 3.

8.7.1.1.7.a.1 J11
The UNICOM frequency at airports with a control tower is
A. 123.0.
B. 122.95.
C. 122.8.

8.7.1.1.8.a.1 J11
As standard operating practice, all inbound traffic to an airport without a control tower should continuously monitor the appropriate facility from a distance of
A. 25 miles.
B. 20 miles.
C. 10 miles.

8.7.1.1.9.a.1 J11
When landing at an airport that does not have a tower, FSS, or UNICOM, you should broadcast your intentions on
A. 122.9 MHz.
B. 123.0 MHz.
C. 123.6 MHz.

8.7.1.2.0.a.1 J11
Absence of the sky condition and visibility on an ATIS broadcast indicates that
A. weather conditions are at or above VFR minimums.
B. the sky condition is clear and visibility is unrestricted.
C. the ceiling is at least 5,000 feet and visibility is 5 miles or more.

8.7.1.2.1.a.1 J11
When are ATIS broadcasts updated?
A. Only when the ceiling and/or visibility changes by a reportable value.
B. Every 30 minutes if weather conditions are below basic VFR; otherwise, hourly.
C. Upon receipt of any official weather, regardless of content change or reported values.

8.7.1.2.2.a.1 J11
When an air traffic controller issues radar traffic information in relation to the 12-hour clock, the reference the controller uses is the aircraft's
A. true course.

B. ground track.
C. magnetic heading.

8.7.1.2.3.a.1 J11
Which transponder code should the pilot of a civilian aircraft never use?
A. 7500.
B. 7600.
C. 7777.

8.7.1.2.4.a.1 J12
If the aircraft's radio fails, what is the recommended procedure when landing at a controlled airport?
A. Select 7700 on your transponder, fly a normal traffic pattern, and land.
B. Flash your landing lights and make shallow banks in opposite directions while circling the airport.
C. Observe the traffic flow, enter the pattern, and look for a light signal from the tower.

8.7.1.2.5.a.1 J13
The recommended entry position to an airport traffic pattern is
A. 45° to the base leg just below traffic pattern altitude.
B. to enter 45° at the midpoint of the downwind leg at traffic pattern altitude.
C. to cross directly over the airport at traffic pattern altitude and join the downwind leg.

8.7.1.2.6.a.1 J13
(Refer to figure 54.) The segmented circle indicates that the airport traffic pattern is
A. left-hand for Rwy 17 and right-hand for Rwy 35.
B. right-hand for Rwy 35 and right-hand for Rwy 9.
C. left-hand for Rwy 35 and right-hand for Rwy 17.

8.7.1.2.7.a.1 J13
(Refer to figure 54.) Which runway and traffic pattern should be used as indicated by the wind cone in the segmented circle?
A. Right-hand traffic on Rwy 17.
B. Left-hand traffic on Rwy 27 or Rwy 35.
C. Left-hand traffic on Rwy 35 or right-hand traffic on Rwy 27.

8.7.1.2.8.a.1 J13
Pilots are encouraged to turn on their landing lights when operating below 10,000 feet, day or night, and when operating within
A. Class B airspace.
B. 10 miles of any airport.
C. 5 miles of a controlled airport.

8.7.1.2.9.a.1 J15
When information is disseminated for a navigational facility, it will be located in
A. FDC NOTAM's.
B. NOTAM (L) distribution.
C. NOTAM (D) distribution.

8.7.1.3.0.a.1 J15
When information is disseminated about a taxiway closure, it will be located in
A. FDC NOTAM's.
B. NOTAM (L) distribution.
C. NOTAM (D) distribution.

8.7.1.3.1.a.1 J15
How long will a Flight Service Station hold a VFR flight plan past the proposed departure time?
A. 30 minutes.
B. 1 hour.
C. 2 hours.

8.7.1.3.2.a.1 J15
If an aircraft has a transponder, encoding altimeter, and DME, the proper equipment suffix to be entered on a flight plan is
A. A.
B. R.
C. U.

8.7.1.3.3.a.1 J15
If an aircraft has a transponder, encoding altimeter, and RNAV, the proper equipment suffix to be entered on a flight plan is
A. A.
B. R.
C. W.

