Q1. In the mid-latitude the stratosphere extends on an average from

- A) 50 to 85km
- B) 85 to more than 200km

#### C) 11 to 50km

D) 0 to 11km

Q2. The troposphere

# A) has a greater vertical extent above the equator than above the poles

- B) is the separation layer between the stratosphere and the atmosphere
- C) reaches the same height at all altitudes
- D) contains all oxygen of the stratosphere

Q3. The tropopause is lower

# A) over the North Pole than over the equator

- B) over the equator than over the South Pole
- C) south of the equator than north of it
- D) in summer than winter in moderate latitudes
- Q4. The tropopause is a level at which
- A) water vapour content is great
- B) pressure remains constant

#### C) temperature ceases to fall with increasing height

D) vertical currents are strongest

Q5. The troposphere is the

- A) boundary between the stratosphere and the mesosphere
- B) part of the atmosphere above the stratosphere

#### C) part of the atmosphere below the tropopause

D) boundary between the mesosphere and the thermosphere

Q6. The height and the temperature of the tropopause are respectively in the order of

#### A) 16km and -75°C over the equator

- B) 8km and -40°C over the poles
- C) 16km and -40°C over the poles
- D) 8km and -75°C over the poles

Q7. The average height of the tropopause at 50°N is about

- A) 8km
- B) 14km

#### C) 11km

D) 16km

Q8. Which layer of the atmosphere contains more than 90% of all water?

- A) Lower stratosphere
- B) Ionosphere
- **C)** Troposphere
- D) Upper stratosphere

Q9. How does the height of the tropopause normally vary with latitude in the northern hemisphere?

#### A) It decreases from south to north

- B) It increases from south to north
- C) It remains constant throughout the year
- D) It remains constant from north to south

Q10. What, approximately, is the average height of the tropopause over the equator?

- A) 11km
- **B) 16km**
- C) 40km
- D) 8km

Q11. In which layer is most of the atmospheric humidity concentrated?

#### A) Troposphere

- B) Tropopause
- C) Stratosphere
- D) Stratopause

Q12. What is the boundary layer between troposphere and stratosphere called?

#### A) Tropopause

- B) Ionosphere
- C) Stratosphere
- D) Atmosphere

Q13. Which of the following cloud types can project up into the stratosphere?

# A) Cumulonimbus

- B) Cirrostratus
- C) Altocumulus
- D) Altostratus

Q14. Which one of the following statements applies to the tropopause?

- A) It is, by definition, a temperature inversion
- B) It is, by definition, an isothermal layer
- C) It separates the troposphere from the stratosphere
- D) It indicates a strong temperature lapse rate

Q15. The thickness of the troposphere varies with

- A) the wind
- B) rotation of the earth
- C) latitude
- D) longitude

Q16. What is the approximate composition of the dry air by volume in the troposphere?

#### A) 21% oxygen, 78% nitrogen and the rest other gases

- B) 10% oxygen, 89% nitrogen and the rest other gases
- C) 50% oxygen, 40% nitrogen and the rest other gases
- D) 88% oxygen, 9% nitrogen and the rest other gases

Q17. Going from the equator to the north pole, the altitude of the tropopause

#### A) decreases and its temperature increases

- B) increases and its temperature decreases
- C) increases and its temperature increases
- D) decreases and its temperature decreases

Q18. Fog and cloud formation takes place by:

A) Evaporation

#### **B)** Condensation.

- C) Sublimation.
- D) None of the above.

Q19. You observe the altimeter in a parked aircraft shortly before an active cold front passes. What does the altimeter indicate?

A) It decreases.

# B) It increases.

- C) It is not affected by a pressure change.
- D) The pressure changes are very small and therefore, there is no visible change of the indication.

Q20. How does the level of the tropopause vary with latitude in the Northern Hemisphere?

A) Decreases North - South.

# **B)** Decreases South - North.

- C) Constant.
- D) It varies with longitude not latitude.

Q21. The troposphere is deepest:

- A) over the poles in summer.
- B) the same all over the earth.
- C) near the poles.

# D) near the equator.

Q22. What is the primary cause of all changes in the Earths weather?

- A) Changes in air pressure over the Earths surface.
- B) None of the above.
- C) Movement of air masses from moist areas to dry areas.
- D) Variation of solar energy at the Earths surface.

Q23. Given a surface temperature of  $+10^{\circ}$  C, and a dew point of  $+5^{\circ}$  C, at what height might you expect cumulus clouds to form:

A) 4000 ft.
B) 6000 ft.
C) 1000 ft.
D) 2000 ft.

Q24. The pressure at sea level in the ISA is:

A) 29.95 in Hg.B) 1012.35 hPa.

# C) 1013.25 hPa.

D) 1025.13 hPa.

Q25. An OAT of -15° C at the 700 hPa pressure level:

A) is high.

B) equals approximately (+/-5° C) ISA.

C) is almost impossible.

D) is low.

Q26. A body of air over the ocean is referred to as:

# A) Maritime air.

- B) Polar air.
- C) Oceanic air.
- D) Moist air.

Q27. The changes of state of water are known as:

A) liquidation, freezing, evaporation, sublimation, melting.

B) evaporation, freezing, sublimation, vaporization, melting.

- C) melting, freezing, sublimation, vaporization, condensation.
- D) freezing, liquidation, evaporation, sublimation, condensation.

Q28. What is the tropopause?

#### A) The boundary between the troposphere and stratosphere.

- B) The layer between the troposphere and stratosphere.
- C) Upper boundary to C.A.T.
- D) Where temperature increases with height.

Q29. What is the average temperature of the tropical tropopause?

A) -65° C. B) -56.5° C.

- C) -75° C.
- D) -40° C.

Q30. You cruise at FL 200 and notice an OAT of  $-35^{\circ}$  C. The airmass has therefore an average temperature which is...

A) 5° C colder than ISA.
B) 5° C warmer than ISA.
C) 10° C colder than ISA.
D) 20° C colder than ISA.

Q31. The unit of pressure most commonly used in meteorology is:

A) lbs/inch2.
B) tons/m2.
C) hPa.
D) kg (cm2)

D) kg /cm2.

Q32. Which statement is true concerning the tropopause from the equator to the poles?

A) The tropopause increases, the tropopause temperature decreases.

B) The tropopause decreases, the tropopause temperature decreases.

C) The tropopause decreases, the tropopause temperature increases.

D) The tropopause increases, the tropopause temperature increases.

Q33. The average heights of the tropopause and Stratopause are:

A) 36,090m; 20km.

B) 5km; 50km.

C) 11km; 20km.

D) 11km; 50km.

Q34. Define the tropopause:

- A) A relatively thick layer or boundary zone below the troposphere.
- B) A relatively thin layer, or boundary zone, which separates the lower atmosphere from the tropopause.
- C) That area where the temperature change does not exceed twothirds of one degree Celsius per thousand foot increase in altitude over a range of 6000 feet.
- D) That area where the temperature change does not exceed two-thirds of one degree Celsius per thousand foot increase in altitude independent of latitude.

Q35. What can be said about the temperature in the lower stratosphere?

- A) The temperature is decreasing.
- B) The temperature is first increasing and then decreasing.
- C) The temperature is increasing.

#### D) The temperature is constant.

Q36. An aircraft is flying on a constant heading with left drift in the northern hemisphere, maintaining a constant indicated pressure altitude. Which of the following is true?

A) It is likely to be maintaining a constant distance relative to the surface.

#### B) It is likely to be climbing relative to the surface.

- C) None of the above
- D) It is likely to be descending relative to the surface.

Q37. Average seasonal tropopause heights would be:

A) Latitude 55; winter :FL500; summer :FL250

B) Latitude 25; winter :FL250; summer :FL400

C) Latitude 25; winter :FL500; summer :FL250

#### D) Latitude 55; winter :FL250; summer :FL350

Q38. The lowest layer in the atmosphere is:

#### A) the Mesosphere.

#### B) the Troposphere.

- C) the Ionosphere.
- D) the Stratosphere.

Q39. The tropopause at 50N is:

#### A) lower in the winter, higher in the summer.

- B) higher in the winter, lower in the summer.
- C) higher in the winter than at the Equator.
- D) higher in the summer than at the Equator.

Q40. What is the average height of the Tropopause at the equator?

- A) 3000m.
- B) 5000m.
- C) 11000m.
- D) 16000m.

Q41. The maximum water in the air depends on the following:

- A) None of the above
- B) Cloud type
- C) Density

#### **D)** Temperature

Q42. You are cruising at FL 200, OAT -40° C, sea level pressure 1033 hPa. Calculate the true altitude:

#### A) 19340 ft.

- B) 18260 ft.
- C) 21740 ft.
- D) 20660 ft.

Q43. Where do you find the majority of the air within atmosphere?

- A) Mesosphere.
- B) Stratosphere.
- C) Tropopause.

#### D) Troposphere.

Q44. Which of the following statements is true:

- A) the dew point of a sample of air varies with the temperature of the sample.
- B) air cooled without vapour being added or subtracted will never reach its dew point.
- C) the dew point can only be higher than, or equal to the air temperature.
- D) the dew point remains constant if no water vapour is added or subtracted.

Q45. Which of the following is untrue regarding the importance of the tropopause:

- A) air temperature starts to fall severely above the tropopause.
- B) clear air turbulence is often most severe there.
- C) maximum winds are found there.

#### D) it is the upper limit of most visible weather.

Q46. What enhances the growth rate of precipitation?

- A) Cyclonic movement.
- B) Advective action.

# C) Upward currents.

D) Temperature inversions.

Q47. Which conditions result in the formation of frost?

- A) Temperature of the collecting surface is below the dew point of surrounding air and the dew point is colder than freezing.
- B) When dew forms and the temperature is below freezing.
- C) None of the above is correct.
- D) The temperature of the collecting surface is at or below freezing and small droplets of moisture are falling.

Q48. A line on a chart joining places of equal sea level pressure is called an:

A) Isagona.B) Isogonal.C) Isobar.D) Agonic line.

Q49. An aircraft cruises at FL 100 in an airmass, which is 10° C warmer than the Standard Atmosphere. The OAT is therefore...

A) +15° C. B) -15° C. C) -10° C. **D) +5° C.** 

Q50. What can be said about isobars?

#### A) Isobars appear on meteorological surface charts.

- B) Certain information can be depicted with the isobars on upper level charts.
- C) Isobars are lines of equal temperature.
- D) Isobars show wind speeds around a jet stream area.

Q51. The main constituents of the atmosphere are:

- A) Oxygen, Hydrogen, Carbon Dioxide, Xenon.
- B) Sulphur Dioxide, Carbon Dioxide, Particulates.
- C) Nitrogen, Oxygen, Carbon Dioxide, Ozone.
- D) Nitrogen, Oxygen, Carbon Dioxide, Argon.

Q52. How is wind measured?

- A) 2 m above the ground on a mast with an anemometer.
- B) 8-10 m above the ground on a mast with a pluviometer.

# C) 8-10 m above the ground on a mast with an anemometer.

D) 2 m above the ground in a weather shelter.

Q53. A temperature increase with altitude through a layer is called:

- A) Unstable air.
- B) Heating aloft.
- C) An extension.
- D) An inversion.

Q54. If you fly into rain which freezes on impact?

#### A) You have flown into an area of thunderstorms.

#### B) Temperatures are above freezing at some higher altitude.

- C) You have flown through a cold front.
- D) If you descend, you will fly out of the icing condition.

Q55. While flying at FL 120, you notice an OAT of -2° C. At which altitude do you expect the freezing level to be?

A) FL 90
B) FL 130
C) FL 150
D) FL 110

Q56. The observed temperature at the surface is 11° C. This can be described as:

A) ISA +11. **B) ISA -4.** C) ISA +4. D) ISA.

Q57. In the northern hemisphere, the Coriolis force deflects air to:

# A) The right.

- B) none of the above
- C) Does not deflect the air at all.
- D) The left.

Q58. An aircraft cruises at FL 300 in an airmass, which is 15° C warmer than the Standard Atmosphere. The OAT is therefore...

**A) -30° C.** B) -60° C. C) -15° C.

D) -45° C.

Q59. A parcel of air is said to be saturated if it has a relative humidity of:

A) Greater than 90 %.
B) Greater than 80 %.
C) 100 %.
D) 50 %.

Q60. The rate at which descending unsaturated air is heated is about:

# A) 3° C per 1000 ft. B) 3° C per 100 m. C) 1.5° C per 100 m. D) 1.5° C per 1000 ft.

Q61. At sea level, the pressure of the atmosphere on a standard day will cause the mercury in the column to rise to:

#### A) 29.92 inches.

- B) 19.19 inches.
- C) 92.29 inches.
- D) 29.29 inches.

Q62. What is dynamic pressure?

#### A) Pressure caused by movement.

- B) Centrifugal force.
- C) Turbulence.
- D) Acceleration force.

Q63. In relation to air density which of the following responses are correct?

A) Cold air is less dense than warm air.

#### B) Dry warm air is less dense than cold air.

C) Air density is not influenced of air humidity.

D) If the temperature is decreasing the air density will decrease.

Q64. The region of the atmosphere which is normally stable and has few clouds is known as the:

- A) Tropopause.
- **B)** Stratosphere.
- C) Jet stream.
- D) Troposphere.

Q65. Relative humidity relates to:

# A) both b and c.

B) the amount of water vapour present in warm air compared to cold air.

- C) actual water vapour present to what could be present.
- D) the degree of saturation.

Q66. You are cruising at FL 160 and notice an OAT of -27° C. The sea level pressure is 1003 hPa. Your true altitude therefore is...

#### A) 15090 ft.

- B) 16370 ft.
- C) 15630 ft.
- D) 16910 ft.

Q67. Which layer of the atmosphere contains more than 90 per cent of all water vapour?

#### A) Troposphere

- B) Ozone layer
- C) Upper stratosphere
- D) Lower stratosphere

Q68. The temperature at FL110 is -5°C. What will the temperature be at FL50 if the ICAO standard lapse rate is applied?

- A) 0°C
- B) -3°C
- C) +7°C
- D) +3°C

Q69. At a certain position, the temperature on the 300hPa chart is -48°C; according to the tropopause chart, the tropopause is at FL3330. What is the most likely temperature at FL350?

A) -54°C

B) -50°C C) -58°C

C) = 30 C

D) -56.5°C

Q70. What is the most likely temperature at the tropical tropopause?

A) -55°C B) -35°C **C) -75°C** D) -25°C

Q71. Which is true of the temperature at the tropopause?

A) There is no significant difference with change of latitude

B) It is highest in middle latitudes

C) It is higher in equatorial regions than in polar regions

#### D) It is higher in polar regions than in equatorial regions

Q72. The temperature at FL80 is +6°C. What will the temperature be at FL130 if the ICAO standard lapse rate is applied?

A) -4°C

B) 0°C

- C) -6°C
- D) +2°C

Q73. An outside air temperature of -35°C is measured while cruising at FL200. What is the temperature deviation from the ISA at this level?

A) 5°C colder than ISA

B) 5°C warmer than ISA

C) 10°C warmer than ISA

D) 10°C colder than ISA

Q74. How would you characterise an air temperature of -15°C at the 700hPa level over western Europe?

A) Within +/-5°C of ISA

B) HighC) 20°C below standardD) Low

Q75. How would you characterise an air temperature of -30°C at the 300hPa level over western Europe?

A) Low
B) Very low
C) High
D) Within +/-5°C of ISA

Q76. How would you characterise an air temperature of -55°C at the 200hPa level over western Europe?

A) Very high
B) Low
C) Within +/-5°C of ISA
D) High

Q77. In the lower part of the stratosphere the temperature

- A) increases with altitude
- B) increases at first and decreases afterward
- C) decreases with altitude
- D) is almost constant

Q78. The 0° isotherm is forecasted to be at FL50. At what FL would you expect a temperature of -6°C?

- A) FL100
- B) FL110
- C) FL20
- D) FL80

Q79. Several physical processes contribute to atmospheric warming. Which of the following contribute the most?

