NOTE: Sections with changes are indicated by a vertical bar in the left margin. Text that should be deleted is displayed with a line through it. New text is shown with blue underlined font.

If you are tested on any content not represented in our materials or this update, please share this information with Gleim so we can continue to provide the most complete test preparation experience possible. You can submit feedback at www.GleimAviation.com/questions. Thank you in advance for your help!

Study Unit 1 – Airplanes and Aerodynamics

Page 25, Subunit 1.8, Item 4.: This update adds information related to flaring.

4. When the CG in an airplane is located at or rear of the aft CG limit, the airplane
   a. Develops an inability to recover from stall conditions and
   b. Becomes less stable at all airspeeds, and
   c. Could be difficult to flare for landing.

Page 27, Subunit 1.11, New item 3.g.1): This update expands our discussion of limit load factor.

   g. The line from point C to point E represents the positive limit load factor. The lines from point I to point G and from point G to point F represent the negative limit load factor.

   1) The limit load factor is the ratio of maximum sustainable load imposed on the aircraft to the gross weight of the aircraft.

   2) Exceeding the positive limit load factor, the negative limit load factor, or VNE would subject an airplane to structural damage or failure.

Page 35, Subunit 1.8, New question: The following question was added due to a sample exam released by the FAA. Subsequent questions have been renumbered accordingly.

37. An airplane loaded with the Center of Gravity (CG) aft of the rear CG limit could
   A. make it easier to recover from stalls and spins.
   B. make it more difficult to flare for landing.
   C. increase the likelihood of inadvertent overstress.

   Answer (B) is correct. (FAA-H-8083-25B Chap 5)

   DISCUSSION: The increased instability from an aft CG makes the aircraft more difficult to flare for landing.
   Answer (A) is incorrect. As the CG of the aircraft moves aft, the aircraft becomes progressively more unstable, making the recovery from a stall or spin more difficult.
   Answer (C) is incorrect. The major factor in overstressing is excess weight either exceeding the overall weight limit of the aircraft or exceeding the weight limit for a certain area, such as a baggage compartment.
51. Limit load factor is the ratio of

A. angle of attack to stall speed.
B. angle of attack to power-on configuration-specific stall speed.
C. maximum sustainable load to the gross weight of the airplane.

Answer (C) is correct. *(FAA-H-8083-25B Chap 5)*

**DISCUSSION:** Limit load factors are the highest load factors that can be expected in normal operation under various operational situations. The limit load factor is the ratio of maximum positive or negative load imposed on the aircraft to the gross weight of the aircraft.

Answer (A) is incorrect. The relationship between angle of attack and stall speed is the critical angle of attack, not the load factor. Answer (B) is incorrect. The relationship between angle of attack and stall speed is the critical angle of attack, not the load factor.

---

Study Unit 2 – Airplane Instruments, Engines, and Systems

68. The reason a 4-cylinder reciprocating engine continues to run after the ignition switch is positioned to OFF may be a

A. fouled spark plug.
B. wire between the magneto and spark plug in contact with the engine casing.
C. broken magneto ground wire.

Answer (C) is correct. *(FAA-H-8083-25B Chap 7)*

**DISCUSSION:** A broken magneto ground wire will cut off grounding for the magneto and will allow it to continue to send electricity to the spark plugs for the engine to run.

Answer (A) is incorrect. A fouled spark plug will cause the engine to run rough. However, the engine can still be shut off when the ignition is in the OFF position.

Answer (B) is incorrect. A wire between the magneto and spark plug in contact with the engine casing will cause the engine to run rough, but the engine can still be shut off when the ignition switch is turned to the OFF position.

---

Study Unit 3 – Airports, Air Traffic Control, and Airspace

35. You are on approach to land on Runway 19 of a non-towered airport. You observe ripples on the southeast side of a small lake 3/4 mi. east of the airport. What is the most appropriate course of action?

A. Proceed with your approach to Runway 19.
B. Maneuver for an approach to Runway 01.
C. Check the wind sock to determine the appropriate runway.

Answer (C) is correct. *(AIM Para 4-3-4)*

**DISCUSSION:** Checking the wind sock will enable you to verify the wind direction over the field and determine the best runway for landing.