8.7.1.3.4.a.1 J15
How much time do you have to close a VFR flight plan before search and rescue procedures are initiated?
A. One hour after your ATA.
B. One-half hour after landing.
C. One-half hour after your ETA.

8.7.1.3.5.a.1 J27
How does the wake turbulence vortex circulate around each wingtip?
A. Inward, upward, and around each tip.
B. Inward, upward, and counterclockwise.
C. Outward, upward, and around each tip.

8.7.1.3.6.a.1 J27
What effect would a crosswind of 5 knots or less have on the wingtip vortices generated by a large aircraft that had just taken off?
A. A light crosswind would rapidly dissipate the strength of both vortices.
B. The upwind vortex would tend to remain on the runway longer than the downwind vortex.
C. Both vortices would move downwind at a greater rate than if the surface wind was directly down the landing runway.

8.7.1.3.7.a.1 J27
During a takeoff made behind a departing large jet airplane, the pilot can minimize the hazard of wingtip vortices by
A. remaining below the jet's flightpath until able to turn clear of its wake.
B. extending the takeoff roll and not rotating until well beyond the jet's rotation point.
C. being airborne prior to reaching the jet's flightpath until able to turn clear of its wake.

8.7.1.3.8.a.1 J27
When landing behind a large jet aircraft, at which point on the runway should you plan to land?
A. Beyond the jet's touchdown point.
B. At least 1,000 feet beyond the jet's touchdown point.
C. If any crosswind, land on the windward side of the runway and prior to the jet's touchdown point.

8.7.1.3.9.a.1 J27
Which statement is true regarding wingtip vortices?
A. Helicopter rotors generate downwash turbulence only, not vortices.
B. Vortices generated by helicopters in forward flight are similar to those generated by fixed wing aircraft.

C. Vortices tend to remain level for a period of time before sinking below the generating aircraft's flightpath.

8.7.1.4.0.a.1 J27
Due to the effects of wake turbulence, what minimum separation does ATC provide for a small aircraft landing behind a heavy jet?
A. 4 miles.
B. 5 miles.
C. 6 miles.

8.7.1.4.1.a.1 J29
What can a pilot expect when landing at an airport located in the mountains?
A. Higher true airspeed and longer landing distance.
B. Higher indicated airspeed and shorter landing distance.
C. Faster groundspeed and increased aircraft performance.

8.7.1.4.2.a.1 J31
Which statement is true regarding alcohol in the human system?
A. Alcohol renders a pilot more susceptible to hypoxia.
B. Small amounts of alcohol will not impair flying skills.
C. Coffee helps metabolize alcohol and alleviates a hangover.

8.7.1.4.3.a.1 J31
If an individual has gone scuba diving which has not required a controlled ascent and will be flying to cabin pressure altitudes of 8,000 feet or less, the recommended waiting time is at least
A. 4 hours.
B. 12 hours.
C. 24 hours.

8.7.1.4.4.a.1 J31
If an individual has gone scuba diving which has required a controlled ascent and will be flying to cabin pressure altitudes of 8,000 feet or less, the recommended waiting time is at least
A. 8 hours.
B. 12 hours.
C. 24 hours.

8.7.1.4.5.a.1 J31
A rapid acceleration can create the illusion of being in a
A. left turn.
B. noseup attitude.
C. nosedown attitude.

8.7.1.4.6.a.1 J31
An illusion, that the aircraft is at a higher altitude than it actually is, is produced by
A. atmospheric haze.
B. upsloping terrain.
C. downsloping terrain.

8.7.1.4.7.a.1 J31
Which procedure is recommended to prevent or overcome spatial disorientation?
A. Avoid steep turns and rough control movements.
B. Rely entirely on the indications of the flight instruments.
C. Reduce head and eye movements to the greatest extent possible.

8.7.1.4.8.a.1 J31
What effect does haze have on the ability to see traffic or terrain features during flight?
A. Haze causes the eyes to focus at infinity.
B. The eyes tend to overwork in haze and do not detect relative movement easily.
C. All traffic or terrain features appear to be farther away than their actual distance.