- A) Absorption and vaporization
- B) Solar radiation and conduction
- C) Absorption and evaporation

#### D) Convection and condensation

Q80. Convective activity over land in mid-latitudes is greatest in

- A) winter during the night and early morning
- B) winter in the afternoon
- C) summer during the night and early morning

# D) summer in the afternoon

Q81. Advection is:

- A) the same as convection
- B) vertical motion of air
- C) the same as subsidence

# D) horizontal motion of air

Q82. The radiation of the sun heats

- A) the water vapour in the air of the troposphere
- B) the air in the troposphere only directly if no clouds are present
- C) the surface of the earth, which heats the air in the troposphere
- D) the air in the troposphere directly

Q83. The environmental lapse rate in an actual atmosphere

- A) has a fixed value of 2°C/1000ft
- B) has a fixed value of 0.65°C/100m
- C) has a fixed value of 1°C/100m

D) varies with time

Q84. From which of the following pieces of information can the stability of the atmosphere be derived?

A) Pressure at the surface

#### **B)** Environmental lapse rate

- C) Dry adiabatic lapse rate
- D) Surface temperature

Q85. A layer is conditionally unstable if the air

#### A) is unstable for saturated air and stable for dry air

- B) becomes stable by lifting it
- C) is unstable for saturated air as well as for dry air
- D) is stable for saturated air and unstable for dry air

Q86. Absolute instability exists whenever the environmental lapse rate

A) exceeds the saturated adiabatic lapse rate

#### B) exceeds the dry adiabatic lapse rate

- C) is between the dry and saturated adiabatic lapse rate
- D) is less than the saturated adiabatic lapse rate

Q87. An inversion is a layer of air which is

A) absolutely unstable

#### B) absolutely stable

- C) conditionally unstable
- D) conditionally stable

Q88. The dry adiabatic lapse rate has a value of

A) 0.65°C/100m
B) 2°C/1000ft
C) 1°C/100m
D) 0.5°C/100m

Q89. The dry adiabatic lapse rate

- A) is greater during the night than during the day
- B) has a variable value
- C) is greater in summer than in winter

#### D) has a constant fixed value

Q90. An air mass is called stable when

- A) the temperature in a given air mass decreases rapidly with height
- B) the environmental lapse rate is high, with little vertical motion of air currents
- C) the pressure in a given area is constant
- D) the vertical motion of rising air tends to become weaker and disappears

Q91. In still air the temperature decreases at an average of 1.2°C per 100m increase in altitude. This temperature change is called:

- A) dry adiabatic lapse rate
- B) saturated adiabatic lapse rate

#### C) normal lapse rate D) environmental lapse rate

Q92. A layer can be

# A) stable for unsaturated air and unstable for saturated air

- B) unstable for unsaturated air and conditionally unstable
- C) stable for saturated air and unstable for unsaturated air
- D) unstable for unsaturated air and neutral for saturated air

Q93. The value of the saturated adiabatic lapse rate is closest to that of the dry adiabatic lapse rate in

# A) cirrus

- B) cumulus
- C) freezing fog
- D) stratus

Q94. In an air mass with no clouds the surface temperature is 15°C and 13°C at 1000m. This layer of air is:

- A) conditionally unstable
- B) unstable
- C) a layer of heavy turbulence
- D) stable

Q95. When in the upper part of a layer warm air is advected the

#### A) stability increases in the layer

- B) wind will back with increasing height in the northern hemisphere
- C) stability decreases in the layer
- D) wind speed will always decrease with increasing height in the northern hemisphere

Q96. Which of the following is a common result of subsidence?

- A) Wide spread NS and AS clouds and intense precipitation
- B) An inversion over a large area with haze, mist
- C) Clear air turbulence at higher altitudes
- D) CB-clouds and thunderstorms over a large area

Q97. What characteristic is associated with a temperature inversion?

A) Instability

- B) Clear ice
- C) Area of active storms

# D) Stability

Q98. Which of the following is a common cause of ground or surface temperature inversion?

#### A) Terrestrial radiation on a clear night with no or very light winds

- B) The movement of colder air under warm air, or the movement of warm air over cold air
- C) Warm air being lifted rapidly aloft, in the vicinity of mountainous terrain
- D) Heating of the air by subsidence

Q99. A significant inversion at low height is a characteristic of

A) advection fog

B) the passage of cold front

#### C) nocturnal radiation

D) cumulus clouds

Q100. An inversion is

#### A) an increase of temperature with height

- B) a decrease of temperature with height
- C) a decrease of pressure with height
- D) an increase of pressure with height

Q101. An inversion is a layer of air in which the temperature

- A) increases with height more than 1°C/100m
- B) remains constant with height
- C) decreases with height more than 1°C/100m
- D) increases with height

Q102. What is the technical term for an increase in temperature with altitude?

- A) Adiabatic
- B) Subsidence
- C) Advection
- **D)** Inversion

Q103. An isothermal layer is a layer of air in which the temperature

- A) increases with height
- B) decreases with height at a constant rate

#### C) remains constant with height

D) increases with height at a constant rate

Q104. The diurnal variation in temperature is largest when the sky is

- A) overcast and winds are strong
- B) clear and winds are strong
- C) overcast and winds are weak

#### D) clear and winds are weak

Q105. Around Paris on January 3rd at 1800UTC, the surface temperature, under shelter, is 3°C. The sky is covered by 8 oktas of stratus. QNH is 1033hPa. If the sky is covered all night, the minimum temperature of the night of January 3rd to January 4th should be

- A) significant below 0°C
- B) significantly above +3°C
- C) slightly below +3°C
- D) slightly above +3°C

Q106. On a clear sky, continental ground surface, wind calm, the minimum temperature is reached approximately

#### A) half an hour after sunrise

- B) one hour before sunrise
- C) at the moment the sun rises
- D) half an hour before sunrise

Q107. Which one of the following describes normal conditions?

- A) Temperature decreases at a similar rate in the troposphere as in the stratosphere.
- B) Temperature decreases with height in the troposphere.
- C) Temperature decreases with height in the stratosphere.
- D) Temperature increases with height in the troposphere.

Q108. What are the most common characteristics of a cold air mass moving over a warm surface?

A) Stratiform clouds, smooth air, and poor visibility.

# B) Cumuliform clouds, turbulence, and good visibility.

- C) Stratiform clouds, smooth air, and good visibility.
- D) Cumuliform clouds, turbulence, and poor visibility.

Q109. At which average height can the 850 hPa pressure level in moderate latitudes be expected?

- A) 3.0 km AMSL.B) 9.0 km AMSL.C) 1.5 km AMSL.
- D) 12.0 km AMSL.

Q110. Which of the following options is the most effective way of heating the troposphere?

#### A) Outgoing long wave radiation from the Earth.

- B) Incoming long wave radiation from the sun.
- C) Outgoing short wave radiation from the Earth.
- D) Incoming short wave radiation from the sun.

Q111. Earth heating by solar radiation is called:

- A) reflection.
- B) absorption.
- C) insolation.
- D) conduction.

Q112. When is clear ice formed?

- A) When supercooled droplets impact the structure and at a temperature well below -10° C.
- B) When supercooled droplets are large and at a temperature just below freezing.
- C) When supercooled droplets are small and at a temperature just below freezing.
- D) When supercooled droplets freeze rapidly and do not spread out.

Q113. What does a CB contain at moderate latitudes in summer?

# A) A combination of ice crystals, water droplets and supercooled water droplets.

- B) Ice crystals only.
- C) A combination of ice crystals and water droplets.

D) Ice crystals, snow, and water droplets

Q114. Which of the following are high level clouds? State the most complete answer:

A) ST, NS.
B) AS, AC.
C) NS, CI.
D) CI, CC.

Q115. Which of the following statements is incorrect?

A) Large land masses have greater diumal temperature changes than islands.

#### B) Concrete has a lower specific heat than grass.

- C) Large land masses have greater seasonal temperature changes than islands.
- D) None of the above.

Q116. Which clouds, normally found in the medium level, can extend to the other levels?

- A) ST
- B) AS
- C) CU
- D) NS

Q117. One of the reasons why land surfaces heat and cool more quickly than water is because:

- A) land has a lower conductivity than water.
- B) water has a lower relative density than land.
- C) land has a higher specific heat than water.

#### D) water has a higher specific heat than land.

Q118. When is the coldest time of the day?

#### A) 1/2 hr after sunrise.

- B) 2 hr before sunrise.
- C) 1hr before sunrise.
- D) at exact moment of sunrise.

Q119. In which temperature range does clear ice most commonly occur?

A) -5° C to -10° C.
B) below -15° C.
C) -10° C to -15° C.
D) 0° C to -6° C.

Q120. Air at T =  $+16^{\circ}$  C and DP =  $+4^{\circ}$  C is forced from sea level over a 10.000 ft mountain range and descends back to sea level on the other side. If the leeward condensation level is observed to be 8.000 ft, what will be the final temperature?

A) 24° C B) 20° C **C) 22° C** D) 18° C

Q121. For international aviation meteorological purposes, temperature is measured in degrees:

A) Absolute.

- B) Celsius.
- C) Fahrenheit.
- D) Kelvin.

Q122. What would be the final temperature in question above if the Dew Point were 6° C?

A) +06° C B) +03° C C) -06° C D) 0° C

Q123. An air mass is called stable when:

- A) the pressure in a given area is constant.
- B) the vertical motion of rising air tends to become weaker and disappears.
- C) the temperature in a given air mass decreases rapidly with height.
- D) the environmental lapse rate is high, with little vertical motion of air currents.

Q124. At which average height can the 200 hPa pressure level in moderate latitudes be expected?

A) 5.5 km AMSL.
B) 12.0 km AMSL.
C) 3.0 km AMSL.

D) 9.0 km AMSL.

Q125. What is meant by " inversion" ?

A) Temperature remains constant as height increases.

B) Temperature increases as height increases.

- C) Temperature decreases as height increases.
- D) Inversion denotes temperatures below freezing.

Q126. Insolation is maximum at:

- A) late evening.
- B) approximately 2 hours after local noon.
- C) early morning.

D) local noon.

Q127. Why is a calm and clear-sky night cooler than a cloudy night?

A) Due to contents of carbon dioxide.

- B) The radiation from the earths surface slips into space.
- C) The clouds prevent radiation from the atmosphere.
- D) There is radiation from the clouds.

Q128. High clouds are normally composed of:

- A) Condensation nuclei.
- B) Water droplets.

C) Hail.

#### D) Ice crystals.

Q129. The temperature at FL 140 is  $-12^{\circ}$  C. What will the temperature be at FL 110 if the ICAO standard lapse rate is applied:

A) -15° C. B) -18° C. **C) -6° C.** D) -9° C.

Q130. At which average height can the 500 hPa pressure level in moderate latitudes be expected?

# A) 5.5 km AMSL.

B) 12.0 km AMSL.C) 9.0 km AMSL.D) 3.0 km AMSL.

Q131. Which of the following gives conditionally unstable conditions?

# A) 1 deg C/100m.

- B) 0.65 deg C/100m.
- C) none of the above.
- D) 0.49 deg C/100m.

Q132. The family of medium clouds include altostratus, altocumulus and nimbostratus. In moderate latitudes their height of base ranges from:

A) 3000 to 5000 feet.
B) 2000 to 10000 feet.
C) 6500 to 23000 feet.
D) 2000 to 12000 feet.

Q133. The temperature at FL 80 is +6° C. What will the temperature be at FL 130 if the ICAO standard lapse rate is applied?

A) +2° C. B) -4° C. C) -6° C. D) 0° C.

Q134. Where does a Polar Cold Airmass has its origin?

- A) Over the Baltic Sea.
- B) Over the Atlantic Ocean.
- C) Over the Siberian Landmass.
- D) Over the North Pole.

Q135. What determines the structure or type of clouds which will form as a result of air being forced to ascend?

- A) The temperature of the air before lifting occurs.
- B) The relative humidity of the air after lifting occurs.

#### C) The stability of the air before lifting occurs.

D) The method by which air is lifted.

Q136. When is diurnal variation at a maximum?

- A) Clear sky, strong wind.
- B) OVC, windy.

# C) Clear sky, no wind.

D) OVC, still air conditions.

Q137. The atmosphere is heated primarily by:

# A) long wave terrestrial radiation released by the earth.

- B) earth bound electromagnetic radiation.
- C) shortwave terrestrial radiation from the earth.
- D) the suns insolation.

Q138. A parcel of air cooling by more than 1 deg C/100m is said to be?

- A) Conditionally unstable.
- B) Conditionally stable.

#### C) Unstable.

D) Stable.

Q139. The heat of the earth is transferred upwards largely by:

A) insolation.

#### B) convection.

- C) conduction.
- D) radiation.

Q140. The weather is clear and the temperature decreases uniformly and rapidly as you climb (approaching 3° C per 1000 ft), you have an indication of:

#### A) Sublimation.

#### B) Unstable air.

- C) Saturation.
- D) Stable air.

Q141. The rate of fall of pressure with height is:

#### A) Greater in cold air than in warm air.

- B) Greater in warm air than in cold air.
- C) Constant.
- D) Inversely proportional to temperature.

Q142. The heat energy used to change water vapour into liquid water:

- A) is then stored in the water vapour as latent heat.
- B) is passed to the surface from which the water is evaporating.
- C) is released to the atmosphere as latent heat.

# D) modifies the DALR to the SALR.

Q143. Which of the following statements is correct:

#### A) The diurnal range of temperature is least in tropical countries.

- B) The diurnal range of temperature sees the lowest temperature at sunrise.
- C) The diurnal variation of temperature is greatest when a moderate wind is blowing.
- D) The diurnal range of temperature is greatest in conditions of high humidity.

Q144. The sea level temperature of boiling water in degrees Fahrenheit / Celsius / Kelvin is:

A) 212 / 273 / 273
B) 323 / 100 / 373
C) 212 / 100 / 373
D) 232 / 100 / 373

Q145. The 0° isotherm is forecast to be at FL 50. At what FL would you expect a temperature of -6° C?

#### A) FL 80.

- B) FL 110.
- C) FL 100.
- D) FL 20.

Q146. The average visibility as seen from the cockpit in flight is called:

#### A) Flight visibility.

- B) Cockpit visibility.
- C) RVR.
- D) Slant visibility.

Q147. The inversion in the lower troposphere created by old high pressure system during day or night is called:

- A) frontal inversion.
- B) terrestrial inversion.

# C) subsidence inversion.

D) radiation inversion.

Q148. The amount of suns heat absorbed by the earth depends on the suns:

- A) solar strength and duration.
- B) strength and elevation.
- C) distance from the earth.

# D) elevation and duration.

Q149. The two most important methods for transfer of heat from the surface to the troposphere are:

# A) formation of convective cloud and longwave radiation.

- B) shortwave radiation and backscatter.
- C) advection and convection of warm air.
- D) convection of warm air and the formation of fog.

Q150. What units of measurement are used in forecasts for winds aloft?

- A) True direction and MPH.
- **B)** True direction and knots.
- C) Magnetic direction and knots.
- D) Magnetic direction and MPH.

Q151. If the dew point stays the same, but the air temperature decreases, then:

- A) water vapour will increase.
- B) water vapour will decrease.

#### C) the relative humidity will increase.

D) the relative humidity will decrease.

Q152. The time of maximum temperature is:

#### A) approximately 2 hours after local noon.

- B) early evening.
- C) late morning.
- D) local noon.

Q153. It is possible for temperature to increase with height. This is know as:

#### A) an inversion.

- B) a steep lapse rate.
- C) a temperature conversion.
- D) an isothermal layer.

Q154. What will be the classification of high level clouds and where will the base be:

- A) above 16 500ft, Cumuliform.
- B) above 16 500ft, Nimbus.
- C) above 14 000ft, Nimbus.

#### D) above 16 500ft, Cirriform.

Q155. Which cloud type may extend from low to high level (vertical development)?

A) NS

B) AC

C) CI

D) CB

Q156. A temperature of 15° C is recorded at an altitude of 500 metres above sea level. If the vertical temperature gradient is that of a standard atmosphere, what will the temperature be at the summit of a mountain, 2500 metres above sea level?

