NOTE: Text that should be deleted is displayed with a line through it. New text is shown with a blue background.

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Study Unit 1 – Airplanes and Aerodynamics

Page 26, Subunit 1.3, 3.: These edits change the outline to better match FAA Figure 17, which was revised by the FAA in early 2014.

3. Velocity/load factor charts have the indicated airspeed on the horizontal axis and the load factor on the vertical axis.
   a. For various operations, one can plot the load factor and the possible impact on the airplane, as illustrated in the chart below.
   b. One can also plot gusts of various strengths against airspeed to find the resultant load factor.
   c. Point A is the stalling speed (V_S).
   d. Point B is the maneuvering speed (V_A) accelerated stall.
   e. Point C is the maximum structural cruising speed (V_NO) maneuvering speed (V_A).
   f. Point D is the never-exceed speed (V_NE) maximum structural cruise speed (V_NO).
   g. The line from Points B C to Point D and I represents the positive limit load factor.
      1) Exceeding the positive load factor limit would subject an airplane to structural damage.
39. (Refer to Figure 17 on page 41.) A positive load factor of 4 at 140 knots mph would cause the airplane to
   A. stall.
   B. break apart.
   C. be subjected to structural damage.

Answer (C) is correct. (PHAK Chap 4)

**DISCUSSION:** The velocity/load factor chart (Fig. 17) has indicated airspeed on the horizontal axis and load factor on the vertical axis. Plotting a positive load factor of 4 at 140 knots mph by going up the vertical axis to 4 and over to 140 shows that you would be in the shaded area, which would cause the airplane to be subjected to structural damage.

Answer (A) is incorrect. The velocity/load factor chart indicates the impact of combined airspeed and load factor on the structural strength of the airplane, not on stalls. Answer (B) is incorrect. The airspeed causing the airplane to break apart is not measured or documented.

40. (Refer to Figure 17 on page 41.) What load factor would be created if positive 30 feet per second gusts were encountered at 130 knots mph?
   A. 3.8.
   B. 3.0.
   C. 2.0.

Answer (B) is correct. (PHAK Chap 4)

**DISCUSSION:** Begin at the bottom of Fig. 17 by locating 130 knots mph and then move up vertically to the positive 20-feet-per-second (+30 fps) diagonal line. Then move left horizontally to determine a load factor of 3.0.

Answer (A) is incorrect. A load factor of 3.8 would be created if gusts above 30 fps were encountered at 130 knots mph.

Answer (C) is incorrect. A load factor of 2.0 would be created if +15 fps, not +30 fps, gusts were encountered at 130 knots mph.

41. (Refer to Figure 17 on page 41.) 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.

Answer (A) is correct. (FTP Chap 14)

**DISCUSSION:** The horizontal dashed line between points B, C and D, E on Fig. 17 is the positive limit load factor of 3.8. It indicates that structural damage may be possible when the airplane is operated beyond this limit.

Answer (B) is incorrect. The airspeed for normal operations is from point A to point C, D, not point B to point D, E. Answer (C) is incorrect. The maximum structural cruise airspeed is the vertical line down from point C, D.

42. (Refer to Figure 17 on page 41.) The airspeed indicated by point A is
   A. maneuvering speed.
   B. normal stall speed.
   C. maximum structural cruising speed.

Answer (B) is correct. (FTP Chap 14)

**DISCUSSION:** Point A is the normal stall speed (V_{stall}). At this speed in the clean configuration, the airplane will stall. The normal stall speed is shown on the airspeed indicator at the low-speed end of the green arc.

Answer (A) is incorrect. Maneuvering speed (V_{m}) is indicated by point B, C. Answer (C) is incorrect. Maximum structural cruising speed (V_{MCA}) is indicated by point C, D.

43. (Refer to Figure 17 below.) The airspeed indicated by point B, C is
   A. maneuvering speed.
   B. never-exceed speed.
   C. maximum structural cruising speed.

Answer (A) is correct. (FTP Chap 14)

**DISCUSSION:** Point B, C is the maneuvering speed, or V_{m}. It is not shown on the airspeed indicator, but it is the speed at which abrupt or full control deflections may be used without incurring structural damage. A stall will occur before the aircraft is structurally damaged.

Answer (B) is incorrect. The never-exceed speed (V_{NE}) is indicated by point D, E. Answer (C) is incorrect. The maximum structural cruising speed (V_{MCA}) is indicated by point C, D.

44. (Refer to Figure 17 below.) The airspeed indicated by point D, E is
   A. maneuvering speed.
   B. never-exceed speed.
   C. maximum structural cruising speed.