8.7.1.4.9.a.1 J31
Which technique should a student be taught to scan for traffic to the right and left during straight-and-level flight?
A. Continuous sweeping of the windshield from right to left.
B. Concentrate on relative movement detected in the peripheral vision area.
C. Systematically focus on different segments of the sky for short intervals.

8.7.1.5.0.a.1 J31
Dark adaptation is impaired by exposure to
A. carbon dioxide.
B. vitamin A in the diet.
C. cabin pressure altitudes above 5,000 feet.

8.7.1.5.1.a.1 J34
Information concerning parachute jumping sites may be found in the
A. NOTAM's.
B. Airport/Facility Directory.
C. Graphic Notices and Supplemental Data.

8.7.1.5.2.a.1 J34
(Refer to figure 55.) What is the elevation of the DFW VORTAC?
A. 287 feet MSL.
B. 560 feet MSL.
C. 660 feet MSL.

8.7.1.5.3.a.1 J34
(Refer to figure 55.) On what frequency can a pilot activate the approach lights at Redbird Field when the control tower is not in operation?
A. 120.15.
B. 120.3.
C. 122.95.

8.7.1.5.4.a.1 J34
(Refer to figure 55.) Select the correct statement concerning Dallas Love Field.
A. Right traffic is in effect for all runways.
B. The runway gradient for Rwy 18 is less than .3 percent.
C. The touchdown zone elevation for Rwy 13R is 53 feet.

8.7.1.5.5.a.1 J34
(Refer to figure 55.) At what time of day does the tower shut down at Redbird Field?
A. 1000Z.
B. 0400 local.
C. 2200 local.

8.7.1.5.6.a.1 J52
During a climb to 18,000 feet, the percentage of oxygen in the atmosphere
A. increases.
B. decreases.
C. remains the same.

8.7.1.5.7.a.1 J52
Which statement concerning hypoxia is true?
A. Hypoxia is caused by nitrogen bubbles in the joints and bloodstream.
B. Tingling of the skin and a false sense of security may be symptoms of hypoxia.
C. Forcing oneself to concentrate on the flight instruments will help to overcome the effects of hypoxia.

8.7.1.5.8.a.1 J52
Hypoxia is the result of
A. shortage of oxygen in the body.
B. insufficient oxygen in the air.
C. excessive nitrogen in the bloodstream.

8.7.1.5.9.a.1 J52
Which occurs when climbing above 18,000 feet in an unpressurized airplane without supplemental oxygen?
A. Gases trapped in the body contract and prevent nitrogen from escaping the bloodstream.
B. The pressure in the middle ear becomes less than the atmospheric pressure in the cabin.
C. The oxygen pressure within the lungs cannot be maintained without an increase in inhaled oxygen pressure.

8.7.1.6.0.a.1 J53
Hyperventilation results from
A. a lack of carbon dioxide in the body.
B. flying too high without supplemental oxygen.
C. breathing too rapidly causing a lack of oxygen.

8.7.1.6.1.a.1 J53
Rapid or extra deep breathing while using oxygen can cause a condition known as
A. hypoxia.
B. aerotitis.
C. hyperventilation.

8.7.1.6.2.a.1 J53
A pilot should be able to overcome the symptoms or avoid future occurrences of hyperventilation by
A. slowing the breathing rate, breathing into a bag, or talking aloud.
B. increasing the breathing rate in order to increase lung ventilation.
C. refraining from the use of over-the-counter remedies and drugs such as antihistamines, cold tablets, tranquilizers, etc.

8.7.1.6.3.a.1 J58
What is one effect smoking has on a pilot?
A. Decreases night vision by 50 percent.
B. Increases body heat which, in turn, creates a demand for more oxygen.
C. Creates additional carbon dioxide gases in the body which often leads to hyperventilation.

8.7.1.6.4.a.1 J60
One aid in increasing night vision effectiveness would be to
A. look directly at objects.
B. force the eyes to view off center.
C. increase intensity of interior lighting.

8.7.1.6.5.a.1 J63
What suggestion could you make to students who are experiencing motion sickness?
A. Recommend taking medication to prevent motion sickness.
B. Have the students lower their head, shut their eyes, and take deep breaths.

