Homework 14

Study Questions

Commercial AVF 221

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Chapter 1 The Earth’s Atmosphere

1. Name the 5 atmospheric layers in terms of temperature
2. In what layer does almost all of the weather occur?
3. What causes the Troposphere to change height?
4. What values define the standard atmosphere?
5. What characteristic signals the Tropopause?

Chapter 2 Temperature

1. If a land mass and a body of water have the same temperature to start, and the same amount of heat energy is added to both will they have the same temperature?
2. What is terrestrial radiation?
3. What is the primary cause of the Earth’s weather?
4. Define lapse rate.
5. What is the average lapse rate?
6. Under what conditions does the most common type of inversion form?

Chapter 3 Atmospheric Pressure and Altimetry

1. Define True Altitude
2. Define the 5 pressure systems
3. If a column of air is colder than standard are we higher or lower than the altimeter says?
4. When is pressure altitude and density altitude the same?
5. What are the 3 ways high density altitude effects aircraft performance

Chapter 4 Wind

1. Define pressure gradient force
2. Which way does pressure gradient force act?
3. What angle does pressure gradient force act relative to the isobars?
4. In the northern hemisphere, which way does Coriolis force act?
5. What happens to Coriolis force as wind speed increases?
6. What happens to Coriolis force as latitude is increased?
7. What is an anticyclone? Which way does it rotate?
8. What is a cyclone? Which way does it rotate?
9. Give some characteristics of weather associated with low and high pressure systems

Chapter 5 Moisture, Cloud Formation and Precipitation

1. Define relative humidity
2. Define dew point
3. Define evaporation, condensation, sublimation and deposition
4. Name two ways the air may become saturated

Chapter 7 Clouds

1. Which clouds are formed in unstable air?
2. Which clouds are formed in stable air?
3. Name the four cloud families.
4. Where do high clouds exist?
5. Where do middle clouds exist?
6. Where do low clouds exist?
7. Where do clouds with extensive vertical development exist?

Chapter 6 STABLE AND UNSTABLE AIR

1. What is the basic difference between stable and unstable air?
2. How does warming from below affect stability?
3. How does cooling from below affect stability?
4. With regards to stability, what do stratiform and cumuliform clouds represent?
5. The temperature is 19°C and the dew point is 10°C what is the base of the clouds?
6. Name 3 characteristics (turbulence, precip and visibility) of stable air.
7. Name 3 characteristics (turbulence, precip and visibility) of unstable air.

Chapter 8 AIR MASSES AND FRONTS

1. Define the term source region.
2. Define the term Front.
3. Name 4 discontinuities you will experience flying across a front and which one will always happen
4. What is an occluded front?
5. What is the difference between a warm front occlusion and a cold front occlusion?

Chapter 9 TURBULENCE

1. Aircraft reaction to turbulence depends on 5 things, name them.
2. What is the first rule regarding flying in turbulence?

Chapter 10 ICING

1. Name 4 ways icing is a cumulative hazard.
2. There are 2 conditions necessary for structural icing to occur, name them.
3. Name the 3 types of icing.
4. Cumuliform clouds generally form what type of icing?
5. Stratiform clouds generally form what type of icing?

Chapter 11 Thunderstorms

1. 3 requirements for thunderstorm formation are:
2. Name the life cycle of a thunderstorm.
3. What commonly causes the Air Mass thunderstorm?
4. What forms a Steady State thunderstorm?

Chapter 12 Common IFR Producers

1. Name the 6 types of fog mentioned in the book.
2. What are the conditions needed for radiation fog?
3. What are the conditions needed for advection fog?
4. What are the conditions needed for upslope fog?
5. How does upslope fog differ from radiation fog?

14. Why is precipitation-induced fog also referred to as frontal fog?

Chapter 13 High Altitude Weather

1. What causes the “breaks” in the tropopause?
2. What exists in the “breaks” in the tropopause?
3. Why is the jet stronger in the mid latitudes compared to the tropics?
4. How strong do the winds have to be to qualify as a jet stream?
5. Why is the jet stronger in winter than summer?
6. Why does the jet shift south in the winter?
7. Where can the greatest turbulence be found with regards to the jet stream?
8. Where do we expect the jet to be located relative to the frontal wave pattern?
9. The greatest turbulence can be associated with which type of surface and upper level system?
10. Avoid T-storm tops by how much?