A) 0° C. B) +2° C. C) +4° C. D) -2° C.

Q157. Which of the following statements concerning the thermal wind component (TWC) is true?

A) the greater the TWC, the greater the reduction in the upper wind.

- B) TWC increases as the horizontal mean temperature gradient increases.
- C) TWC decreases as the horizontal mean temperature gradient increases.
- D) the greater the TWC, the greater the surface wind.

Q158. Which of the following formulae is incorrect?

A) K = F + 273
B) K = C + 273

C) C = 5/9 x (F - 32) D) F = (C x 9/5) +32

Q159. While forming clear ice in flight, water droplets freeze ...

- A) slowly and do not spread out.
- B) and spread out extensively.
- C) on impact, at temperatures lower than -10° C.
- D) rapidly and do not spread out.

Q160. The dry adiabatic lapse rate:

- A) is greater during the night than during the day.
- B) has a variable value.

#### C) has a constant fixed value.

D) is greater in summer than in winter.

Q161. How can the stability of the atmosphere be determined?

A) Surface pressure.

#### B) Ambient temperature lapse rate.

- C) Atmospheric pressure at various levels.
- D) Surface temperature/dewpoint spread.

Q162. Under normal conditions the temperature in the troposphere changes with increasing height in the following manner:

- A) increases by 2° C per 1.000 ft.
- B) increases by 3° C per 1.000 ft.

# C) decreases by 2° C per 1.000 ft.

D) decreases by 3° C per 1.000 ft.

Q163. The pressure system at position "D" is a

(refer to figure below)



# A) col

- B) ridge of high pressure
- C) secondary low
- D) trough of low pressure

Q164. What positions are connected by isobars on the surface weather chart?

- A) Positions with the same temperature at a given level
- B) Positions with the same relative pressure heights
- C) Positions with the same air pressure at a given level
- D) Positions with the same wind velocity at a given level

Q165. The isobars drawn on a surface weather chart represent lines of equal pressure

- A) at flight level
- B) at height of observatory
- C) reduced to sea level
- D) at a determined density altitude

Q166. Isobars on a surface chart are lines of equal

A) QNH

B) QNE

C) QFE

D) QFF

Q167. The pressure distribution located mainly in square 2A is a?

(refer to figure below)



- A) depression
- B) col
- C) trough of low pressure
- D) ridge of high pressure

Q168. The station pressure used in surface weather charts is

- A) QNE
- B) QFE
- C) QNH
- D) QFF

Q169. An isohypse (contour)

- A) is the longest slope line of a frontal surface
- B) is the limit between two air masses of different temperature

C) indicates the altitude of the zero degrees isotherm

# D) indicates the true altitude of a pressure level

Q170. Which of the following is true concerning atmospheric pressure?

A) It is higher in winter than in summer

B) It always decreases with height at a rate of 1hPa per 8m

# C) It decreases with height

D) It is higher at night than during the day

Q171. What is the approximate vertical interval which is equal to a pressure change of 1hPa at an altitude of 5500m?

A) 64m (210ft)
B) 32m (105ft)
C) 8m (27ft)
D) 15m (50ft)

Q172. In the troposphere the decrease of pressure per 100m increase in height

- A) is in the order of 27hPa near MSL
- B) is greater at higher levels than at lower levels
- C) remains constant at all levels

# D) is smaller at higher levels than at lower levels

Q173. In order to calculate QFE from QNH, which of the following must be known?

- A) Elevation and the temperature at the airfield
- B) Elevation of the airfield and the temperature at MSL
- C) Temperature at the airfield

# D) Elevation at the airfield

Q174. If the QNH at Locarno (200 metres above sea level) is 1025hPa, what is the approximate QFE?

# A) 1000hPa

- B) 995 hPa
- C) 1025hPa
- D) 1005hPa

Q175. The QNH at an airfield located 200 metres above sea level is 1009hPa. The air temperature is 10°C lower than a standard atmosphere. What is the QFF?

A) It is not possible to give a definitive answer

# B) More than 1009hPa

C) Less than 1009hPa

D) 1009hPa

Q176. In order to reduce QFE to QNH, which of the following item(s) must be known?

# A) Elevation of the airfield and the temperature at the airfield

- B) Elevation of the airfield and the temperature at MSL
- C) Temperature at the airfield
- D) Elevation of the airfield

Q177. QNH is defined as

- A) pressure at MSL in the actual atmosphere
- B) pressure at MSL in the standard atmosphere

C) QFE reduced to MSL using the values of the standard atmosphere

D) QFE reduced to MSL using the values of the actual atmosphere

Q178. If the QNH at Locarno (200 metres above sea level) is 1015hPa, what is the approximate QFE?

#### A) 990hPa

- B) 995hPa
- C) 1005hPa
- D) 1000hPa

Q179. If the QNH at Locarno (200 metres above sea level) is 1000hPa, what is the approximate QFE?

A) 990hPa
B) 1035hPa
C) 1025hPa
D) 985hPa

Q180. If the QNH at Locarno (200 metres above sea level) is 980hPa, what is the approximate QFE?

A) 1000hPa B) 1010hPa **C) 1005hPa** D) 1015hPa Q181. The QFF at an airfield located 400 metres above sea level is 1016hPa. The air temperature is 10°C lower than a standard atmosphere. What is the QNH?

A) More than 1016hPa

B) It is not possible to give a definitive answer

#### C) Less than 1016hPa

D) 1016hPa

Q182. The QNH at an airfield located 200 metres above sea level is 1022hPa. The air temperature is not available. What is the QFF?

# A) It is not possible to give a definitive answer

B) 1022hPa

C) Less than 1022hPa

D) More than 1022hPa

Q183. The QNH at an airfield located 0 metres above sea level is 1022hPa. The air temperature is not available. What is the QFF?

A) Less than 1022hPa

#### B) 1022hPa

- C) It is not possible to give a definitive answer
- D) More than 1022hPa

Q184. If you have a column of air limited by two isobaric surfaces at a pressure difference of 100 hPa, the distance between the pressure surfaces will change if mean temperature and mean pressure of the column of air change.

In which of the following alternatives will the change of temperature and pressure interact to shorten the distance as much as possible?

- A) The temperature increases and pressure decreases.
- B) The temperature decreases and pressure decreases.

#### C) The temperature decreases and pressure increases.

D) The temperature increases and pressure increases.

Q185. You are making a long-distance flight and have chosen a suitable cruising altitude for the whole flight. Towards the end of your flight, you have descended. What may be to reason for this?

- A) temperature has increased.
- B) you are approaching a region of low pressure.
- C) standard pressure has dropped.
- D) you are approaching a region of high pressure.

Q186. If you fly across the isobars towards a region of high pressure in the Northern Hemisphere, you will:

#### A) drift to the left.

- B) drift to the right.
- C) experience no drift but experience a headwind.
- D) experience no drift but experience a tailwind.

Q187. State the definition for QFF:

- A) QNE reduced to MSL, using standard temperature gradient.
- B) QFE reduced to MSL, using standard temperature gradient.
- C) QNH reduced to MSL, using standard temperature gradient.

#### D) QFE reduced to MSL, using actual temperature gradient.

Q188. At an altitude of 25000ft when the temperature is -40C and the pressure is 375 mb, the height interval corresponding to 1mb decrease in pressure is:

- A) 56ft.
- B) 65ft.
- C) 62ft.
- D) 60ft.

Q189. Select the correct statement regarding the wind directions in connection with the high and low pressure systems in the Northern Hemisphere:

- A) the winds blow counter-clockwise in both highs and lows.
- B) the winds blow clockwise in a high and counter clockwise in a low.
- C) the winds blow clockwise in both highs and lows.
- D) the winds blow counter-clockwise around a high a clockwise in a low.

Q190. In general, if the air mass temperature is higher than ISA, the pressure at any given height will be ... and the tropopause will be...

- A) low, low.
- B) high, low.
- C) low, high.
- D) high, high.

Q191. When flying from high to low contour values, which of the following is incorrect?

- A) the indicated height of the aircraft will be constant.
- B) the indicated height of the aircraft will only be true if 1013.25 mb is set.
- C) the true height of the aircraft will be falling.
- D) the pressure altimeter will indicate a constant value.

Q192. A rising parcel of air which has no heat entering or leaving it, will:

- A) maintain pressure, reduce in density, increase in volume.
- B) maintain volume, decrease in density, reduce in pressure.
- C) reduce in pressure, rise in temperature, decrease in density.

# D) reduce in pressure, decrease in density, increase in volume

Q193. Without readjusting the barometric setting of the altimeter, it will under-read when:

- A) flying in headwind with constant barometric pressure.
- B) flying from a high pressure area into a low pressure area.

#### C) flying from a low pressure area into a high pressure area.

D) flying in tailwind with constant barometric pressure.

Q194. In the troposphere the decrease of pressure per 100 m increase in height

# A) is smaller at higher levels than at lower levels.

- B) is greater at higher levels than at lower levels.
- C) is in the order of 27 hPa near MSL.
- D) remains constant at all levels.

Q195. At FL180, the air temperature is -35°C. The air density at this level is:

# A) Greater than the density of the ISA atmosphere at FL180

- B) Unable to be determined without knowing the QNH
- C) Less than the density of the ISA atmosphere at FL180
- D) Equal to the density of the ISA atmosphere at FL180

Q196. Half the mass of the atmosphere is found in the first

- A) 3km
- B) 5km
- C) 11km
- D) 8km
Q197. The lift of the air depends on its density. Consequently take-off runs vary with density. In what situation do you have the longest take-off run?

- A) Low elevated airport in the summer.
- B) Low elevated airport in the winter.
- C) High elevated airport in the winter.

#### D) High elevated airport in the summer.

Q198. What happens if density altitude is 3,000 ft at an airport whose elevation is 1,000 ft?

- A) The altimeter will indicate 3,000 ft when the aircraft is on the ground.
- B) Take-off and landing performance will be unaffected.
- C) Take-off and landing performance will be about the same as for an airport with an elevation of 3,000 ft.
- D) Indicated speed at 50 kt on take-off and landing will be higher than in a standard atmosphere

Q199. Which of the following combinations contain the greatest air density?

- A) Low pressure and low temperature.
- B) Low pressure and high temperature.
- C) High pressure and high temperature.

#### D) High pressure and low temperature.

Q200. Atmospheric density at 40,000 ft is approximately:

- A) four times the mean sea level value.
- B) half the mean sea level value .

#### C) one quarter of the sea level value.

D) the same as the mean sea level.

Q201. On the Earth's surface, points of nil variation are:

- A) aclinic.
- B) isogonal.
- C) agonic.
- D) isoclinals.

Q202. What do you expect with fair weather Cumulus clouds?

#### A) Turbulence at and below the cloud level.

B) Smooth flight below the cloud level.

C) Continuous rain.

D) Turbulence in and above the clouds up to approximately FL 250.

Q203. Flying conditions associated with cumulonimbus (cb) at summertime are:

- A) Bad visibility, continuous rain and little turbulence.
- B) Hazy weather combined with drizzle and turbulence.
- C) Good visibility, intervals of fine weather and little turbulence.
- D) Bad visibility in showers and pronounced turbulence.

Q204. How can the minimum safe altitude be converted to the lowest usable flight level?

- A) With the highest value of the QNH and the highest negative temperature deviation from ISA.
- B) With the highest value of the QNH and the lowest negative temperature deviation.
- C) With the lowest value of the QNH and the highest negative temperature deviation from ISA.
- D) With the lowest value of the QNH and the lowest negative temperature deviation.

Q205. Which statement is correct regarding the International Standard Atmosphere?

- A) At MSL pressure is 1013.25hPa and the decrease of temperature with height is 1°C per 100m
- B) At MSL temperature is 15°C and pressure is 1013.25hPa
- C) At MSL temperature is 10°C and the decrease in temperature with height is 1°C per 100m
- D) At MSL temperature is 15°C and the decrease in temperature with height is 1°C per 100m

Q206. The lowest assumed temperature in the International Standard Atmosphere (ISA) is:

A) -100°C

- B) -44.7°C
- C) -273°C
- D) -56.5°C

Q207. What is the vertical temperature lapse rate, up to 11km, in the standard ICAO atmosphere?

A) 4.5°C per 1000m

B) 2°C per 1000m
C) 6.5°C per 1000m
D) 3°C per 1000m

Q208. In ISA conditions:

#### A) the tropopause occurs at 36,090 ft AMSL.

- B) pressure decreases by 1 millibar every 30 ft above mean sea level.
- C) the tropopause occurs at 10 km AMSL.
- D) temperature decreases by 2 deg C per km.

Q209. Over which of the following surface types would you expect the greatest diurnal range of temperature to occur?

- A) An extensive forest area.
- B) A desert area.
- C) An ocean.
- D) Polar regions.

Q210. You intend to overfly a mountain range. The recommended minimum flight altitude is, according to the aviation chart, 15000ft/AMSL. The air mass that you will fly through is on average 15°C warmer than the standard atmosphere. The altimeter is set to QNH 1023hPa. At what altimeter reading will you effectively be at the recommended minimum flight altitude?

#### A) 14100ft

- B) 14370ft
- C) 13830ft
- D) 15900ft

Q211. During a flight at FL100 from Marseille (QNH 1012hPa) to Palma de Mallorca (QNH 1015hPa), an aircraft remains at a constant true altitude. The reason for this is that:

A) the air at Marseille is colder than that at Palma de Mallorca

B) the air at Marseille is warmer than that at Palma de Mallorca

C) the altimeters are errouneous, and need to be tested

D) one of the two QNH values may be incorrect

Q212. The QNH of an airport at sea level is 983hPa and the temperature deviation from ISA is -15°C below FL100. What is the true altitude of FL100?

A) 9790ftB) 8590ft

#### C) 10210ft D) 11410ft

Q213. Assume that an aircraft is flying in the northern hemisphere at the 500hPa pressure surface on a heading of 270degrees. Which of the following statements is correct?

- A) If in this pressure surface the wind comes from the direction 270 degrees, then true altitude is increasing
- B) If in this pressure surface the wind comes from the direction 090 degrees, then true altitude is increasing
- C) If in this pressure surface the wind comes from the direction 180 degrees, then true altitude is increasing
- D) If in this pressure surface the wind comes from the direction 360 degrees, then true altitude is increasing

Q214. You are planning to fly across a mountain range. The chart recommends a minimum altitude of 12000ft above mean sea level. The air mass you will be flying through is an average 10°C warmer than ISA. Your altimeter is set to 1023hPa (QNH of a nearby airport at nearly sea level). What altitude will the altimeter show when you have reached the recommended minimum altitude?

#### A) 11520ft

B) 11790ft

- C) 12210ft
- D) 11250ft

Q215. An aircraft is flying from Point A to Point B on the upper level contour chart. Thr altimeter setting is 1013.2hPa. Which of theese statements is correct?

(refer to figure below)



#### A) The true altitude will be higher at B than at A

- B) Wind speed at A and at B is the same
- C) The true altitude will be higher at A than at B

#### D) Wind speed at B is higher than at A

Q216. An aircraft is flying from Point A to Point B on the upper level contour chart. Thr altimeter setting is 1013.2hPa. Which of these statements is correct?

(refer to figure below)



A) The true altitude will be higher at A than at B

#### B) The true altitude will be higher at B than at A

- C) Wind speed at Madrid is higher than at A
- D) Wind speed at B is higher than at A

Q217. An aircraft is flying from Point A to Point B on the upper level contour chart. Thr altimeter setting is 1013.2hPa. Which of theese statements is correct?



- A) Wind speed at A and at B is the same
- B) The true altitude will be higher at A than at B
- C) Wind speed at A is higher than at B
- D) The true altitude will be higher at B than at A

Q218. The following temperatures have been observed over a station at 1200UTC. Assume the station is at MSL. Height in feet. Temperature in degrees C.