C. Tell the students to avoid unnecessary head movement and to keep their eyes on a point outside the aircraft.

8.7.1.6.6.a.1 J63
Motion sickness is caused by
A. continued stimulation of the tiny portion of the inner ear which controls sense of balance.
B. an instability in the brain cells which affects balance and will generally be overcome with experience.
C. the movement of an aircraft causing the stomach to create an acid substance which causes the stomach lining to contract.

8.7.1.6.7.a.1 L05
What are the four fundamental risk elements in the aeronautical decision making (ADM) process that comprise any given aviation situation?
A. Pilot, aircraft, environment, and mission.
B. Skill, stress, situational awareness, and aircraft.
C. Situational awareness, risk management, judgment, and skill.

8.7.1.6.8.a.1 L10
During training flights, an instructor should interject realistic distractions to determine if a student can
A. learn despite stressful conditions.
B. maintain aircraft control while his/her attention is diverted.
C. perform maneuvers using the integrated method of flight instruction.

8.7.1.6.9.a.1 L15
Although not required, supplemental oxygen is recommended for use when flying at night above
A. 5,000 feet.
B. 10,000 feet.
C. 12,500 feet.

8.7.1.7.0.a.1 L15
The advantage of experiencing hypoxia in an altitude chamber is
A. it helps pilots learn to recognize their own symptoms in a controlled environment.
B. a person will be able to observe many hypoxic symptoms in several people at the same time.
C. when a person becomes hypoxic, air can quickly be readmitted to the chamber to revive that person.

8.7.1.7.1.a.1 L15
Anemic hypoxia has the same symptoms as hypoxic hypoxia but it is most often a result of
A. poor blood circulation.
B. a leaking exhaust manifold.
C. use of alcohol or drugs before flight.

8.7.1.7.2.a.1 L34
What is an effective way to prevent a collision hazard in the traffic pattern?
A. Enter the pattern in a descent.
B. Maintain the proper traffic pattern altitude and continually scan the area.
C. Rely on radio reports from other aircraft who may be operating in the traffic pattern.

8.7.1.7.3.a.1 L34
Most midair collision accidents occur during
A. hazy days.
B. clear days.
C. cloudy nights.

8.7.1.7.4.a.1 L34

The most effective technique to use for detecting other aircraft at night is to
A. turn the head and sweep the eyes rapidly over the entire visible region.
B. avoid staring directly at the point where another aircraft is suspected to be flying.
C. avoid scanning the region below the horizon so as to avoid the effect of ground lights on the eyes.

8.7.1.7.5.a.1 N04
What consideration should be given in the choice of a towplane for use in aerotows?
A. Stall speed of the towplane.
B. Gross weight of the glider to be towed.
C. Towplane's low-wing loading and low-power loading.

8.7.1.7.6.a.1 N21
The reason for retaining water ballast while thermals are strong and dumping the water when thermals weaken is to
A. decrease forward speed.
B. increase forward speed.
C. decrease the rate of descent.

8.7.1.7.7.a.1 N21
When flying into a strong headwind on a long glide back to the airport, the recommended speed to use is the
A. best glide speed.
B. minimum sink speed.
C. best lift/drag speed plus half the estimated windspeed at the glider's flight altitude.

8.7.1.7.8.a.1 N30
How can excessive towline slack that is allowed to develop during a glider tow be eliminated?
A. Increase pitch attitude until towline becomes taut.
B. Execute a shallow banked coordinated turn to either side.
C. Yaw the nose to one side with rudder while keeping the wings level with ailerons.

8.7.1.7.9.a.1 N30
What could result if a glider pilot releases while in the low-tow position during an aerotow?
A. Nose of the glider would tend to pitch up after release.
B. Tow ring may strike and damage the glider after release.
C. Glider may be forced into the towplane's wake turbulence.

8.7.1.8.0.a.1 N30
After signalling the tow pilot that the glider pilot cannot release, the tow pilot fishtails the airplane. The glider pilot should then plan fly the final approach in
A. low-tow position and land before the towplane; but use no spoilers or brakes during the landing roll until after the towplane touches down.
B. high-tow position and extend the spoilers just prior to the towplane's touchdown.
C. the towplane's wake and extend the spoilers as needed for a normal landing.