Answer (A) is incorrect. Landing on Runway 19 will put you in a tailwind condition. Answer (B) is incorrect. Although landing on Runway 1 will allow you to land in a headwind, it is advisable to check the wind sock to ensure that the winds on the field agree with the wind direction over the lake.
Study Unit 4 – Federal Aviation Regulations

Page 132, Subunit 4.9, Submodule 91.17, New item 3.a.: This update expands our coverage to include hangovers.

3. Operating or attempting to operate an aircraft as a crewmember while under the influence of drugs or alcohol is grounds for the denial of an application for a certificate, rating, or authorization issued under 14 CFR Part 91.
   a. While experiencing a hangover, a pilot is still under the influence of alcohol and will have impaired motor and mental responses.

Page 163, Subunit 4.9, Submodule 91.17, New question: The following question was added due to a sample exam released by the FAA. Subsequent questions have been renumbered accordingly.

101. While experiencing a hangover, a pilot
   A. will have impaired motor and mental responses.
   B. is no longer under the influence of alcohol.
   C. may experience discomfort, but no impairment.

Answer (A) is correct. (FAA-H-8083-25B Chap 17)

DISCUSSION: While experiencing a hangover, a pilot is still under the influence of alcohol. Although a pilot may think (s)he is functioning normally, motor and mental response impairment is still present.

Answer (B) is incorrect. Considerable amounts of alcohol can remain in the body for over 16 hours, and the effects and symptoms of a hangover are because of the influence of alcohol. Answer (C) is incorrect. Although a pilot may think (s)he is functioning normally, motor and mental response impairment is still present.

Study Unit 5 – Airplane Performance and Weight and Balance

Page 220, Subunit 5.9, Question 54: These edits correct and clarify the correct answer explanation.

54. (Refer to Figure 34 on page 221.) Calculate the moment of the airplane and determine which category is applicable.

<table>
<thead>
<tr>
<th>WEIGHT (LB)</th>
<th>MOM/1000</th>
</tr>
</thead>
<tbody>
<tr>
<td>Empty weight</td>
<td>1,350</td>
</tr>
<tr>
<td>Pilot and front passenger</td>
<td>310</td>
</tr>
<tr>
<td>Rear passengers</td>
<td>96</td>
</tr>
<tr>
<td>Fuel, 38 gal.</td>
<td>---</td>
</tr>
<tr>
<td>Oil, 8 qt.</td>
<td>---</td>
</tr>
</tbody>
</table>

A. 79.2, utility category.
B. 80.8, utility category.
C. 81.2, normal category.

Answer (B) is correct. (FAA-H-8083-25B Chap 10)

DISCUSSION: First, total the weight and get 1,999 lb. Note that the 38 gal. of fuel weighs 228 lb. (38 gal. × 6 lb./gal.).

Find the moments for the pilot and front seat passenger, rear passengers, and fuel by using the loading graph in Fig. 34. Find the oil weight and moment by consulting Note 2 on Fig. 34. It is 15 lb. and –0.2 moments. Note that the reference point for 38 gal. of fuel is not depicted correctly. Use the fuel weight of 228 lb. for the calculation. Total the moments as shown in the schedule below.

Now refer to the center of gravity moment envelope. Find the gross weight of 1,999 lb. on the vertical scale, and move horizontally across the chart until intersecting the vertical line that represents the 80.8 moment. Note that a moment of 80.8 lb.-in. falls into the utility category envelope.

<table>
<thead>
<tr>
<th>Weight (LB)</th>
<th>Moment/1000</th>
</tr>
</thead>
<tbody>
<tr>
<td>Empty weight</td>
<td>1,350</td>
</tr>
<tr>
<td>Pilot and front passenger</td>
<td>310</td>
</tr>
<tr>
<td>Rear passengers</td>
<td>96</td>
</tr>
<tr>
<td>Fuel (38 gal. × 6 lb./gal.)</td>
<td>228</td>
</tr>
<tr>
<td>Oil</td>
<td>15</td>
</tr>
<tr>
<td>1,999</td>
<td></td>
</tr>
</tbody>
</table>

Answer (A) is incorrect. A moment of 79.2 is 1.6 less than the correct moment of 80.8 lb.-in. Answer (C) is incorrect. The moment of the oil must be subtracted, not added.
Study Unit 6 – Aeromedical Factors and Aeronautical Decision Making (ADM)

Page 237, Subunit 6.1, Item 1.b.1): This edit expands our coverage of hypoxia.

b. **Hypemic hypoxia** occurs when the blood is not able to take up and transport a sufficient amount of oxygen to the cells in the body. The oxygen deficiency is in the blood, not the result of too little inhaled oxygen.