20000: -12; 18000: -11; 16000: -10; 14000: -10; 12000: -6; 10000: -2; 8000: +2; 6000: +6; 4000: +12; 2000: +15; surface: +15

- A) The layer between 16000ft and 18000ft is absolutely unstable
- B) Assuming that the MSL pressure is 1013.25hPa the true altitude of an aircraft would actually be higher than the indicated altitude
- C) The temperature at 10000ft is in agreement with the temperature in the International Standard Atmosphere
- D) The height of the freezing level over the station is approximately 12000ft

Q219. An aircraft is flying from Point A to Point B on the upper level contour chart. The altimeter setting is 1013.2hPa. Which of theese statements is correct?

(refer to figure below)



- A) Wind speed at Paris is higher than at B
- B) The true altitude will be higher at A than at B
- C) The true altitude will be higher at B than at A
- D) Wind speed at A is higher than at B

Q220. An aircraft is flying over the sea at FL120; the true altitude is 12000ft; local QNH is 1013hPa. What assumption, if any, can be made about the air mass in which the aircraft is flying?

#### A) Its average temperature is the same as ISA

- B) It is warmer than ISA
- C) There is insufficient information to make any assumption
- D) It is colder than ISA

Q221. An aircraft is flying through the Alps on a very cold winter's day. The regional QNH is 1013hPa. During the flight, you circle around a mountain at an altitude of its summit. What reading will the aneroid altimeter give, compared to the elevation of the summit?

- A) There is insufficient information to come to a conclusion
- B) A lower altitude than the elevation of the summit
- C) The same altitude as the elevation of the summit

#### D) A higher altitude than the elevation of the summit

Q222. An aircraft is flying through the Alps on a warm summer's day. The weather is fine, and there is a high pressure system in the area. During the flight, a mountain is passed at an altitude of its summit. What reading will the aneroid altimeter give, compared to the summit's elevation?

A) The same altitude of the summit

B) A lower altitude than the elevation of the summit

C) A higher altitude than the elevation of the summit

D) There is insufficient information to come to a conclusion

Q223. An aircraft is flying at FL80. The local QNH is 1000hPa. After the second altimeter has been adjusted to the local QNH, the reading will be approximately

A) 8350ft
B) 8000ft
C) 8600ft
D) 7650ft

Q224. You must make an emergency landing at sea. The QNH of a field on a nearby island with an elevation of 4000ft is 1025hPa and the temperature is -20°C. What is your pressure altimeter reading when landing if 1025hPa is set in the subscale?

A) More than 0ft, but less than 4000ft
B) Less than 0ft
C) 4000ft
D) 0ft

Q225. Which of the following conditions gives the highest value of the QNH?

A) QFE= 995hPa, elevation= 1200ft (366m)
B) QFE= 1003hPa, elevation= 1200ft (366m)
C) QFE= 1000hPa, elevation= 1200ft (366m)
D) QFE= 995hPa, elevation= 1600ft (488m)

Q226. The QNH is equal to the QFE if

A) T actual> T standard
B) T actual< T standard</li>
C) the elevation= 0
D) T actual= T standard

Q227. When the subscale is set to the QNH of an airfield the pressure altimeter indicates

- A) elevation while landing
- B) elevation while landing only if conditions are as the International Standard Atmosphere
- C) zero while landing only if conditions are as in the International Standard Atmosphere
- D) zero while landing

Q228. Which statement is true?

- A) QNH is lower than 1013.25hPa at any time
- B) QNH can not be 1013.25hPa
- C) QNH can be 1013.25hPa only for a station at MSL

#### D) QNH can be lower as well as higher than 1013.25hPa

Q229. Which of the following statements is true?

- A) QNH is always lower than QFE
- B) QNH is always equal to QFE
- C) QNH can be equal to QFE
- D) QNH is always higher than QFE

Q230. The barometric compensator of an altimeter is locked on reference 1013.2hPa. The aircraft has to land on a point with an elevation of 290ft where the QNH is 1023hPa. Assuming that 1hPa corresponds to 27ft, the reading on the altimeter on the ground will be:

- A) 560ft
- B) -10ft
- C) 20ft
- D) 11ft

Q232. Before landing, an altimeter set to QFE indicates

- A) the aircraft's altitude above the mean sea level
- B) in standard atmosphere, the height of the aircraft above the official airport elevation
- C) the height of the aircraft's wheels above the runway
- D) the flight level

Q233. An altimeter adjusted to 1013hPa indicates an altitude of 3600ft. Should this altimeter be adjusted to the local QNH value of 991hPa, the altitude indicated would be

A) 4278ft
B) 3006ft
C) 4194ft
D) 2922ft

Q234. After landing at an aerodrome (QNH 993hPa) it is noticed that the altimeter is still set to 1013.2hPa and that it reads 1200ft. What is the elevation of the aerodrome above mean sea level?

A) 2280ft

B) 660ft

C) 1200ft

D) 1740ft

Q235. An aircraft lands at an airport (airport elevation 540ft, QNH 993hPa) with the altimeter set to 1013hPa. What will it indicate?

#### A) 1080ft

B) 380ft

- C) 0ft
- D) 700ft

Q236. During the climb after take-off, the altimeter setting is adjusted at the transition altitude. If the local QNH is 966hPa, what will happen to the altimeter reading during the resetting procedure?

A) It is not possible to give a definitive answer

B) It will decrease

#### C) It will increase

D) It will remain the same

Q237. An aircraft is descending to land under IFR. If the local QNH is 1009hPa, what will happen to the altitude reading when the altimeter is reset at the transition level?

A) It will not be affected

B) It will remain the same

#### C) It will decrease

D) It will increase

Q238. What pressure is defined as QFE?

A) The pressure reduced to sea level using ISA temperatures

#### B) The pressure at field elevation

- C) The pressure of the altimeter
- D) The pressure reduced to sea level using actual temperatures

Q239. An aircraft at an airport (airport elevation 1240ft, QNH 1008hPa). The altimeter is set to 1013hPa. The altimeter will indicate:

- A) 1280ft
- B) 1105ft
- C) 1200ft
- D) 1375ft

Q240. What is the relationship, if any, between QFE and QNH at an airport situated 50ft below sea level?

#### A) QFE is greater than QNH

- B) QFE equals QNH
- C) QFE is smaller than QNH
- D) No clear relationship exists

Q241. In Geneva, the local QNH is 994hPa. The elevation of Geneva is 1411ft. The QFE adjustment in Geneva is

- A) 948hPa
- B) 961hPa
- C) 942hPa
- D) 967hPa

Q242. At which pressure and temperature conditions may you safely assume that the minimum usable flight level at least lies at the same height, as the minimum safe altitude?

- A) In a cold low pressure region
- B) In a warm high pressure region
- C) At a temperature less than or equal to that of the ISA and where the QNH is less than 1013hPa
- D) At a temperature greater than or equal to that of the ISA and where the QNH is greater than or equal to 1013hPa

Q243. If atmospheric conditions exist such that the temperature deviation is ISA+10°C in the lower troposphere up to 18000ft, what is the actual layer thickness between FL60 and FL120?

A) 6000ft B) 5900ft

C) 6240ft

D) 5760ft

Q244. Which weather condition lowers true altitude as compared to pressure altitude to a position where flight over mountains could be dangerous?

A) Cold high

- B) Warm high
- C) Cold low
- D) Warm depression

Q245. A vertical spacing of 1000ft, is the standard required separation between two FL. Under conditions of cold air advection (ISA-15°C), what would the true vertical separation be?

#### A) Less than 1000ft

- B) More than 1000ft
- C) It remains 1000ft
- D) Without QNH information, it can not be determined

Q246. If an altimeter setting is not available before flight, to which altitude should the pilot adjust the altimeter?

A) So that the altimeter reads zero.

#### B) The elevation of the departure area.

- C) Pressure altitude corrected for non-standard temperature.
- D) The elevation of the nearest airport corrected to mean sea level.

Q247. What happens to an aircrafts altimeter on the ground at the approach of a cold front?

#### A) Increases.

- B) Increases then decreases.
- C) Remains the same.
- D) Decreases then increases.

Q248. After landing at an aerodrome (aerodrome elevation 1715 FT), the altimeter indicates an altitude of 1310 FT.

The altimeter is set to the pressure value of 1013 hPa. What is the QNH at this aerodrome?

#### A) 1028 hPa.

- B) 1013 hPa.
- C) 998 hPa.
- D) 1015 hPa.

Q249. If an aircraft, without changing altimeter reference, flies so that the altimeter all the time indicates the same altitude, this always means that:

#### A) the air pressure around the aircraft is unchanged.

- B) the actual altitude above sea level is unchanged.
- C) the actual height above the mean ground level is unchanged.
- D) the air pressure at sea level is unchanged.

Q250. In which of the following cases will the altimeter always indicate the airport elevation when landing?

- A) If QFE of the airport is set as reference.
- B) At standard setting.
- C) If QFF on the airport is set as reference.

#### D) If QNH of the airport is set as reference.

Q251. State the definition for QNH:

- A) QFF reduced to MSL, using standard temperature gradient.
- B) Pressure reduced to sea level, using the standard temperature gradient.
- C) QFE reduced to MSL, using actual temperature gradient.
- D) QNE reduced to MSL, using standard temperature gradient.

Q252. If flying North with easterly drift, an aircrafts altimeter will progressively:

A) impossible to say - it depends on the atmospheric pressure.

B) remain correct.

#### C) over-read.

D) under-read.

Q253. Which of these would cause your true altitude to decrease with a constant indicated altitude?

A) Cold/High.B) Hot/High.C) Hot/Low.D) Cold/Low.

Q254. The QNH is 1030Hpa and at the Transition Level you set the SPS. What happens to your indicated altitude?

A) Rises but not much.

#### B) Drops by approximately 510ft.

- C) Rises by approximately 510ft.
- D) Drops but not much.

Q255. QNH 1025 hPa at an altitude of 200 m AMSL: What will the approximate QFE be?

#### A) 1000 hPa.

B) 1005 hPa.

C) 1025 hPa.

D) 995 hPa.

Q256. If it is necessary to set the altimeter from 29.15 to 29.85, what change will occur?

A) 7000-foot increase in indicated altitude.

B) 70-foot increase in indicated altitude.

#### C) 700-foot increase in indicated altitude.

D) 70-foot increase in density altitude.

Q257. QNH is defined as:

A) QFE reduced to MSL using the actual conditions.

- B) The pressure at MSL obtained using the standard atmosphere.
- C) The pressure at MSL obtained using the actual conditions.

#### D) QFE reduced to MSL using the standard atmosphere.

Q258. An aircraft takes of from airfield A, elevation 270ft, with the QFE of 994mb correctly set. Without re-setting the altimeter the pilot lands at airfield B, 405ft higher than A, with a QNH of 1000mb. Use 27ft/mb for calculations. On landing the altimeter will read:

A) 405ft below zero.B) 405ft.C) 513ft.

D) 513ft below zero.

Q259. Flying at FL135, the Radio Altimeter indicates a true altitude of 13,500 ft. The local QNH is 1019 hPa. Hence the crossed air mass is, on average:

#### A) Colder than ISA.

- B) At ISA standard temperature.
- C) Warmer than ISA.
- D) There is insufficient information to determine the average temperature deviation.

Q260. The difference between QNH and QFE at an airport is:

- A) dependent on the air pressure at the airport.
- B) dependent on the air pressure as well as the air temperature of the airport.
- C) always the same.
- D) dependent on the (ambient) air temperature of the airport.

Q261. You are flying in the Alps at the same level as the summits on a hot day. What does the altimeter read?

- A) Higher altitude as the summit.
- B) Impossible to tell.
- C) Lower altitude as the summit.
- D) Same altitude as the summit.

Q262. Which factors below increase density altitude for a given aerodrome:

- 1. Decreasing air pressure.
- 2. Increasing air pressure.
- 3. Decreasing temperature.
- 4. Increasing temperature.
- A) 2, 3
- B) 2, 4
- C) 1, 4
- D) 1, 2

Q263. At an airport 1,700 ft above sea level the temperature reading is  $+10^{\circ}$  C . from the barometer readings made at the same time QFE, QFF and QNH are computed. Which of the following statements concerning air pressure in correct?

A) QFF is equal to QFE.

## B) QFF is equal to QNH.C) QFF is higher than QNH.D) QNH is equal to QFE.

Q264. On the ground, an altimeter will read ... ft if QFE is set and ... if QNH is set:

#### A) airfield elevation; airfield altitude

#### B) zero ft; airfield elevation

- C) zero ft; airfield height
- D) zero ft; airfield altitude

Q265. If the Bahrain QNH = 1003mb, how thick is the Transition Layer assuming that 1mb = 40 ft at altitude; the Bahrain TA = 13.000 ft and the TL is FL 150?

A) 1,210 ft
B) 1,500 ft
C) 600 ft
D) 1,600 ft

Q266. Standard altimeter setting is:

A) 1015.25 hPa
B) 1013.25 hPa
C) 1018.25 hPa
D) 1010.25 hPa

Q267. During a flight over the sea at FL 100 from Marseille (QNH 1012 hPa) to Palma de Mallorca (QNH 1012 hPa), the true altitude is constantly increasing. What action, if any, should be taken ?

- A) None, the reason for the change is that the air around Palma is warmer than the air around Marseille
- B) Have your altimeter checked, because its readings are obviously wrong
- C) Recheck the QNH because one of the QNH values must be wrong
- D) Compensate by heading further to the left

Q268. During a flight over the sea at FL 100 from Marseille (QNH 1016 hPa) to Palma de Mallorca (QNH 1016 hPa), the true altitude is constantly decreasing. What is the probable reason for this ?

- A) The altimeter is faulty
- B) One of the QNH values must be wrong
- C) The air at Palma de Mallorca is warmer than that at Marseille
- D) The air at Marseille is warmer than that at Palma de Mallorca

Q269. What is the approximate speed of 90km/h, expressed in knots?

- A) 70kt
- B) 55kt
- C) 50kt
- D) 60kt

Q270. What values are used for the forecasted wind at higher levels?

A) Direction relative to grid north and speed in km/h

#### B) Direction relative to true north and speed in knots

- C) Direction relative to magnetic north and speed in knots
- D) Direction relative to magnetic north and speed in km/h

Q271. What term describes an elongated area of low pressure?

- A) Ridge.
- B) Isobar.
- C) Hurricane or typhoon.
- D) Trough.

Q272. Which statement is true, when isobars stand close together on a surface chart?

A) A high pressure area is approaching.

#### B) Strong winds are present.

- C) Westerly winds prevail.
- D) Lights winds prevail.

Q273. What happens when you descend from 2000 ft to the surface, when no fronts are present?

A) The wind veers and decreases.

#### B) The wind backs and decreases.

- C) The wind backs and the wind speed remains more or less constant.
- D) The wind veers and increases.

Q274. What prevents air from flowing directly from a high to a low pressure?

- A) Pressure force.
- **B)** Coriolis force.
- C) Centripetal force.
- D) Centrifugal force.

Q275. A Foehn wind is:

- A) a dry wind which blows through a mountain gap or valley.
- B) a wind which flows down the leeside of a mountain due to its greater density.
- C) a warm wind which flows down the leeside of a mountain due to the pressure distribution.

#### D) a warm dry wind which blows down the leeside of a mountain.

Q276. Define high pressure:

- A) A high pressure ridge.
- B) An area with higher pressure than that of the environments.
- C) An area of divergence.
- D) Non of the above.

Q277. The effect of wind is to ... the difference in temperature between ground level and 4 ft:

- A) increase
- B) cancel
- C) equalise
- D) decrease

Q278. Which of the following statements is untrue?

- A) The Coriolis force deflects the wind to the right in the Northern hemisphere only.
- B) The geostrophic force is the same as the Coriolis force.
- C) The Coriolis force deflects the wind to the right in both hemispheres.
- D) The geostrophic force deflects the wind to the left in the Southern hemisphere.

Q279. Characteristic of a cold air mass is:

- A) precipitation (drizzle).
- B) extensive fog.
- C) strong and smooth winds.
- D) showers and gusty winds.

Q280. Water droplets often condense or persist at temperature colder than  $0^{\circ}$  C. What are water droplets called which are colder than  $0^{\circ}$  C?