8.7.1.8.1.a.1 N31
During an autolaunch, the pitch angle of the glider should not exceed
A. 10° at 50 feet, 20° at 100 feet, and 45° at 200 feet.
B. 15° at 50 feet, 20° at 100 feet, and 40° at 200 feet.
C. 15° at 50 feet, 30° at 100 feet, and 45° at 200 feet.

8.7.1.8.2.a.1 N31
At what point during an autotow should the glider pilot establish the maximum pitch attitude for the climb?
A. 200 feet above the ground.
B. 100 feet above the ground.
C. Between 300 and 400 feet above the ground.

8.7.1.8.3.a.1 N31
When preparing for an autotow with a strong crosswind, where should the glider and towrope be positioned?
A. Obliquely to the line of takeoff on the upwind side of the tow vehicle.
B. Obliquely to the line of takeoff on the downwind side of the tow vehicle.
C. Directly behind the tow vehicle and crabbed into the wind with the wing runner holding the upwind wingtip.

8.7.1.8.4.a.1 N31
During a ground launch, how is the airspeed of a glider increased?
A. Raise the nose.
B. Lower the nose.
C. Increase speed of vehicle or winch.

8.7.1.8.5.a.1 N31
During a winch launch, which factor would most likely result in pitch oscillations?
A. Winching speed too fast.
B. Winching speed too slow.
C. Insufficient up-elevator control.

8.7.1.8.6.a.1 N32
Unless adequate speed control is maintained during the turn to base and the final approach for a landing into the wind, which would most likely occur if a steep wind gradient existed?
A. The desired landing spot would be undershot or the glider would stall.
B. The airspeed on final approach would increase, causing the glider to overshoot the desired landing spot.
C. The wingtip on the outside of the turn would stall before the wingtip on the inside of the turn.

8.7.1.8.7.a.1 N32
A rule of thumb for flying a final approach is to maintain a speed that is
A. 50 percent above the glider's stall speed, regardless of windspeed.
B. twice the glider's stall speed plus half the estimated windspeed.
C. 50 percent above the glider's stall speed plus half the estimated windspeed.

8.7.1.8.8.a.1 N32
If swirling dust, leaves, or debris indicate a strong thermal on the final approach to a landing, it is recommended that the glider pilot
A. open the spoilers and reduce the airspeed.
B. close the spoilers and increase the airspeed.
C. open the spoilers and maintain a constant airspeed.

8.7.1.8.9.a.1 N33
With regard to two or more gliders flying in the same thermal, which statement is true?
A. All turns should be to the right.
B. Turns should be in the same direction as the highest glider.
C. Turns should be made in the same direction as the first glider to enter the thermal.

8.7.1.9.0.a.1 N33
Which is true relating to the direction in which turns should be made during slope soaring?
A. All reversing turns should be made to the left.
B. All turns should be made downwind toward the slope.
C. All reversing turns should be made into the wind away from the slope.

8.7.1.9.1.a.1 N34
While maintaining the best glide speed, a glider pilot may expect the

A. fastest cross country speed.
B. longest cross country flight.
C. loss of the least amount of altitude.

8.7.1.9.2.a.1 N34
What is the proper speed to fly when passing through lift with no intention to work the lift?
A. Best glide speed.
B. Minimum sink speed.
C. Best lift/drag speed.

8.7.1.9.3.a.1 N34
When making an off-field landing, it is recommended that the landing be accomplished
A. in pastures which are seldom cultivated.
B. uphill, if possible, regardless of the wind direction.
C. in cultivated fields where the crops have not yet been harvested.

8.7.1.9.4.a.1 N34
Which would most likely ensure a safe off-field landing?
A. Landing into the wind, regardless of the type or slope of the terrain.
B. Landing in a pasture or uncultivated field rather than one in cultivation and whose crops have been harvested.
C. Maintaining an approach airspeed of at least 50 percent above the glider's stall speed plus half the estimated windspeed.

8.7.1.9.5.a.1 O01
What should a pilot do if a small hole is seen in the fabric of a balloon during inflation?
A. Continue the inflation and make a mental note of the location of the hole for later repair.
B. Instruct a ground crew member to inspect the hole and, if under 5 inches in length, continue the inflation.
C. Consult the flight manual to determine if the hole is within acceptable damage limits established for the balloon being flown.