   1) **EXAMPLE:** Carbon monoxide poisoning or a lack of blood from severe bleeding or blood donation

Page 238, Subunit 6.2, Item 1.b.: This edit expands our coverage of hyperventilation.

b. The symptoms are dizziness, hot and cold sensations, nausea, tinglying in the extremities, etc.

Page 238, Subunit 6.4, New items 5.-6.: The following material was added to expand our coverage of vision.

5. A narrower-than-usual runway may create the illusion that the airplane is higher than it actually is.
   a. This illusion results in a lower-than-normal approach.
   b. A wider-than-usual runway creates the opposite illusion and problem.

6. An upward-sloping runway may create the illusion that the airplane is at a higher-than-actual altitude.
   a. This illusion results in a lower-than-normal approach.
   b. A downward-sloping runway creates the opposite illusion and problem.

Page 239, Subunit 6.6, Item 2.: This update adds an additional detail related to risk management.

2. Risk management is the part of the decision-making process that relies on situational awareness, problem recognition, and good judgment to reduce risks and manage external pressures associated with each flight.

Page 239, Subunit 6.6, New item 7.: This material was added to increase students' knowledge base.

7. Crew resource management (CRM) is the application of team management concepts in the flight deck environment. CRM refers to the effective use of all resources available, such as human resources (e.g., aircraft dispatchers, flight attendants, maintenance personnel, air traffic controllers, and flight crew), hardware (e.g., computers and flight directories), and information (e.g., Chart Supplements).

   a. This definition includes all groups routinely working with the flight crew who are involved in decisions required to operate a flight safely. These groups include, but are not limited to, pilots, dispatchers, cabin crewmembers, maintenance personnel, and air traffic controllers.

   b. The mission of CRM training has always been to prevent aviation accidents by improving crew performance through better crew coordination.

   c. The goal of all flight crews is good ADM, and using CRM is one way to make good decisions that proactively recognize safety-related hazards and mitigate the associated risks.
Page 240, Subunit 6.1, New question: The following question was added due to a sample exam released by the FAA. Subsequent questions have been renumbered accordingly.

4. A pilot making a blood donation in order to help a sick associate should be aware that for several weeks

A. sufficient oxygen may not reach the cells in the body.
B. fewer oxygen molecules will be available to the respiratory membranes.
C. the ability of the body tissues to effectively use oxygen is decreased.

Answer (A) is correct. *(FAA-H-8083-25B Chap 17)*

**DISCUSSION:** Blood donations can cause hypemic hypoxia because not enough blood is available to carry a sufficient amount of oxygen to the cells.

Answer (B) is incorrect. The amount of oxygen available to the body does not change; however, there may not be enough blood to carry the oxygen to the cells. Answer (C) is incorrect. The body tissues have not lost the ability to use oxygen; however, the amount of blood available to deliver the oxygen has decreased.

Page 241, Subunit 6.2, New question: The following question was added due to a sample exam released by the FAA. Subsequent questions have been renumbered accordingly.

10. Which is a common symptom of hyperventilation?

A. Tingling sensations.
B. Visual acuity.
C. Decreased breathing rate.

Answer (A) is correct. *(AIM Para 8-1-3)*

**DISCUSSION:** Hyperventilation results from an abnormal increase in the volume of air breathed in and out of the lungs. It can occur subconsciously when a stressful situation is encountered. The result is an excessive amount of carbon dioxide removed from the body. The symptoms are lightheadedness, suffocation, drowsiness, tingling of the extremities, and coolness.

Answer (B) is incorrect. Hyperventilation distorts one’s abilities; it does not improve them. Answer (C) is incorrect. Decreasing the breathing rate is one way to overcome hyperventilation. It is not a symptom of it.

Page 243, Subunit 6.4, New question: The following question was added due to a sample exam released by the FAA. Subsequent questions have been renumbered accordingly.