A) None of the above.

#### **B)** Supercooled water droplets.

C) Ice.

D) Super-heated water droplets.

Q281. Which of the following statements is true?

A) A gust is a squall which lasts for several minutes.

B) A gale has an average speed of 33 Kts or more.

#### C) The more stable the atmosphere, the less turbulence.

D) A gust is a squall which lasts for several minutes.

Q282. Due to the diurnal variations of temperature the following types of wind arise:

#### A) Monsoon winds.

#### B) Sea and land breeze.

C) Anabatic winds.

D) Trade-winds.

Q283. At which location does Coriolis force have the least effect on wind direction?

- A) Middle latitudes (30° to 60°).
- B) It is almost constant everywhere on earth.

#### C) At the Equator.

D) At the poles.

Q284. What is the term used to describe streamers of precipitation trailing beneath clouds, but evaporating before reaching the ground:

A) None of the above.
B) Virga.
C) Dissipation trails.
D) Foehn.

Q285. How does Coriolis force affect wind direction in the Southern Hemisphere?

- A) Causes anti-clockwise rotation around a low.
- B) Causes wind to flow out of a low toward a high.
- C) Causes clockwise rotation around a low.

D) Has exactly the same effect as in the Northern Hemisphere.

Q286. Which atmospheric factor causes rapid movement of surface fronts?

#### A) Upper winds blowing across the front.

- B) Lower winds blowing parallel to the front.
- C) The cold front overtaking and lifting the warm front.
- D) Upper low located directly over the surface low.

Q287. The wind which results from air cooling on the side of a valley is known as:

#### A) a katabatic wind.

- B) a mountain breeze.
- C) an anabatic wind.
- D) a valley wind.

Q288. A trough is a:

#### A) kind of low pressure.

- B) tropical wind.
- C) high pressure ridge.
- D) tropical thunderstorm.

Q289. What is condensation?

#### A) The change of state from water vapour to water.

- B) The change of state from ice to water.
- C) The change of state from water to water vapour.
- D) The change of state from ice to water vapour or from water vapour to ice.

Q290. What are trade winds?

- A) The westerly wind zones.
- B) The polar easterly winds.
- C) Foen winds in alpine valleys.

#### D) The wind zones towards the Intertropical Convergence Zone.

Q291. Fog which reaches only 2 metres above ground or 10 metres above the sea is called:

#### A) Shallow fog.

B) Smog.

C) Drifting fog. D) Mist.

Q292. With respect to high and 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 descending air.
- C) A high pressure area or trough is an area of rising air.

#### D) A high pressure area or ridge is an area of descending air.

Q293. Possible mountain wave turbulence should be anticipated in cases where wind speeds of:

## A) 25 kts. or greater blow across a mountain ridge, and the air is stable.

- B) 25 kts. or greater blow parallel to a mountain peak, and the air is stable.
- C) 25 kts. or greater blow down a mountain valley, and the air is unstable.
- D) 20 kts. or greater blow across a mountain ridge, and the air is unstable.

Q294. The wind tends to follow the contour lines (isohypses) above the friction layer because

### A) the coriolis force tends to balance with the horizontal pressure gradient force

- B) the coriolis force acts perpendicular on a line that connects high and low pressure system
- C) the friction of the air with the earth's surface gives the airflow a diversion perpendicular to the gradient force.
- D) contour lines are lines that connect points with the same windspeed in the upper air

Q295. For the same pressure gradient at 60°N, 50°N and 40°N the speed of the geostrophic wind will be

#### A) greatest at 40°N

- B) the same at all altitudes
- C) least at 50°N
- D) greatest at 60°N

Q296. The geostrophic wind speed is directly proportional to the

- A) sine of latitude
- B) density of the air

#### C) horizontal pressure gradient

#### D) curvature of isobars

Q297. The wind speed in a system with curved isobars compared to a system with straight isobars is (other conditions being the same)

#### A) higher if curvature is anticyclonic

- B) always lower
- C) higher if curvature is cyclonic
- D) always higher

Q298. Wind is caused by

A) the rotation of the earth

#### B) horizontal pressure differences

- C) the movement of fronts
- D) friction between the air and the ground

Q299. The geostrophic wind is less than the gradient wind around an anticyclone because the

- A) effect of coriolis is added to friction
- B) coriolis effect opposes the centrifugal force
- C) centrifugal force is added to the pressure gradient
- D) centrifugal force opposes the pressure gradient

Q300. The difference between geostrophic wind and gradient wind is caused by

- A) slope of pressure surfaces
- B) friction
- C) curvature of isobars
- D) horizontal temperature gradients

Q301. For a similar pressure gradient, the geostrophic wind speed will be

- A) greater at 60°N than at 30°N
- B) equivalent to gradient wind +/- thermal component
- C) the same at all latitudes north or south of 15°

#### D) greater at 30°N that at 60°N

Q302. The geostrophic wind depends on

- A) geographic latitude, centripetal force, height
- B) earth's rotation, geographic latitude, centripetal force

#### C) density, earth's rotation, geographic latitude

D) centripetal force, height, pressure gradient

Q303. Geostrophic wind

A) always increases with increasing height

#### B) is perpendicular to the horizontal pressure gradient force

- C) veers with height if cold air is advected in the northern hemisphere
- D) is directly proportional to the density of the air

Q304. Geostrophic wind is the wind when isobars are

A) straight lines and no friction is involved

#### B) straight lines and no friction is involved

- C) curved lines and friction is involved
- D) curved lines and no friction is involved

Q305. Which forces are balanced with geostrophic winds?

- A) Friction force, pressure gradient force, Coriolis force
- B) Pressure gradient force, Coriolis force, centrifugal force

C) Pressure gradient force, Coriolis force

D) Pressure gradient force, centrifugal force, friction force

Q306. The greater the pressure gradient the

#### A) closer the isobars and the stronger the wind

- B) further the isobars will be apart and the higher the temperature
- C) further the isobars will be apart and the weaker the wind
- D) closer the isobars and the lower the temperatures

Q307. Where are you likely to find the strongest winds close to the ground?

- A) Where there is little variation in pressure over a large area during the winter months
- B) At the centre of a high-pressure system
- C) In the transition zone between two air masses
- D) At the centre of a low-pressure system

Q308. What characteristics will the surface winds have in an area where the isobars on the weather map are very close together?

- A) Very weak but gusty and flowing across the isobars
- B) Strong and parallel to the isobars
- C) Moderate and parallel to the isobars

#### D) Strong and flowing across the isobars

Q309. In a low pressure system the convergence at the surface is caused by

- A) the curvature of the isobars
- B) centripetal forces
- C) the inbalance of the horizontal gradient force and the Coriolis force

#### D) frictional forces

Q310. In an area converging air

- A) clouds can not be formed
- B) convective clouds can be dissolved
- C) stratified clouds can be dissolved

#### D) clouds can be formed

Q311. Divergence in the upper air results, near the surface, in

A) rising pressure and likely dissipation of clouds

#### B) falling pressure and likely formation of clouds

- C) falling pressure and likely dissipation of clouds
- D) rising pressure and likely formation of clouds

Q312. The wind which results from the warming on the side of a valley is known as:

- A) a valley wind.
- B) a katabatic wind.

#### C) an anabatic wind.

D) a Foehn wind.

Q313. The error introduced in geostrophic or gradient wind calculations when the pressure is changing rapidly is the:

- A) geothermal effect.
- B) convergence correction.
- C) isallobaric effect.

D) Foehn effect.

Q314. A land breeze blows:

A) from the sea by night.

- B) from the sea by day.
- C) always from the sea.

#### D) from the land by night.

Q315. In a warm front, a freezing level of 10.000 ft in the warm air and 2.000 ft in the cold air is observed. Where is the probability for FZRA the lowest?

A) 10,000 ft.
B) 12,000 ft.
C) 1000 ft.
D) 5,000 ft.

Q316. When flying at FL 180 in the Northern Hemisphere you experience a right drift:

- A) your TA remains unchanged.
- B) your TA decreases.
- C) not enough information is provided to determine the TA.
- D) your TA increases.

Q317. Assuming a constant pressure gradient, the gradient wind speed would be slowest:

- A) at 30 N around a depression.
- B) at 50 N around an anticyclone.
- C) at 50 N around a depression.
- D) at 30 N around an anticyclone.

Q318. The gradient wind is:

- A) less than the geostrophic wind around a high.
- B) more than the geostrophic wind around a low.
- C) none of the above.
- D) less than the geostrophic wind around a low.

Q319. An aircraft flying in the southern hemisphere at 2000 feet, has to turn to the right in order to allow for drift. In which direction, relative to the aircraft, is the centre of low pressure ?

#### A) In front.

- B) To the right.
- C) To the left.
- D) Behind.

Q320. Assuming a generalised zonal system of world climatic and wind circulation, zone "u" is an area of?

(refer to figure below)



A) SW trade winds

#### **B)** NE trade winds

- C) subtropical high pressure
- D) travelling depressions

Q321. Between which latitudes are you most likely to find the region of travelling low pressure systems?

A) 35°- 55°
B) 55°- 75°
C) 10°- 15°
D) 25°- 35°

Q322. Assuming a generalised zonal system of world climatic and wind circulation, zone "y" is an area of?



- A) SE trade winds
- **B) travelling low pressure systems**
- C) subtropical high pressure systems
- D) NE trade winds

Q323. Assuming a generalised zonal system of world wind circulation, the NE trade winds are applicable to zone



- A) u
- B) w
- C) t
- D) v

Q324. Assuming a generalised zonal system of world wind circulation, the travelling low pressure systems are applicable to zone

(refer to figure below)



#### A) s and y

B) t and x

- C) t only
- D) u and w

Q325. Assuming a generalised zonal system of world climatic and wind circulation, zone "t" is an area of



- A) travelling low pressure systems
- **B)** subtropical high pressure systems
- C) SE trade winds

#### D) NE trade winds

Q326. In the central part of the Atlantic Ocean between 10°N and 20°N the prevailing winds are

- A) NE monsoon on winter and SW monsoon in summer
- B) NE trade winds
- C) SW winds throughout the whole year
- D) SE trade winds

Q327. At a coastal airfield, with the runway parallel to the coastline. You are downwind over the sea with the runway to your right. On a warm summer afternoon, what would you expect the wind to be on finals?

- A) Headwind.
- **B)** Crosswind from the right.
- C) Tailwind.
- D) Crosswind from the left.

Q328. With all other things being equal with a high and a low having constantly spaced circular isobars. Where is the wind the fastest?

A) Wherever the PGF is greatest.

#### **B)** Anticyclonic.

- C) Cyclonic.
- D) Where the isobars are closest together.

Q329. What can be said about showers at a cold front?

- A) They occur mostly in stable air.
- B) NS clouds are present.
- C) Unstable air is present.
- D) It is a sign for a cold occlusion.

Q330. What is meant by an area of divergence?

- A) A high pressure area.
- B) An area where air masses are moving in.
- C) A frontal zone.

#### D) An area where air masses are moving out.

Q331. Name the jetstream(s) which appear all year round:

- A) subtropical jetstream only.
- B) polar front jetstream only.

#### C) subtropical and polar front jetstream.

D) arctical jetstream.

Q332. When a cold front has passed over an airfield, the wind will:

- A) become laminar.
- B) not change.
- C) veer.
- D) reverse.

Q333. Which degree of aircraft turbulence is determined by the following ICAO description? "There may be moderate changes in aircraft attitude and/or altitude but the aircraft remains in positive control at all times. Usually, small variations in air speed. Changes in accelerometer readings of 0.5 to 1.0g at the aircraft's center of gravity. Occupants feel starin against seat belts. Loose objects move about. Food service and walking are difficult."

#### A) Moderate

- B) Violent
- C) Light
- D) Severe

Q334. All pilots encountering Clear Air Turbulence are requested to report it. You experience CAT which causes passengers and crew to feel definite strain against their seat belt or shoulder straps. Unsecured objects are dislodged. Food service and walking are difficult. This intensity of CAT should be reported as

#### A) moderate

- B) extreme
- C) severe
- D) light

Q335. What degrees of turbulence, if any, is likely to be encountered while flying through a cold front in the summer over Central Europe in FL100?

#### A) Severe turbulence in CB cloud

- B) Light turbulence in CB cloud
- C) Light turbulence in ST cloud
- D) Moderate turbulence in NS cloud

Q336. Which cloud type may indicate the presence of severe turbulence?

- A) Stratocumulus
- B) Nimbostratus
- C) Cirrocumulus

#### D) Altocumulus lenticularis

Q337. Fair weather cumulus often is an indication of

A) a high risk of thunderstorms

#### B) turbulence at and below the cloud level

- C) smooth flying conditions below the cloud level
- D) poor visibility at surface

Q338. On a clear summer day, turbulence caused by solar heating is most pronounced

#### A) during the early afternoon

- B) immediately after sunset
- C) about midmorning
- D) during early morning hours before sunrise

Q339. Turbulence at low level is more likely to be associated with:

A) heavy rainfall.

#### B) a temperature inversion.

- C) steady drizzle.
- D) an anticyclone over the ocean.

Q340. What degree of turbulence, if any, is likely to be encountered while flying through a cold front in the summer over Central Europe at FL 100?

- A) Light turbulence in ST cloud.
- B) Light turbulence in CB cloud.

#### C) Severe turbulence in CB cloud.

D) Moderate turbulence in NS cloud.

Q341. In the northern hemisphere with an anticyclonic pressure system the geostrophic wind at 2000ft over the sea is 060/15. At the same position the surface wind is most likely to be

A) 060/18B) 075/12C) 060/12

#### D) 045/12

Q342. During a descent from 2000ft above the surface to the surface (no frontal passage) the wind normally

- A) backs and increases
- B) veers and decreases
- C) veers and increases
- D) backs and decreases

Q343. In the northern hemisphere the gradient wind of a cyclonic pressure distribution is 350/24, over the sea the surface wind would approximate

A) 030/20 B) 340/20 C) 340/28 D) 030/28

Q344. If Paris reports a wind of 190°/15kt on the MEATR, what wind velocity would you expect to encounter at a height of 2000ft above the ground?

A) 250/25
B) 220/30
C) 160/20
D) 220/10

Q345. Generally nothern hemisphere winds at 5000ft/AGL are southwesterly while most of the surface winds are southerly. What is the primary reason of difference between these two wind directions?

A) A strong pressure gradient at higher altitudes

#### B) Friction between the wind and the surface

- C) The influence of warm air at the lower altitude
- D) Stronger Coriolis force at the surface

Q346. What relationship exists between the wind at 3000ft and the surface wind?

- A) The surface wind is veered compared to the wind at 3000ft and is usually weaker
- B) They have the same direction, but the surface wind is weaker, caused by friction
- C) The wind at 3000ft is parallel to the isohypses and the surface wind direction is across the isobars toward the low pressure and

#### the surface wind is weaker

D) They are practically the same, except when eddies exist, caused by obstacles

Q347. What causes surface winds to flow across the isobars at an angle rather than parallel to the isobars?

- A) Coriolis force
- B) Greater atmospheric pressure at the surface

#### C) Surface friction

D) Greater density of the air at the surface

Q348. You are flying at 2500ft/AGL, with a southerly wind, and intend to land at an airport, at sea level directly below. From approximately which direction would you expect the surface wind (mid-latitude, northern hemisphere)?

A) South

- B) Southwest
- C) South-southwest
- **D)** South-southeast

Q349. Of the forces that act on low level winds, the pressure gradient force acts ... and the geostrophic force acts...

- A) across the isobars; along the isobars.
- B) along the isobars; at right angles to the wind vector.
- C) across the isobars; at right angles to the wind vector.

D) at right angles to the wind vector; along the wind vector.

Q350. The magnitude of the geostrophic force:

#### A) increases with increase of wind speed.

B) increases with decrease of wind speed.

- C) is not affected by the windspeed.
- D) decreases with an increase of latitude.

Q351. If Paris reports a wind of 19015KT on the METAR, what wind velocity would you expect to encounter at a height of 2000 feet above the ground ?