Answer (B) is correct. (FTP Chap 14)

**DISCUSSION:** Point D, E is the never-exceed speed, or V_{NE}. This airspeed is indicated on the airspeed indicator by a red line. If flight is attempted beyond V_{NE}, structural damage or failure may result from a variety of phenomena.

Answer (A) is incorrect. Maneuvering speed (V_{m}) is indicated by point B, C. Answer (C) is incorrect. Maximum structural cruising speed (V_{MCA}) is indicated by point C, D.
45. (Refer to Figure 17 below.) The airspeed indicated by point C D is

A. maneuvering speed.
B. never-exceed speed.
C. maximum structural cruising speed.

Answer (C) is correct. (FTP Chap 14)

DISCUSSION: Point C D is the maximum structural cruising speed, or VNO. This airspeed is indicated on the airspeed indicator by the upper limit of the green arc (or lower limit of the yellow arc). This is the maximum speed for normal operation.

Answer (A) is incorrect. Maneuvering speed (V\text{\text{\textit{A}}}) is indicated by point B C. Answer (B) is incorrect. Never-exceed speed (V\text{\text{\textit{NE}}}) is indicated by point D E.

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Study Unit 6 – Aviation Weather

Page 214, Subunit 6.17, Question 105: Directions were added to refer to a specific area of the figure for clarification purposes.

105. (Refer to Figure 10 below.) (Refer to illustration 8.) On a Weather Depiction Chart, what does the present weather symbol indicate?

A. Mountain waves are present.
B. Mountain waves are expected.
C. Smoke is present.

Answer (C) is correct. (AWS Sect 5)

DISCUSSION: The present weather condition is the symbol between the visibility number on the left and the sky cover on the right. The squiggly line between the “6” and the “M” with a circle around it in illustration 8 means there is smoke present.

Answer (A) is incorrect. There is no symbol for mountain waves on the Weather Depiction Chart. Answer (B) is incorrect. There is no symbol for mountain waves on the Weather Depiction Chart.

Page 216, Subunit 6.17, Question 114: This edit was made to correct and expand the answer explanations for marginal weather.

114. (Refer to Figure 12 on page 217.) The marginal weather in central Kentucky is due to low

A. ceiling.
B. ceiling and visibility.
C. visibility.

Answer (A) is correct. (AWS Sect 5)

DISCUSSION: The marginal weather in central Kentucky (outlined area with no shading) is due to the ceiling height. The station circle is shaded (overcast sky) and the “30 10” below the circle means a ceiling of $3,000 \text{ ft.}$ The “\text{\textquoteleft=\text{\textquoteleft}}” symbol to the left of the shaded circle indicates mist. Marginal VFR is defined as ceilings greater than or equal to 1,000 ft. to less than or equal to 3,000 ft. and/or visibility greater than or equal to 3 SM to less than or equal to 5 SM.

Answer (B) is incorrect. The marginal weather in central Kentucky is due to the ceiling only. The absence of a visibility value to the left of the station circle indicates that the visibility is greater than 5 SM, which is not considered marginal. The “\text{\textquoteleft=\text{\textquoteleft}}” symbol to the left of the shaded circle indicates mist. Answer (C) is incorrect. The marginal weather in central Kentucky is due to the ceiling, not the visibility. The absence of a visibility value to the left of the station circle indicates visibility greater than 5 SM, which is not considered marginal. The “\text{\textquoteleft=\text{\textquoteleft}}” symbol to the left of the shaded circle indicates mist.
134. (Refer to Figure 16 on page 223.) What direction are the hazard fields moving?

A. Northwest.
B. Southeast.
C. Cannot determine without movement arrows.

Answer (C B) is correct. (AWS Sect 9)

DISCUSSION: The blue-lined polygons to the southeast of each hazard field indicate a 1-hour extrapolated forecast of the hazard fields. Answer (A) is incorrect. The blue-lined polygons indicate the direction in which the hazard field is moving. The majority of the blue-lined polygons are located to the southeast of the storm cells. Answer (B C) is incorrect. The blue-lined polygons indicate the direction in which the hazard field is moving.

Page 227, Subunit 6.24, Question 147: The answer explanations were edited to be more specific regarding area forecasts.

147. 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.