8.7.1.9.6.a.1 O02
Prior to balloon flight on a cold, winter day, it may be necessary to preheat propane tanks because
A. ice may have formed in the lines to the burners.
B. the temperature of liquid propane controls burner pressure during combustion.
C. propane needs to be at a temperature which will allow it to go from a liquid to a gaseous state.

8.7.1.9.7.a.1 I05
The recommended size for a balloon launch site should be
A. 500 feet on the downwind side.
B. twice the height of the balloon.
C. 100 feet for every 1 knot of wind.

8.7.1.9.8.a.1 O05
It may be possible to make changes in the direction of flight of a hot air balloon by
A. using the maneuvering vent.
B. operating at different flight altitudes.
C. flying a constant atmospheric pressure gradient.

8.7.1.9.9.a.1 O05
What action is most appropriate when an envelope over-temperature condition occurs?
A. Land as soon as practicable.
B. Descend and allow envelope to cool before landing.
C. Throw all unnecessary equipment overboard in order to lighten the load.

8.7.2.0.0.a.1 O30
For a hot air balloon, the weigh-off procedure is helpful because the
A. pilot can adjust the altimeter to the correct setting.
B. ground crew can assure that downwind obstacles are clear.
C. pilot will learn what the equilibrium conditions are prior to being committed to fly.

8.7.2.0.1.a.1 O30
What is the relationship of false lift to the wind? False lift
A. exists only if the surface winds are calm.
B. increases if the vertical velocity of a balloon increases.
C. decreases as the wind accelerates a balloon to the same speed as the wind.

8.7.2.0.2.a.1 O30
Why is false lift dangerous?
A. Pilots are not aware of its effect until the burner sound changes.
B. To commence a descent, the venting of air will nearly collapse the envelope.
C. When the balloon's horizontal speed reaches wind speed, the balloon could descend into obstructions downwind.

8.7.2.0.3.a.1 O30
The practice of allowing the ground crew to lift a balloon into the air is
A. a safe way to reduce stress on the envelope.
B. unsafe because it can lead to a sudden landing at an inopportune site just after lift-off.
C. considered to be good practice, particularly when obstacles must be cleared shortly after lift-off.

8.7.2.0.4.a.1 O46
How should a roundout from a moderate-rate ascent to level flight be made?
A. Vent at altitude and add heat upon settling back down to altitude.
B. Reduce the amount of heat gradually as the balloon approaches altitude.
C. Cool the envelope by venting and add heat just before arriving at the desired altitude.

8.7.2.0.5.a.1 O46
All fuel tanks should be fired during preflight to determine
A. if there are any leaks in the tanks.
B. burner pressure and condition of the valves.
C. if the pilot light functions properly on each tank.

8.7.2.0.6.a.1 O46
In a balloon, best fuel economy in level flight can be accomplished by
A. evenly-spaced, short blasts of heat.
B. long blasts of heat, spaced as necessary.
C. noting the pyrometer and remaining at a constant temperature.

8.7.2.0.7.a.1 O46
If powerlines become a factor during a balloon flight, a pilot should know that
A. it is safer to contact the lines than chance ripping.
B. contact with powerlines creates no great hazard for a balloon.
C. it is better to chance ripping at 25 feet above the ground than contacting powerlines.

8.7.2.0.8.a.1 O46
What is a potential hazard in a balloon during a climb that exceeds maximum rate?
A. Envelope may collapse.
B. Deflation port may be forced open.

C. Rapid flow of air may extinguish the burner and pilot light.

8.7.2.0.9.a.1 O46
What is the recommended ascent rate upon initial launch of a balloon?
A. Maximum ascent to altitude to avoid low-level thermals.
B. Shallow ascent to take maximum advantage of lighter winds.
C. A moderate rate of ascent to determine wind directions at different altitudes.

8.7.2.1.0.a.1 O46
What is one procedure for relighting the burner while in flight?
A. Open the blast valve full open and light the pilot light.
B. Open another tank valve, open the blast valve, and light the main jet using reduced flow.
C. Close the tank valves, vent the fuel lines, reopen the tank valves, and light the pilot light.