22. The illusion associated with landing on a narrower than usual runway may result in the pilot flying a

A. lower approach with the risk of striking objects along the approach path or landing short.
B. slower approach with the risk of reducing airspeed below VSO or landing hard.
C. higher approach with the risk of leveling out high and landing hard or overshooting the runway.

Answer (A) is correct. *(FAA-H-8083-25B Chap 17)*

**DISCUSSION:** A narrower-than-usual runway can create an illusion that the aircraft is at a higher altitude than it actually is, which could result in striking objects along the flight path or landing short.

Answer (B) is incorrect. Runway width has no effect on the perceived speed in an approach to landing. Answer (C) is incorrect. A wider-, not narrower-, than-usual runway can create the illusion that the aircraft is lower than actual altitude, creating the risk of the pilot leveling out the aircraft high and landing hard or overshooting the runway.
41. The most important key to risk management is
   A. understanding pilot predisposition.
   B. management of external pressures.
   C. the sense of security provided by experience.

   **Answer (B) is correct.** *(FAA-H-8083-25B Chap 2)*

   **DISCUSSION:** Management of external pressures is the single most important key to risk management because it is the one risk factor category that can cause a pilot to ignore all the other risk factors. External pressures put time-related pressure on the pilot and figure into a majority of accidents.

   Answer (A) is incorrect. Predisposition is an attitude or tendency to act in a certain way. Although understanding this can alleviate risk, it is not the most important factor in good risk management. Answer (C) is incorrect. A sense of security does not necessarily mean that risks have been properly managed, and it may lead to complacency, thereby compounding the existing risks.

42. One purpose of crew resource management (CRM) is to give crews tools to
   A. recognize and mitigate hazards.
   B. maintain currency with regulations.
   C. reduce the need for outside resources.

   **Answer (A) is correct.** *(FAA-H-8083-25B Chap 2)*

   **DISCUSSION:** CRM is focused on supporting ADM to proactively recognize safety-related hazards and mitigate the associated risks.

   Answer (B) is incorrect. Maintaining currency with regulations is the responsibility of each PIC. Answer (C) is incorrect. The purpose of CRM is to manage all resources, both onboard and from outside sources.

**Study Unit 7 – Aviation Weather**

Page 251, Subunit 7.10, Item 4.: This update expands our coverage of airmass stability.

4. The lapse rate is the decrease in temperature with increase in altitude. As the lapse rate increases (i.e., air cools more with increases in altitude), air is more unstable.
   a. The ambient lapse rate can be used to determine the stability of air masses.
   b. The cloud types and type of precipitation can also be used to determine the stability of an air mass.

Page 251, Subunit 7.11, New item 3.b.: This update expands our coverage of temperature inversions.

3. A temperature inversion often develops near the ground on clear, cool nights when the wind is light.
   a. It is caused by terrestrial radiation.
   b. Temperature and radiation variations over land with a clear sky typically lead to the minimum temperature occurring just after sunrise when the incoming solar radiation is not yet strong enough to offset the terrestrial radiation from the Earth.

Page 261, Subunit 7.9, New question: The following question was added due to a sample exam released by the FAA. Subsequent questions have been renumbered accordingly.

47. Cumulus clouds often indicate
   A. possible turbulence.
   B. a temperature inversion.
   C. a dry adiabatic lapse rate.

   **Answer (A) is correct.** *(AC 00-6B)*

   **DISCUSSION:** Cumulus clouds are formed in a convective updraft, build upward, and are associated with turbulence.

   Answer (B) is incorrect. A temperature inversion prevents updrafts from forming, which is needed for the formation of cumulus clouds. Answer (C) is incorrect. The dry adiabatic lapse rate is a measurement of air with no moisture available to form clouds.
58. Clouds with extensive vertical development over mountainous terrain are a sign of
   A. a dry adiabatic lapse rate.
   B. a stable air mass.
   C. an unstable air mass.

   Answer (C) is correct. *(AC 00-6B)*

   **DISCUSSION:** Winds across mountains cause mountain waves that are associated with severe turbulence, strong vertical currents, and icing. The extent of the turbulence is relative to the height of the ground, speed of the wind, and instability of the atmosphere. With adequate moisture, lenticular clouds will form at the top of each wave.