Answer (B) is correct. (AWS Sect 7)

DISCUSSION: The synopsis section of the area forecast provides For a brief summary of the location and movement of fronts, pressure systems, and circulation patterns for an 18-hr. period, a pilot should refer to the synopsis section of the area forecast. Answer (A) is incorrect. The radar summary chart provides a graphic presentation of radar reports on precipitation. Answer (C) is incorrect. A significant weather prognostic chart presents location of fronts, pressure systems, and pressure patterns in a chart format, not in a text summary format. Some prognostic charts provide the location and movement of fronts. However, the prognostic chart that provides surface pressure systems, fronts, and precipitation for a 2-day period is the short-range surface prognostic chart. The other prognostic charts do not necessarily give information regarding fronts or significant weather for various altitudes and flight levels.

Study Unit 7 – Federal Aviation Regulations

Page 254, Subunit 7.3, Question 23: This edit was made to further clarify the incorrect answer explanation.

23. 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.

Answer (C) is correct. (FAR 61.39)

DISCUSSION: To be eligible for a practical test for a certificate or rating, a pilot must hold at least a third-class medical certificate. Answer (A) is incorrect. Medical certificates are required of all powered-aircraft pilots except those flying gliders. Answer (B) is incorrect. A pilot must hold a third-class, not second-class, medical certificate to take a practical test.
Page 259, Subunit 7.3, Question 45: This edit was made to reflect regulations set out in FAR 61.69 concerning when a pilot can act as pilot in command.

45. 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.

Answer (B) is correct. (FAR 61.69)

DISCUSSION: No person may act as pilot in command of an aircraft towing a glider unless (among other requirements), within the preceding 42 months, (s)he has made at least three actual or simulated glider tows while accompanied by a qualified pilot, or made at least three flights as pilot in command of a glider towed by an aircraft.

Answer (A) is incorrect. The pilot must have made three, not 10, actual or simulated glider tows in the last 12 months.

Answer (C) is incorrect. The pilot must have made three, not six, actual or simulated glider tows in the last 42 months.

Study Unit 8 – Navigation

Page 310, Subunit 8.1, Question 16: The foils and answer explanations were edited to more closely reflect information found in Figure 45. We also added a note to advise our customers that we have addressed two issues found in this question with the FAA.

16. (Refer to Figure 45 on page 311.) Where does the floor of controlled airspace begin over McCampbell Airport (area 1)?

A. Surface.
B. 717 feet AGL.
C. 1,217 feet MSL.

Answer (C) is correct. (ACL)

DISCUSSION: Refer to Fig. 45. Area 1 is in the upper right-ha nd corner of the chart. McCampbell Airport lies within an unshaded area. Locate McCampbell Airport, just southwest of area 1. There is a magenta-shaded area extending from the northeast down and around to the southwest of Campbell Airport and beyond. The figure cuts off the magenta-shaded area northwest of McCampbell Airport and southeast of Corpus Christi NAS/Truax, so we can assume that the magenta-shaded area goes around McCampbell Airport. We can also assume that McCampbell Airport is within a magenta-shaded area, as seen as on the FAA’s chart. This would indicate the floor of that Class E (controlled) airspace extends upward from 1,200 ft. AGL to the base of the overlying airspace (here, Class A airspace at 18,000 ft. MSL).

The airport identifier shows the field elevation to be 17 ft. MSL. Thus, Class E airspace extends upward from 1,247 ft. MSL.

NOTE: There are issues with this question: (1) the actual airport is named McCampbell-Porter Airport, not McCampbell Airport; and (2) the shaded area actually extends into the Gulf of Mexico and then northwest before coming back southbound around to the northwest side of McCampbell-Porter Airport.

Answer (A) is incorrect. An unshaded magenta-shaded area indicates that Class E airspace extends upward from 1,200 ft. AGL, not the surface. Answer (B C) is incorrect. An unshaded magenta-shaded area indicates that Class E airspace extends upward from 1,200 ft. AGL, not 717 1,218 ft. AGL MSL.
Page 323, Subunit 8.3, Question 53: This edit was made to provide a more precise calculation.

53. 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.

Answer (C) is correct. *(FL Comp)*

**DISCUSSION:** To determine the distance traveled in 2 1/2 min. at 98 kt., note that 98 kt. is 1.6 NM/min. (98 ÷ 60 = 1.633). Thus, in 2 1/2 min., you will have traveled a total of 4.08 NM (1.633 × 2.5 = 4.08).

Alternatively, put 98 on the outer scale of your flight computer over the index on the inner scale. Find 2.5 min. on the inner scale, above which is 4.1 NM.

Answer (A) is incorrect. For 2.45 NM to be true, you would need a groundspeed of approximately 59 kt. Answer (B) is incorrect. For 3.35 NM to be true, you would need a groundspeed of approximately 80 kt.