8.7.2.1.1.a.1 O46
If you are in a balloon over a heavily wooded area with no open fields in the vicinity and have only 10 minutes of fuel remaining, you should
A. stay low and keep flying in hopes you will find an open field.
B. climb as high as possible to see where the nearest landing field is.
C. land in the trees while you have sufficient fuel for a controlled landing.

8.7.2.1.2.a.1 O46
Prior to a high-wind landing in a balloon, occupants should be briefed to
A. kneel on the floor, face aft, and hang on to the basket.
B. crouch in back of basket, face direction of landing, hold on in two places, and stay in basket.
C. crouch on the floor in the center of the basket and jump out as soon as initial ground contact is made.

8.7.2.1.3.a.1 O46
The windspeed is such that it is necessary to deflate the envelope as rapidly as possible during a landing. When should the deflation port be opened?
A. Just prior to ground contact.
B. The instant the basket contacts the surface.
C. As the balloon skips off the surface the first time and all ballast has been discharged.

8.7.2.1.4.a.1 O46
What procedure is recommended when confronted with the necessity of having to land a balloon in turbulent conditions?
A. Land in the center of the largest available field.
B. Land in any available lake close to the upwind shore.
C. Land in trees to absorb shock forces and cushion the landing.

8.7.2.1.5.a.1 P03
If all engine power is lost during flight, an airship should be
A. brought to a condition of equilibrium as soon as possible and free-ballooned.
B. trimmed nose-heavy to use the airship's negative dynamic lift to fly the airship down to the landing site.
C. trimmed nose-light to use the airship's positive dynamic lift to control the angle and rate of descent to the landing site.

8.7.2.1.6.a.1 P04
Under which condition is maximum headway possible in an airship?
A. Slightly nosedown.
B. Flying at equilibrium.
C. Slightly heavy and with dynamically positive force.

8.7.2.1.7.a.1 P11

To land an airship that is 250 pounds heavy when the wind is calm, a wheel landing should be made with the airship
A. in trim.
B. tail heavy, up to 5°.
C. approximately 5° nose heavy.

8.7.2.1.8.a.1 P11
What action is required to dynamically trim an airship that is in even static trim and equilibrium during a weigh-off?
A. Transfer air aft.
B. Increase airspeed.
C. Transfer air forward.

8.7.2.1.9.a.1 P11
Dampers should normally be kept closed during a climb to altitude because any air blown into the system would
A. decrease the volume of gas within the envelope.
B. increase the amount of air to be valved, resulting in a slower rate of ascent.
C. increase the amount of gas to be valved, preventing the airship from ascending too fast.

8.7.2.2.0.a.1 P11
When checking pressure height of an airship during a climb, the dampers should be
A. opened.
B. closed.
C. opened aft and closed forward.

8.7.2.2.1.a.1 P11
Which action is necessary in order to perform a normal descent in an airship?
A. Valve gas from the envelope.
B. Take air into the aft ballonet.
C. Valve air from the forward ballonet.

8.7.2.2.2.a.1 P11
The purpose of a ground weigh-off for an airship is to determine
A. available lift.
B. static and/or trim condition.
C. trim angle necessary to make an up-ship takeoff.

8.7.2.2.3.a.1 P11
Which takeoff procedure is considered to be most hazardous for an airship?
A. Not using an up-ship takeoff when the airship is more than 200 pounds heavy.
B. Maintaining 50 percent of the maximum permissible positive angle of inclination.
C. Maintaining a negative angle of inclination during a wheel takeoff after elevator response is adequate for controllability.

8.7.2.2.4.a.1 P11
A heavy airship, flying dynamically with air ballasted forward to overcome a climbing tendency and slowed down for a weigh-off prior to landing, will be very nose heavy. This condition can be corrected prior to landing by
A. ballasting air aft.
B. discharging forward ballast.
C. dumping fuel from the forward tanks.

8.7.2.2.5.a.1 Z01
Which stall must be performed during a flight instructor - airplane practical test?
A. Power-on or power-off.
B. Accelerated.
C. Imminent.