   Answer (A) is incorrect. The dry adiabatic lapse rate is a measurement of air with no moisture available to form clouds.
   Answer (B) is incorrect. The vertical development of the clouds indicates the presence of multiple waves with adequate upward motion and moisture to cause cloud formation.

59. The stability of an air mass can usually be determined by
   A. the height of the tropopause.
   B. measuring the dry adiabatic lapse rate.
   C. cloud types and the type of precipitation.

   Answer (C) is correct. *(FAA-H-8083-25B Chap 12)*

   **DISCUSSION:** Atmospheric stability influences weather by affecting the vertical motion of air. Stable air suppresses vertical motion, but unstable air enhances it. Clouds formed in stable air will be shallow and layered, e.g., stratus clouds. Clouds formed in unstable air will have more height and be of the cumulus or cumulonimbus type. Precipitation from stratus clouds tends to be over large areas and lasts for long periods. Precipitation from cumulus clouds tends to be more intense and lasts for short periods.

   Answer (A) is incorrect. The tropopause is a thin boundary area between the troposphere and the stratosphere. The height of the tropopause varies widely due to the location above the earth and the time of the year and is not necessarily indicative of air mass stability. Answer (B) is incorrect. Stability is determined by the change in the ambient lapse rate, not the dry lapse rate.

65. Temperature and radiation variations over land with a clear sky typically lead to
   A. minimum temperature occurring after sunrise.
   B. outgoing terrestrial radiation peaking at noon.
   C. temperature reaching a maximum closer to noon than to sunset.

   Answer (A) is correct. *(AC 00-6B)*

   **DISCUSSION:** At night, heating is absent, but terrestrial radiation continues cooling the earth’s surface. Cooling continues until shortly after sunrise, when incoming solar radiation once again exceeds outgoing terrestrial radiation. Minimum surface air temperature usually occurs shortly after sunrise.

   Answer (B) is incorrect. Outgoing radiation peaks during the nighttime when no isolation occurs. Answer (C) is incorrect. Peak isolation occurs around noon, but maximum surface air temperature occurs during mid-afternoon.

**Study Unit 8 – Aviation Weather Services**

24. What is indicated by the following report?
   TYR UUA/OV TYR180015/TM 1757/FL310/TP B737/TB MOD-SEV CAT 350-390

   Answer (A) is correct. *(AC 00-45H Sect 3.2)*

   **DISCUSSION:** The UUA found in the first section of the report indicates an “Urgent Upper Air” report. The /TB MOD-SEV CAT 350-390 in the last section of the report indicates moderate to severe clear air turbulence for flight levels 350 to 390.

   Answer (B) is incorrect. If the report were a routine report, code UA would be used in the first section instead of UUA. Answer (C) is incorrect. The second section of the PIReP containing 1800 is the location section. In this example, /OV TYR 180015 indicates that the location of the weather-related phenomenon is on the 180° radial of the TYR VOR at 15 NM. A METAR is an aviation routine weather report; however, METAR coding is used to describe weather and visibility phenomena in the PIReP.
Study Unit 9 – Navigation: Charts and Publications

Page 352, Subunit 9.3, Question 62: This update corrects the spelling of an airport name.

62. (Refer to Figure 23 on page 353.) The flag symbols at Statesboro Bulloch County Airport, Claxton-Evans County Airport, and Ridgeland Airport are

- A. outer boundaries of Savannah Class C airspace.
- B. airports with special traffic patterns.
- C. visual checkpoints to identify position for initial callup prior to entering Savannah Class C airspace.

Answer (C) is correct. (ACL)

DISCUSSION: On Fig. 23, note the flag symbols at Claxton-Evans County Airport (1 in. to the left of 2), at Statesboro Bulloch County Airport (2 in. above 2), and at Ridgeland Airport (2 in. above 3). These airports are visual checkpoints to identify position for initial callup prior to entering the Savannah Class C airspace.

Answer (A) is incorrect. They do not indicate outer boundaries of the Class C airspace. The flags are outside the Class C airspace area, the boundaries of which are marked by solid magenta lines. Answer (B) is incorrect. Airports with special traffic patterns are noted in the Chart Supplement and also by markings at the airport around the wind sock or tetrahedron.