A) 16020KT
B) 22030KT
C) 25025KT

#### D) 22010KT

Q352. If Paris reports a wind of 16020KT on the METAR, what wind velocity would you expect to encounter at a height of 2000 feet above the ground?

# A) 14020KT B) 19040KT C) 17015KT D) 16030KT

Q353. If Paris reports a wind of 30012KT on the METAR, what wind velocity would you expect to encounter at a height of 2000 feet above the ground ?

A) 30025KT
B) 23030KT
C) 33025KT
D) 27020KT

Q354. The sea breeze is a wind from the tropopause

- A) that reaches up to the tropopause in daytime
- B) blowing at night in mid-latitudes
- C) occuring only in mid-latitudes and daytime

#### D) occuring only in the lower layers of the atmopshere in daytime

Q355. In a mountain-valley wind circulation, the mountain wind blows

A) during the day down from the mountains

#### B) at night down from the mountains

- C) at night up from the valley
- D) during the day up from the valley

Q356. When otherwise calm and clear conditions exist a station on the shore of a large body of water will experience wind

- A) continually from water to the land
- B) continually from land to water
- C) from the water in daytime and from the land at night
- D) from the land in daytime and from the water at night

Q357. A mountain breeze (katabatic wind) blows

- A) up the slope during the day
- B) down the slope during the night
- C) up the slope during the night
- D) down the slope during the day

Q358. An aircraft is approaching under visual flight rules an airfield whose runway is parallel to the coast. When downwind over the sea, the airfield is on the left. What wind effect should be anticipated on final approach and landing during a sunny afternoon?

- A) Tailwind
- B) Crosswind from the right
- C) Crosswind from the left
- D) Headwind

Q359. The most frequent wind direction in a valley caused by thermal effects is toward the:

- A) valley during daylight as much as at night
- B) mountain at night
- C) valley during daylight hours

#### D) mountain during daylight hours

Q360. A high pressure area (shallow pressure gradient) covers an area of the Mediterranean Sea and its nearby airport. What surface wind direction is likely at the airport on a sunny afternoon?

#### A) Variable

#### B) Sea to land

- C) Land to sea
- D) Parallel to the coastline

Q361. In a land- and sea-breeze circulation the land-breeze blows:

#### A) during the night and is weaker than the sea-breeze

- B) during the day and is weaker than the sea-breeze
- C) during the day and is stronger than the sea-breeze
- D) during the night and is stronger than the sea-breeze

Q362. Which of the following is true of a land breeze?

A) It blows from water to land

B) It blows by day

C) It blows only at noon

#### D) It blows from land to water

Q363. An anabatic wind is a wind which:

- A) flows down a hill or mountain mainly during the day.
- B) flows up a hill or mountain mainly during the night.

C) flows up a hill or mountain mainly during the day.

D) flows down a hill or mountain mainly during the night.

Q364. What is the relationship between the 5000 ft wind and the surface wind in the southern hemisphere?

- A) Surface winds are backed from the 5000ft and have a slower speed.
- B) Surface winds are veered from the 5000ft and have a slower speed.
- C) Surface winds are veered from the 5000ft and have the same speed.
- D) Surface winds are backed from the 5000ft and have a faster speed.

Q365. Which type wind flows down slope becoming warmer and dryer?

- A) Mountain breeze.
- B) Katabatic wind.
- C) Land breeze.
- D) Valley wind.

Q366. The normal maximum height of the sea breeze in mid-altitudes is approximately:

A) 50 ft B) 200 ft **C) 500 - 1,000 ft** D) 5,000 ft.

Q367. In the northern hemisphere a pilot flying at 1000 FT/AGL directly towards the centre of a low pressure area, will find the wind blowing from

- A) right and behind
- B) left and behind
- C) directly ahead
- D) about 45 degrees to the right of directly ahead

Q368. What is the main cause for the formation of a polar front jet stream?

- A) The varied elevations of the tropopause in the polar front region
- B) The pressure difference, close to the ground, between a high over the Azores and a low over Iceland
- C) Strong winds in the upper atmosphere
- D) The north-south horizontal temperature gradient at the polar front

Q369. You cross a jet stream in horizontal flight at approximately right angles. While crossing, in spite of a strong wind of 120kt, you notice the temperature barely changes.

- A) This phenomenon is absolutely normal as you are crossing the jet core
- B) Since the result of such readings seems impossible, you will after landing have the instruments tested
- C) This phenomenon does not surprise you at all, since normally no large temperature differences are possible at these heights
- D) You assume the front associated with the jet stream to be very weak with practically no temperature difference between the two air masses

Q370. On a particular day part of a polar front jet stream runs from north to south in the northern hemisphere. This means that

#### A) the polar air is below and the east of the core of the jet

- B) above the core of the jet the horizontal temperature gradient runs from north to south
- C) below the core of the jet the horizontal temperature gradient runs from north to south
- D) the polar air is on the eastern side and above the core of the jet

Q371. Which of the following statements concerning the core of a polar front jet stream is correct?

- A) It lies at a height where there is no horizontal temperature gradient; the slope of the pressure surfaces at the height of the core is at its maximum
- B) It lies in the warm air; its pressure surfaces are horizontal at the height of the core
- C) It lies in the cold air; the thermal wind reverses direction at the height of the core
- D) It and its surface projection lie in the warm air
Q372. Which of the following statements concerning jet streams is correct?

- A) In the northern hemisphere only westerly jet streams occur
- B) In the northern hemisphere both westerly and easterly jet streams occur
- C) In the southern hemisphere only easterly jet streams occur
- D) In the southern hemisphere no jet streams occur

Q373. Where, in central Europe, are the highest wind speeds to be found?

- A) At about 5500 metres altitude
- B) Close to the ground
- C) Just below the tropopause
- D) In the stratosphere

Q374. What jet streams are likely to be crossed during a flight from Stockholm to Rio de Janeiro (23°S) at FL350 in July?

- A) A polar front jet stream followed by a subtropical jet stream and later, a second polar front jet
- B) One subtropical jet stream
- C) A polar front jet stream followed by one or two subtropical jet streams
- D) A subtropical jet stream followed by a polar front jet stream

Q375. Where, as general rule, is the core of the polar front jet stream to be found?

- A) In the cold air mass
- B) Just above the warm-air tropopause
- C) Just below the cold-air tropopause
- D) In the warm air mass

Q376. A wind speed of 350kt within a jet stream core should be world-wide regarded as:

## A) not possible

# B) possible but a very rare phenomenon

- C) not unusual in polar regions
- D) a common occurence

Q377. An aircraft is flying from south to north, above the polar front jet stream, at FL400 in the southern hemisphere. What change, if any, in temperature will be experienced?

A) It falls and then risesB) It stays the sameC) It fallsD) It rises

Q378. What is the approximate ratio between height and width for a jet stream cross section?

A) 1/1
B) 1/100
C) 1/10
D) 1/1000

Q379. Which jet stream is connected with a surface front system?

- A) The arctic jet stream
- B) The subtropical jet stream
- C) The polar front jet stream
- D) The equatorial jet stream

Q380. A wind sounding in the region of a polar front jet stream gives the following windprofile (Northern hemisphere)

900hPa 220/20kt 800hPa 220/25kt 700hPa 230/35kt 500hPa 260/50kt 400hPa 280/85kt 300hPa 300/100kt 250hPa 310/120kt 200hPa 310/80kt Which system is the jet stream associated with?

- A) With an easterly wave
- B) With a ITCZ
- C) With a cold front
- D) With a warm front

Q381. What is the minimum speed for a wind to be classified as a jet stream?

- A) 100kt
- B) 70kt
- C) 50kt
- D) 60kt

Q382. What name is given to the jet stream lying over North Africa (B)?

(refer to figure below)



# A) Sub-tropical jet stream

- B) Equatorial jet stream
- C) Polar front jet stream
- D) Arctic jet stream

Q383. Most strong air currents at higher levels (jet streams) have a westerly direction. There is, however, an important easterly jet stream. When and where is it likely to be encountered?

- A) In summer from the Middle East extending over the southern part of the Mediterranean to southern Spain
- B) Throughout the year to the south of the Azorian high
- C) In winter along the Russian coast facing the Arctic ocean
- D) In summer from south-east Asia extending over southern India to central Africa

Q384. The equatorial easterly jet is a jetstream that occurs:

# A) only in the summer of the northern hemisphere at approx. 45000ft

- B) only in the winter of the northern hemisphere at approx. 30000ft
- C) during the whole year in the southern hemisphere
- D) during the whole year in the northern hemisphere

Q385. Which of the following types of jet streams can be observed all year round?

A) Arctic jet stream/polar front jet stream

B) Equatorial jet stream/polar front jet stream

## C) Subtropical jet stream/polar front jet stream

D) Equatorial jet stream/arctic jet stream

Q386. What is the most significant difference between an equatorial jet stream and all the other jet streams?

- A) Vertical dimension
- B) Horizontal dimension

## **C)** Wind direction

D) Windspeed

Q387. In the month of August you prepare a flight (cruising level FL370) from Bombay (19°N-73°E) to Bangkok (13°N-100°E). What wind conditions can you expect?

A) Tailwinds

# **B)** Headwinds

C) Light winds diagonal to the route

D) Strong northerly winds

Q388. What is the average height of the jet core within a polar front jet stream?

A) 20000ft
B) 50000ft
C) 30000ft
D) 40000ft

Q389. What is the average height of the arctic jet stream core?

- A) 50000ft
- B) 30000ft
- C) 20000ft
- D) 40000ft

Q390. What name is given to the jet stream lying across India (A)?

(refer to figure below)



- A) Sub-tropical jet stream
- B) Polar front jet stream
- C) Arctic jet stream

# D) Equatorial jet stream

Q391. At approximately what altitude is the subtropical jet stream found over Europe?

- A) FL200
- B) FL500
- C) FL300

# D) FL400

Q392. The jetstream and associated clear air turbulence can sometimes be visually identified in flight by

- A) a constant outside air temperature
- B) dust or haze at high level
- C) a high-pressure centre at high level

# D) long streaks of cirrus clouds

Q393. In which zone of a jet stream is the strongest CAT to be expected?

A) About 12000ft above the core

# B) The cold air side of the core

- C) Exactly in the center of the core
- D) The warm air side of the core

Q394. Which area of a polar front jet stream in the northern hemisphere has the highest probability of turbulence?

- A) Above the core in the boundary between warm and cold air
- B) In the core of the jet stream
- C) Looking downstream, the area to the left of the core
- D) Looking downstream, the area to the right of the core

Q395. Arctic Front Jetstreams:

- A) are formed along the arctic front where arctic air meets polar maritime air.
- B) occur at high altitude and high latitudes during the winter months.
- C) occur at low level between 2000 and 0400 local time.
- D) blow towards the west at speeds averaging 250kt.

Q396. How could you visually identify a jet stream?

- A) Cirrus stratus.
- B) Contrails.
- C) Impossible without radar.

# D) Streaky cirrus.

Q397. A jet stream with a wind speed of 350kts?

# A) Possible but rare.

- B) Common.
- C) Impossible.
- D) Possible in polar areas.

Q398. Where is the normal location of the jetstream relative to surface lows and fronts?

A) Over the low and crosses the warm front.

# B) North of the surface systems.

- C) Over the low and crosses both the warm front and the cold front.
- D) South of the low and warm front.

Q399. With a polar front jetstream (PFJ), the area with the highest probability of turbulence in the Southern Hemisphere is:

A) in the jet core.

B) above the jet core in the boundary of the warm and cold air.

# C) looking downstream, on your right hand side.

D) looking downstream, on your left hand side.

Q400. Where are Jetstreams normally located?

- A) In areas of strong low pressure systems in the stratosphere.
- B) In a single continuous band, encircling the Earth, where there is a break between the equatorial and polar tropopause.
- C) In areas of strong high pressure systems in the stratosphere.
- D) At the tropopause where intensified temperature gradients are located.

Q401. In central Europe, where are the greatest wind speeds?

- A) Above the Alps.
- **B)** Tropopause level.
- C) 5500m.
- D) Where the air converges.

Q402. Which phenomenon is often associated with a jetstream?

- A) Both a and b.
- B) Windshear.
- C) Clear air turbulence (CAT).
- D) Icing.

Q403. What is the ratio of height to width in a typical Jet stream?

A) 1:10.
B) 1:10000.
C) 1:1000.
D) 1:100.

Q404. Which type frontal system is normally crossed by the jetstream?

A) Cold front.

- B) Cold front and warm front.
- C) Occluded front.
- D) Warm front.

Q405. Typically a Jet Stream is:

- A) 1000nm or more long, 5000ft to 10000ft wide and 1000ft deep.
- B) 1000nm long, 150nm wide and 5000ft to 10000ft deep.
- C) 150nm long, 500nm wide and 5000ft deep.
- D) 1000nm long, 150nm wide and 5nm deep.

Q406. The normal maximum speeds of the Polar Front Jet are in the region of:

- A) 135 kt in July / 135 kt in January
- B) 150 kt in July / 135 kt in January
- C) 150 kt in January / 135 kt in July
- D) 150 kt in July / 50 kt in January

Q407. Where are easterly and westerly jets found?

# A) Northern hemisphere only.

- B) There are no easterly jets.
- C) Northern and southern hemisphere.
- D) Southern hemisphere only.

Q408. Where, as a general rule, is the core of the polar front jet stream to be found?

A) Just above the warm-air tropopause.

## B) In the warm air mass.

- C) In the cold air mass.
- D) Just below the cold-air tropopause.

Q409. A wind speed of 350 kt within a jet stream core should be world-wide regarded as:

#### A) a common occurence.

B) not possible.

## C) possible but a very rare phenomenon.

D) not unusual in polar regions.

Q410. At the top of orographic waves, in mountainous regions, the cloud most likely to be encountered is

- A) cirrus
- B) cumulus mediocris
- C) cirrostratus

## D) altocumulus lenticularis

Q411. On a summer day, the following observations are made in Zurich: 0450Z 24009 KT 7000 SCT040 SCT120 15/12 Q1014 NOSIG =0650Z 24010KT 6000 SCT040 SCT120 17/13 Q1012 NOSIG = 0850Z 23014KT 8000 BKN100 19/13 Q1009 BECMG 26020G35KT TS = 1050Z 28022G33KT 4000 TSRA SCT015 SCT050CB OVC080 16/14 Q1006 BECMG NSW = 1250Z 31016KT 9999 SCT025TCU BKN030 13/09 Q1009 NOSIG = 1450Z 30012KT 9999 SHRA BKN020TCU 14/10 Q1011 NOSIG = 1650Z 30009KT SCT025 BKN035 13/10 Q1013 RESHRA NOSIG = 1850Z 28006KT 9999 SCT040 11/09 Q1014 NOSIG = 2050Z 26004KT CAVOK 10/08 Q1015 NOSIG = You conclude, that...

- A) a warm front has passed the station in the morning, and warm sector weather prevailed in the afternoon.
- B) a warm front in the morning, and a cold front in the afternoon have passed the station.
- C) a cold front in the morning, and a warm front in the afternoon have passed the station.
- D) a cold front has passed the station in the morning, and rear side weather prevailed in the afternoon.

Q412. On a summer day, the following observations are made in Zurich:

0450Z 23015KT 3000 RA SCT008 SCT020 0VC030 13/12 Q1010 NOSIG= 0650Z 25008KT 6000 SCT040 BKN090 18/14 Q1010 RERA NOSIG=0850Z 25006KT 8000 SCT040 SCT100 19/15 Q1009 NOSIG=

1050Z 24008KT 9999 SCT040 SCT100 21/15 Q1008 NOSIG=

1250Z 23012KT CAVOK 23/16 Q1005 NOSIG=

1450Z 23016KT 9999 SCT040 BKN090 24/17 Q1003 BECMG 25020G40KT TS= 1650Z 24018G35KT 3000 TSRA SCT006 BKN015CB 18/16 Q1002 NOSIG= 1850Z 28012KT 9999 SCT030 SCT100 13/11 Q1005 NOSIG=

You conclude, that...

- A) an air mass thunderstorm only has passed during the entire day.
- B) a cold front early in the morning and a warm front late in the afternoon have passed the station.
- C) a trough line early in the morning and a warm front late in the afternoon have passed the station.
- D) a warm front early in the morning and a cold front late in the afternoon have passed the station.

Q413. What of the following is the most important constituent in the atmosphere from a weather stand-point?

# A) Water vapour

- B) Oxygen
- C) Hydrogen

D) Nitrogen

Q414. What does dewpoint mean?

- A) The temperature at which ice melts
- B) The temperature at which the relative humidity and saturation vapour pressure are the same
- C) The freezing level (danger of icing)
- D) The temperature to which a mass of air must be cooled in order to reach saturation

Q415. Relative humidity depends on

- A) moisture content and pressure of the air
- B) temperature of the air only

# C) moisture content and temperature of the air

D) moisture content of the air only

Q416. The relative humidity of a sample air mass is 50%. How is the relative humidity of this air mass influenced by changes of the amount of water vapour in it?

A) It is not influenced by changing water vapour

## B) It increases with increasing water vapour

- C) It decreases with increasing water vapour
- D) It is only influenced by temperature

Q417. Relative humidity

# A) changes when water vapour is added, even though the temperature remains constant

- B) is not affected by temperature changes of the air
- C) is not affected when air is ascending or descending
- D) does not change when water vapour is added provided the temperature of the air remains constant

Q418. How, if at all, is the relative humidity of an unsaturated airmass influenced by temperature changes?

- A) It is not influenced by temperature changes
- B) It is only influenced by the amount of water vapour

## C) It decreases with increasing temperature

D) It increases with increasing temperature

Q419. The difference between temperature and dewpoint is greater in

- A) moist air
- B) air with low temperature
- C) dry air
- D) air with high temperature

Q420. Which of the following is the definition of relative humidity?

- A) Ratio between water vapour pressure and atmospheric pressure x100
- B) Ratio between air temperature and dewpoint temperature x100
- C) Ratio between the actual mixing and the saturation mixing ratio x100
- D) Ratio between water vapour (g) and air (kg) x100

Q421. The dewpoint temperature

- A) can not be lower than the air temperature
- B) can be reached by cooling the air whilst keeping pressure constant
- C) can be reached by lowering the pressure whilst keeping temperature constant
- D) can not be equal to the air temperature

Q422. Which of the following statements is true?

- A) Ozone allows short-wave radiation to pass through to the earth's surface.
- B) Water vapor and carbon dioxide gas both absorb long-wave radiation.
- C) Water vapor absorbs short-wave radiation.
- D) The atmosphere is heated by short-wave radiation from the sun.

Q423. Unsaturated air moving downwards is heated at a certain rate of temperature change, called:

- A) Chinook wind.
- B) Saturated adiabatic.
- C) Ambient lapse rate.
- D) Dry adiabatic.

Q424. A parcel of fair is forced to rise and becomes saturated at 3.000 ft when it is at the same temperature as the surrounding dry air. The parcel of fair will subsequently.

A) It is impossible to say.

- B) Continue to rise.
- C) Remain at the same level.
- D) Fall.

Q425. Relative humidity increases in:

- A) warmer air compared to colder air.
- B) warm air at a constant vapour pressure.
- C) colder air compared to warmer air.

#### D) cold air at a constant vapour pressure.

Q426. If Relative Humidity is low, you would expect a... cloud base. The cloud top would be when the... meets the...

- A) low, SALR, ELR
- B) high, ELR, DALR
- C) low, SALR, DALR
- D) high, SALR, ELR

Q427. Which statement is true for the lifting of an air parcel?

## A) Unsaturated parcels cool more rapidly than saturated.

- B) An air parcel always cools at the dry adiabatic lapse rate.
- C) Saturated parcels cool more rapidly than unsaturated.
- D) A stable air mass must be present.

Q428. If the relative humidity of a sample of air is 100%, then the actual amount of water vapour present would be:

#### A) greater at the Equator than at the poles.

B) greater at the poles than at the Equator.

- C) greater at 10000ft than at mean sea level.
- D) the same at the Equator as at the poles.

Q429. Describe how a cold high pressure changes at altitude:

A) strengthens.

B) weakens and may transfer into a low pressure.

C) no change.

D) impossible to predict.

Q430. In still air a lapse rate of 1.2 deg C/100m refers to:

- A) DALR.
- B) SALR.
- C) ALR.
- D) ELR.

Q431. Which process causes adiabatic cooling?

- A) Release of latent heat during the vaporization process.
- B) Movement of air over a colder surface.

## C) Expansion of air as it rises.

D) Expansion of air as it descends.

Q432. With decreasing temperature and unchanged dew point:

## A) The relative humidity will increase.

- B) Water Vapor will decrease.
- C) Water Vapor will increase.
- D) The relative humidity will decrease.

Q433. When the upper part of a layer of warm air is advected:

A) wind will back with increase in height in the Northern Hemisphere.

## B) stability decreases within the layer.

- C) wind speed will always decrease with increase in height in the Northern Hemisphere.
- D) stability increases within the layer.

Q434. " Instability" low pressure means:

- A) A lee low.
- B) Orographic low pressure containing condensation heat.
- C) Cold low pressure.

## D) A low pressure receiving energy from released condensation heat.

Q435. Which of the following statements is true of the dew point of an air mass?

- A) It can be higher than the temperature of the air mass
- B) It can be used together with the air pressure to estimate the air mass's relative humidity
- C) It can be used to estimate the air mass's relative humidity even if the air temperature is unknown
- D) It can only be equal to, or lower, than the temperature of the air mass

Q436. A super-cooled droplet is one that

- A) is at an above freezing temperature in below freezing air
- B) has a shell of ice with water inside it

C) remains liquid at a below freezing temperature

D) has frozen to become an ice pellet

Q437. The process by which water vapour is transformed directly into ice is known as

A) radiation cooling

## **B)** sublimation

- C) supersaturation
- D) supercooling

Q438. Supercooled droplets can occur in

A) clouds but not in fog

## B) clouds, fog and precipitation

- C) precipitation but not in clouds
- D) clouds but not in precipitation

Q439. In which of the following changes of state is latent heat released?

A) Liquid to gasB) Solid to gas

- C) Gas to liquid
- D) Solid to liquid

Q440. How are high level condensation trails formed that are to be found occasionally behind jet aircraft?

A) Only through unburnt fuel in the exhaust gases

# B) Through water vapour released during fuel combustion

- C) In conditions of low humidity, through the particles of soot contained in the exhaust gases
- D) Through a decrease in pressure, and the associated adiabatic drop temperature at the wing tips while flying through relatively warm but humid air

Q441. When water evaporates into unsaturated air

# A) heat is absorbed

- B) heat is released
- C) relative humidity is decreased
- D) relative humidity is not changed

Q442. A super-cooled droplet is

- A) a small particle of water at a temperature below -50°C
- B) a water droplet that has been frozen during its descent
- C) a water droplet that is mainly frozen

# D) a droplet still in liquid state at a temperature below freezing

Q443. Which of the following changes of state is known as sublimation?

A) Liquid direct to solid

# **B) Solid direct to vapour**

- C) Solid direct to liquid
- D) Liquid direct to vapour

Q444. Latent heat is defined in meteorology as:

- A) the quantity of heat emitted which increases the lapse rate of saturated air.
- B) the quantity of heat emitted which increases the temperature of the air.
- C) the quantity of head absorbed decreasing the lapse rate of saturated air.
- D) the quantity of heat absorbed which decreases the lapse rate in dry air.

Q445. A certain amount of water vapor saturated air (i.e. intestinal gases) is transported from sealevel up to 34.000 ft.

In the same amount of dry air, the volume of this gas is:

- A) first larger, then smaller.
- B) smaller.
- C) constant.
- D) larger.

Q446. With regard to latent heat which of the following statements is true:

- A) when water changes from a vapor to a solid latent heat is absorbed.
- B) when water changes from a solid to a liquid latent heat is released.
- C) when water changes from a solid to a vapor latent heat is released.
- D) when water changes from a vapor to a liquid latent heat is released.

Q447. When water vapor condenses into water droplets, there is a:

A) release of heat energy that increases density of the surrounding air.

- B) none of the above.
- C) release of heat energy that makes the surrounding air warmer.
- D) sublimation.

Q448. Cloud base is at 5.000ft, and the temperature at cloud base is 10° C. The surface OAT and wet bulb temperatures that gave rise to this would be ... and ... and the surface dew point about...

# A) 25° C; 19° C; 13° C.

- B) 20° C; 18° C; 4° C.
- C) 25° C; 19° C; 4° C.
- D) 20° C; 18° C; 14° C.

Q449. The stable layer at some height in the lower troposphere of an old high pressure area in the moderate latitudes is called:

A) Friction inversion.

- B) Trade wind.
- C) Radiation inversion.
- D) Subsidence inversion.

Q450. A VOLMET broadcast is:

- A) a recorded broadcast of weather forecast (TAF) for a specific airfield.
- B) a special ATC broadcast, to all aircraft on frequency, of a significant change in weather conditions.
- C) a recorded broadcast of the METAR for a specific airfield.

# D) a recorded broadcast of METARs for about 10 airports.

Q451. What is meant by the expression " Low level windshear" ?

- A) The effect of friction.
- B) The wind when blowing across the isobars.
- C) A change of wind direction and force during a limited period of time within a small area.
- D) Turbulence containing whirling dust.

Q452. What is the dry adiabatic lapse rate per 1000ft?

A) 3.0°C

- B) 3.5°C
- C) 1.5°C
- D) 2.0°C

Q453. A parcel of unsaturated air is lifted to just below the condensation level and then returned to its original level. What is the final temperature of the parcel of air?

# A) The same as the starting temperature

- B) Higher than the starting temperature
- C) It depends upon the QFE
- D) Lower than the starting temperature

Q454. If a saturated air mass descends down a slope its temperature increases at

A) a higher rate than in dry air, as it gives up latent evaporation heat

B) a lower rate than in dry air, as evaporation absorbs heat

C) a lower rate than in dry air, as condensation gives out heat

D) the same rate as if the air mass were dry

Q455. A moist but unsaturated parcel of air becomes saturated by

A) moving the parcel to an area with lower pressure and equal temperature

B) moving the parcel to an area with higher pressure and equal temperature

# C) lowering the parcel to a lower level

# D) lifting the parcel to a higher level

Q456. During an adiabatic process heat is

- A) added but the result is an overall loss
- B) lost
- C) added
- D) neither added nor lost

Q457. The rate of cooling of ascending saturated air is less than the rate of cooling of ascending unsaturated air because:

# A) heat is released during the condensation process

- B) moist air is heavier than dry air
- C) water vapour doesn't cool as rapidly as dry air
- D) water vapour absorbs the incoming heat from the sun

Q458. A parcel of moist but not saturated air rises due to adiabatic effects. Which of the following changes?

A) Absolute humidity

# **B)** Relative humidity

- C) Specific humidity
- D) Mixing ratio

Q459. A layer in which the temperature increases with height is

## A) neutral

# B) absolutely stable

- C) conditionally unstable
- D) absolutely unstable

Q460. An inversion is

- A) an unstable layer
- B) a conditionally unstable layer

## C) an absolutely stable layer

D) a layer that can be either stable or unstable

Q461. The stability in a layer is increasing if

# A) warm air is advected in the upper part and cold air in the lower part

- B) warm air is advected in the lower part and cold air in the upper part
- C) cold and dry air is advected in the upper part
- D) warm and moist air is advected in the lower part

Q462. A layer in which the temperature decreases with 1°C per 100m is

# A) neutral for dry air

- B) absolutely stable
- C) conditionally unstable
- D) absolutely unstable

Q463. Which statement is true for a conditionally unstable layer?

# A) The environmental lapse rate is less than 1°C/100m

- B) The wet adiabatic lapse rate is 0.65°C/100m
- C) The environmental lapse rate is less than 0.65°C/100m
- D) The layer is unstable for unsaturated air

Q464. The average value of the ELR is:

A) it varies daily.
B) 2.0° C / 1,000 ft
C) 1.5° C / 1,000 ft
D) 3.0° C / 1,000 ft

Q465. What weather condition occurs at the altitude where the dewpoint lapse rate and the dry adiabatic lapse rate converge?

- A) Unstable air changes into stable air.
- B) Precipitation starts.
- C) Stable air changes to unstable air.
- D) Cloud bases form.

Q466. Foehn winds are caused by:

- A) air rising on the windward side of a mountain range at the SALR and descending on the leeward side at the DALR.
- B) air rising on the windward side of a mountain range at the DALR and

descending on the leeward side at the SALR.

- C) unstable conditions on the windward side of a mountain causing cloud to form and precipitation to occur.
- D) Katabatic flow of air on the windward side of the mountain range compressing and warming the air.

Q467. An ELR of 2.9° C per 1,000 ft, is by definition:

# A) conditionally unstable.

B) stable.

- C) unstable.
- D) conditionally stable.

Q468. The environmental lapse rate is less than 1° C/100m

## A) True altitude to be higher than Indicated altitude.

- B) True altitude to be the same as Indicated altitude.
- C) True altitude to be the decreasing.
- D) True altitude to be lower than Indicated altitude.

Q469. At lower altitudes, the SALR differs from the DALR. The reason is due to:

## A) the release of latent heat.

- B) the absorption of latent heat.
- C) the lowering of the saturation vapour pressure of water with altitude.
- D) none of the above.

Q470. A moist stable airstream is blowing slowly over a range of hills 5000ft high. On the windward side of the hills the surface temperature is 10° C and the cloud base 1000ft. On the lee side the cloud base is 3000ft. The surface temperature on the lee side is:

# A) 12.4° C.

- B) 13.4° C.C) 15.4° C.
- D) 13.6° C.

Q471. The decrease in temperature, per 100 metres, in a saturated rising parcel of air at lower level of the atmosphere is approximately

A) 0.35°C B) 1°C **C) 0.6°C**  D) 1.5°C

Q472. Which of the following is a cause of stratus forming over flat land?

- A) The release of latent heat
- B) Convection during the day
- C) Radiation during the night from the earth surface in moderate wind
- D) Unstable air

Q473. What process in air mass leads to the creation of wide spread NS, AS and ST cloud coverage?

- A) Convection process
- B) Sinking
- C) Lifting
- D) Radiation

Q474. Rising air cools because

A) surrounding air is cooler at higher levels

## B) it expands

- C) it contracts
- D) it becomes more moist

Q475. In an unstable layer there are cumuliform clouds. The vertical extent of these clouds depends on the

## A) thickness of the unstable air

- B) pressure at different levels
- C) air pressure at the surface
- D) wind direction

Q476. Which one of the displayed cloud forms is representative of altocumulus castellanus?

(refer to figure below)



A) 1

- B) 3
- C) 2
- D) 4

Q477. The presence of altocumulus castellanus indicates

# A) instability in the middle troposphere

- B) subsidence in a large part of the troposphere
- C) stability in the higher troposphere
- D) strong convection at low height

Q478. Fallstreaks or virga are

- A) water or ice particles falling out of a cloud that evaporate before reaching the ground
- B) strong katabatic winds in mountainous areas and accompanied by heavy precipitation
- C) gusts associated with a well developed Bora
- D) strong downdraughts in the polar jet stream, associated with jet streaks

Q479. Strongly developed cumulus clouds are an indication of

# A) instability in the atmosphere

- B) the presence of a low level inversion
- C) poor surface visibility
- D) the presence of warm air aloft

Q480. What are the characteristics of cumuliform clouds?

- A) Large water droplets, stability, no turbulence, showers and mainly rime ice
- B) Large water droplets, instability, turbulence, showers and mainly clear ice
- C) Small water droplets, instability, turbulence, extensive areas of rain and rime ice
- D) Small water droplets, stability, no turbulence and extensive areas of rain

Q481. In which of the following conditions is moderate to severe airframe icing most likely to be encountered?