Page 362, Subunit 9.4, Question 74: This update corrects an error in direction from west to east.

74. (Refer to Figure 26 on page 363.) (Refer to Area 5.) What is the CTAF/UNICOM frequency at Barnes County Airport?

- A. 122.2 MHz.
- B. 122.8 MHz.
- C. 123.6 MHz.

Answer (B) is correct. (ACL)

DISCUSSION: In Fig. 26, Barnes County Airport is to the west of Area 5. The CTAF at Barnes County Airport is marked as the UNICOM frequency for the airport, i.e., 122.8.

Answer (A) is incorrect. This is the Flight Service frequency. Answer (C) is incorrect. This is an FSS frequency.

Page 381, Subunit 9.6, New question: This question was added to increase our question database coverage. Subsequent questions have been renumbered accordingly.

98. To avoid landing at the wrong airport or runway, pilots should

- B. consult airport diagrams and Chart Supplements.
- C. contact the airport UNICOM frequency for runway advisory.

Answer (B) is correct. (FAA-H-8083-25B Chap 14)

DISCUSSION: Chart Supplements are published every 56 days and include the most accurate information about an airport, including runways and lighting.

Answer (A) is incorrect. The Aeronautical Information Manual does not include airport-specific information regarding runways and is used as a recommendation. Answer (C) is incorrect. Although recommended runway information can be received on the UNICOM frequency, not all airports have active UNICOMs and it is better practice to use the Chart Supplements, which include more detailed information such as LAHSO operations.
Study Unit 11 – Cross-Country Flight Planning

Page 403, Subunit 11.1, Item 1.: This update reflects the FAA’s recent requirement for pilots to use the ICAO flight plan for all flights instead of the FAA domestic flight plan.

NOTE: As of the publication date of this text, pilots may file flight plans in the U.S. under either the domestic or International Civil Aviation Organization (ICAO) format. The FAA is planning to exclusively use the ICAO format for civil aircraft. The FAA previously removed all questions from its test bank referring to flight plans; however, new questions regarding ICAO flight plans are expected to be added. The questions in Subunit 11.1, VFR Flight Plan, are written based on previous questions using the domestic flight plan format, with updates referring to the equivalent ICAO flight plan form entries. Please check www.GleimAviation.com/updates for edits and updates, if applicable.

1. The ICAO international flight plan form may be used for domestic and international operations under VFR or IFR.
   a. If an instrument rated pilot wants to conduct a flight partially under VFR and then change to IFR, a separate flight plan should be filed for each portion.
   b. For complete guidance on filling out the ICAO flight plan form, refer to the Aeronautical Information Manual (AIM) paragraph 5-1-9.
   c. Item 15, “Level.” Use only your initial requested altitude on your VFR flight plan.
   d. Item 16, “Destination Aerodrome,” should include the ICAO four-letter indicator for the airport or place at which you plan to make your last landing for this flight.
      1) An exception is if you plan a stopover of more than 1 hr. elsewhere en route. In this instance, you need to file a flight plan for each leg because, practically, the FAA views this as two flights. Otherwise, stopovers that are 1 hr. or less should be mentioned in the remaining section.
   e. Item 19, “Endurance” (in hours and minutes), requires the amount of usable fuel in the airplane at the time of departure, expressed in hours of flying time.
   f. Except for military flight operations, when use of the International Flight Plan becomes mandatory, it will be required for all VFR and IFR flight plans in the National Airspace System (NAS).

Page 414, Subunit 11.1, Question 7: This update reflects the FAA’s recent requirement for pilots to use the ICAO flight plan for all flights instead of the FAA domestic flight plan.

7. (Refer to Figure 51 on page 415.) The International Flight Plan, FAA Form 7233-4, may be used
   A. only for international flights under VFR or IFR.
   B. for domestic and international flights under VFR or IFR.
   C. only for flights within 30 NM of the DC SFRA.

Answer (B) is correct. (AIM Para 5-1-9)

DISCUSSION: The International Flight Plan may be used for domestic and international flights under VFR or IFR.

Answer (A) is incorrect. The International Flight Plan may be used for domestic and international flights, not just international flights. Answer (C) is incorrect. The International Flight Plan may be used for domestic and international flights, not just flights in the vicinity of the DC SFRA.