# A) In Nimbostratus cloud

- B) Below the freezing level in clear air
- C) Within cloud of any type
- D) In clear air above the freezing level

Q482. What flying conditions may be encountered when flying in cirrus clouds?

# A) Average horizontal visibility more than 1000m; nil icing

- B) Average horizontal visibility more than 1000m; light to moderate rime ice
- C) Average horizontal visibility less than 500m; light to moderate icing
- D) Average horizontal visibility less than 500m; nil icing

Q483. Cumulus clouds are an indication for

- A) the approach of a cold front
- B) stability
- C) the approach of a warm front

# D) up and downdrafts

Q484. Stratus cloud of limited depth at a temperature of -5C will most likely give

# A) light to moderate rime ice.

- B) moderate to heavy glaze ice.
- C) light to moderate glaze ice.
- D) moderate to heavy rime ice.

Q485. Low cloud in temperature climates, excluding heap, are those existing from:

- A) The surface to 7500 metres.
- B) The surface to 6500ft.
- C) 1000ft to 6500ft.
- D) The surface to 7500ft.

Q486. A cumulus cloud, base 3,000 ft has a base temperature of +16 deg C. The dewpoint temperature and the dry bulb temperature at the surface are probably:

## A) +17.5 deg C & +25 deg C.

B) +16 deg C & +16 deg C.C) +25 deg C & +20 deg C.

D) +25 deg C & +17.5 deg C.

Q487. What are the typical bases of alto type cloud?

# A) 16,500ft.

- B) surface.
- C) 1,000ft.
- D) 6,500ft.

Q488. A layer of air can be:

- A) all of the above.
- B) Neutrally stable when saturated and unstable when unsaturated.
- C) Conditional; unstable when unsaturated and stable when saturated.
- D) Conditional; unstable when saturated and stable when unsaturated.

Q489. What are the typical tops of alto type cloud?

# A) 23,000ft.

- B) surface.
- C) 6,500ft.
- D) 16,500ft.

Q490. Turbulence cloud is:

A) warm air being forced to rise ahead of cold air at the surface.

B) cloud with significant turbulence within it.

## C) created as a result of mixing from turbulence.

D) usually alto - stratus type cloud.

Q491. Clouds classified as low level are considered to have a base height of:

# A) 1000 - 2000ft.

- B) the surface 6500ft.
- C) 500 1000ft.
- D) 100 200ft.

Q492. Uneven heating of a land surface by day in a stable atmosphere is most likely to form:

- A) Fracto stratus cloud.
- **B)** Fair weather cumulus cloud.
- C) Alto cumulus castellanus.
- D) Stratocumulus cloud.

Q493. What cloud types are classified as medium cloud?

A) Cb + St. **B) Ac + As.** C) Ns + Sc. D) Ci + Cs.

Q494. What type of cloud is being described? A generally grey cloud layer with fairly uniform base and uniform appearance, which may give drizzle or snow grains. When the sun is visible through the cloud, the outline is clearly discernible. Sometimes it appears in the form of ragged patches.

- A) Nimbostratus.
- B) Cirrostratus.
- C) Altostratus.
- D) Stratus.

Q495. Altostratus (AS) and Nimbostratus (NS) are easily confused. How do you distinguish between them?

# A) The cloud base is higher in AS and precipitation, if any, is light.

- B) Precipitation falls from AS but not from NS.
- C) Steady precipitation from AS.
- D) The sun can be seen through NS.

Q496. Orographic lifting associated with stable conditions might produce:

## A) Cap clouds, AC lenticularis, standing waves.

- B) CU/CB, showers.
- C) ST/SC, showers of heavy rain.
- D) NS/AS, thunderstorms and hail.

Q497. Cumulus clouds are an indication for:

# A) up and downdrafts.

- B) the approach of a cold front.
- C) stability.
- D) the approach of a warm front.

Q498. What causes low level cloud in front of the warm front?

# A) Rain dragging warm air into the cold air and condensing it.

- B) Rain falling into warm air and condensing.
- C) Cold air passing over warm surface.
- D) Warm air passing over cold surface.

Q499. Orographic lifting associated with unstable conditions will produce:

# A) CU/CB, showers.

- B) AC lenticularis, standing waves, light precipitation.
- C) ST/SC, continuous light/moderate rain.
- D) NS/AS, thunderstorms and hail.

Q500. What is the composition of Ci cloud?

- A) Supercooled water droplets.
- B) Water droplets.
- C) Smoke particles.
- D) Ice crystals.

Q501. What type of cloud is associated with drizzle?

- A) Ac
- B) St
- C) Ci
- D) Cb

Q502. The presence of altocumulus lenticularis is a sign of:

- A) katabatic winds.
- B) severe instability.

## C) lee waves.

D) anabatic winds.

Q503. When a CC layer lies over a West European plane in summer, with a mean terrain height of 500 m above sea level, the average cloud base could be expected:

- A) 7 000 15 000 ft above ground level.
- B) 100 1 500 ft above ground level.

## C) 15 000 - 25 000 ft above ground level.

D) 1 500 - 7 000 ft above ground level.

Q504. Which of the following indicates medium to upper level instability and possible the formation of TS?

- A) Altocumulus Lenticularis.
- B) Halo.
- C) Red cirrus.
- D) Altocumulus castellanus.

Q505. Cu is an indication of:

## A) vertical movement of air.

- B) the approach of a cold front.
- C) the approach of a warm front.
- D) stability.

Q506. If you see Alto Castellanus what does it indicate?

- A) Subsidence..
- B) Instability in the lower atmosphere.

#### C) Middle level instability.

D) The upper atmosphere is stable.

Q507. A plain in Western Europe at 500m (1600ft) AMSL is covered with a uniform alto - cumulus cloud during summer months. At what height AGL is the base of the cloud expected?

#### A) 7000 - 15000ft.

B) 1500 - 7000ft.
C) 15000 - 25000ft.
D) 100 - 1500ft.

Q508. Freezing fog consists of

# A) ice crystals B) supercooled water droplets

C) frozen minute snow flakes

D) frozen water droplets

Q509. What is the average vertical extent of radiation fog?

A) 2000ft
B) 500ft
C) 5000ft
D) 10000ft

D) 10000ft

Q510. What wind conditions, occuring just before dawn, favour the formation of fog at an airport where the temperature is 15°C and the dewpoint is 14°C?

A) Northerly, 10kt

## B) Calm

C) Easterly, 10kt

D) Westerly, 10kt variable

Q511. Which of the following weather conditions favour the formation of radiation forg?

A) Light wind, extensive cloud, dry air

# B) Light wind, little or no cloud, moist air

C) Light wind, extensive cloud, moist air

D) Strong wind, little or no cloud, moist air

Q512. Which of the following is most likely to lead to the dissipation of radiation fog?

# A) A marked increase in wind velocity near the ground

- B) Ground cooling caused by radiation during the night
- C) A build up of a high pressure area resulting in adiabatic warming associated with a sinking air mass
- D) A marked decrease in wind velocity close to the ground

Q513. The most likely reason for radiation fog to dissipate or become low stratus is:

A) a low level temperature inversion

# B) increasing surface wind speed

- C) an increasing stable atmosphere
- D) surface cooling

Q514. What are differences between radiation fog and advection fog?

- A) Radiation fog forms due to night cooling and advection fog due to daytime cooling
- B) Radiation fog is formed by surface cooling in a calm wind. Advection fog is formed by evaporation over the sea
- C) Radiation fog forms only on the ground, advection fog only on the sea
- D) Radiation fog forms due to surface at night in a light wind. Advection fog forms when warm humid air flows over a cold surface

Q515. What type of fog is most likely to form over flat land during a clear night, with calm or light wind conditions?

A) Orographic

## **B)** Radiation

C) Advection

D) Steam

Q516. The range of wind speed in which radiation fog is most likely to form is:

- A) between 10 and 15kt
- B) above 15kt
- C) between 5 and 10kt
- D) below 5kt

Q517. Which of the following is most likely to lead to the formation of radiation fog?

# A) Heat loss from the ground on clear nights

- B) Cold air passing over warm ground
- C) Dry, warm air passing over warm ground
- D) The passage of fronts

Q518. Which type of fog is likely to form when air having temperature of 15°C and dewpoint of 12°C blows at 10kt over a sea surface having temperatures of 5°C?

# A) Advection fog

- B) Frontal fog
- C) Radiation fog
- D) Steam fog

Q519. Which of the following statements is true concerning advection fog?

# A) It can be formed suddenly by day or night

- B) It forms when unstable air is cooled adiabatically
- C) It forms slowly and disappears rapidly
- D) It forms at night or the early morning

Q520. Steaming fog (arctic sea smoke) occurs in air

# A) with cold mass properties

- B) that is absolutely stable
- C) that is stable
- D) with warm mass properties

Q521. Which of the following conditions is most likely to lead to the formation of steam fog (arctic smoke)?

- A) Warm air moving over cold water
- B) The sea is warmed by strong radiation from the sun
- C) The coastal region of the sea cools at night

# D) Cold air moving over warm water

Q522. Frontal fog is most likely to occur

- A) in winter in the early morning
- B) in summer in the early morning
- C) in rear of a warm front
- D) in advance of a warm front

Q523. When does frontal fog, also known as mixing fog, occur?

# A) When very humid warm air meets with very cold air

- B) When very dry cold air meets with very dry warm air
- C) When very humid warm air meets with dry cold air
- D) When very humid cold air meets with dry warm air

Q524. What conditions are most likely to lead to the formation of hill fog?

- A) Clear skies, calm or light winds, with relatively low humidity
- B) Precipitation which is lifted by the action of moderate winds striking the range
- C) Humid stable air mass, wind blowing towards the hills

D) High relative humidity and an unstable air mass

Q525. Two factors which contribute to the formation of radiation fog are:

# A) a high relative humidity and clear night skies.

- B) a high relative humidity and no wind.
- C) clear night skies and a low relative humidity.
- D) a light wind (2 to 8 kts) and good cloud cover.

Q526. Fog (FG) is defined as being a:

- A) visibility of < = 1.000 m due to liquid particles or ice crystals suspended in the atmosphere.
- B) visibility of < 1.000 m due to any precipitation in the atmosphere.
- C) visibility of < 1.000 m due to liquid particles or ice crystals suspended in the atmosphere.
- D) visibility of < 1.000 m due to solid or liquid particles suspended in the atmosphere

Q527. Hill fog will be most likely when:

# A) humid, stable, blowing onto a range of hills.

- B) clear sky, little wind, dry air.
- C) high RH, unstable.
- D) precipitation is lifted by air blowing over the hills.

Q528. Radiation fog requires ... and ..., which usually occur in ... pressure systems.

- A) strong winds; overcast skies; low
- B) light winds; overcast skies; low
- C) strong winds; clear skies; high

# D) light winds; clear skies; high

Q529. Which of the following would lead to the formation of Steaming fog?

- A) Warm air over cold sea.
- B) Warm air over land.
- C) Cold sea near coast.
- D) Cold air over warm sea.

Q530. Advection fog will form when warm, moist air moves at ... over a cold sea current like the ... current.

# A) 15kt; Labrador

- B) 25kt; Brazil
- C) 15kt; Harmattan
- D) 25kt; Gulf Stream

Q531. How does freezing rain develop?

- A) Rain falls on cold ground and then freezes
- B) Through melting of ice crystals
- C) Rain falls through a layer where temperatures are below 0°C
- D) Through melting of sleet grains

Q532. Intensity of precipitation is described as:

A) Intermittent, moderate or heavy.

# B) Slight, moderate or heavy.

- C) Intermittent, continuous or showery.
- D) Drizzle, rain or snow.

Q533. The intensity of precipitation associated with dense nimbostratus is:

- A) nil.
- B) heavy, possibly hail.
- C) moderate or heavy.
- D) light.

Q534. The Bergeron Theory:

- A) explains the formation of hailstones in Cumulus cloud.
- B) explains the formation and growth of snowflakes.
- C) explains the formation of raindrops in cloud where the temperature is above freezing.
- D) presumes that at high levels in a cloud, some water droplets turn to ice and grow by sublimation.

Q535. Precipitation in the form of showers occurs mainly from

## A) convective clouds

B) Stratified clouds

C) cirro-type clouds

D) clouds containing only ice crystals

Q536. Steady precipitation, in contrast to showery precipitation falls from

## A) stratiform clouds with little or no turbulence

- B) convective clouds with little or no turbulence
- C) stratiform clouds with severe turbulence
- D) convective clouds with moderate turbulence

Q537. Large hail stones

- A) only occur in frontal thunderstorms
- B) are entirely composed of clear ice

## C) are typically associated with severe thunderstorms

D) only occur in thunderstorms of mid-latitudes

Q539. Freezing rain occurs when

- A) ice pellets melt
- B) snow falls into an above-freezing layer of air
- C) rain falls into a layer of air with temperatures below 0°C
- D) water vapour first turns into water droplets

Q540. The following statements deal with precipitation, turbulence and icing. Select the list containing the most likely alternatives for NS cloud:

- A) Precipitation may be snow, sleet or rain. Icing and turbulence are frequently severe
- B) Precipitation may be snow, sleet or rain. Icing is probable and may range between light and severe. Turbulence is rarely more than moderate
- C) Precipitation is frequently in the form of hail. Icing and turbulence are frequently severe
- D) Precipitation and icing are usually nil. Turbulence is rarely more than moderate

Q541. From what type of cloud does drizzle fall?

- A) Cirrostratus
- B) Altostratus
- C) Cumulus

# D) Stratus

Q542. What type of clouds are associated with snow showers?

- A) Nimbostratus
- B) Altostratus and stratus
- C) Cumulus and altostratus

#### **D)** Cumulus and cumulonimbus

Q543. Which of the following types of cloud is "+RA" precipitation most commonly associated?

- A) NS
- B) SC
- C) ST
- D) AC

Q544. What type of clouds are associated with rain showers?

- A) Towering cumulus and altostratus
- B) Altostratus and stratus
- C) Towering cumulus and cumulonimbus
- D) Nimbostratus

Q545. The presence of ice pellets at the surface is evidence that

- A) a warm front has passed
- B) there are thunderstorms in the area

## C) freezing rain occurs at a higher altitude

D) a cold front has passed

Q546. Which one of the following types of clouds is most likely to produce heavy precipitation?

- A) CS
- B) ST
- C) NS
- D) SC

Q547. With what type of cloud is "DZ" precipitation most commonly associated?

- A) CB
- B) CC

**C) ST** D) CU

Q548. With what type of cloud is "GR" precipitation most commonly associated?

A) AS

- B) ST
- C) CB
- D) CC

Q549. Which of the following are favourable conditions for the formation of freezing rain?

- A) Cold air aloft from which hail is falling into air that is warm
- B) Warm air aloft from which rain is falling into air with a temperature below 0°C
- C) A isothermal layer aloft with a temperature just above 0°C through which rain is falling
- D) Water droplets falling from cold air aloft with a temperature below 0°C

Q550. Hail, which can weigh up to... will only fall from... cloud. Hailstones grow by collision with... and...

A) 1 kg; NS; raindrops; soft hail

# B) 1 kg; CB; supercooled water droplets; sublimation

- C) 1 lb.; CB; supercooled water droplets; soft hail
- D) 1 lb.; CB; raindrops; snow

Q551. What is the most common freezing precipitation?

- A) Freezing pellets.
- B) Freezing hail and freezing snow.

# C) Freezing rain and freezing drizzle.

D) Freezing graupel.

Q552. Which precipitation type generally has the greatest impact on visibility?

# A) Snow.

- B) Drizzle.
- C) Heavy rain.
- D) Hail.

Q553. An airmass is unstable when

- A) temperature increases with height
- B) a ascending parcel of air continues to rise to a considerable height
- C) pressure shows a marked variation over a given horizontal area
- D) temperature and humidity are not constant

Q554. An airmass is stable when

- A) pressure is constant
- B) temperature in a given area drops off very rapidly with height
- C) the vertical motion of a rising parcel of air tends to become weaker and disappears
- D) the lapse rate is 1°C per 100m

Q555. What is the classification of the airmass affecting position "Q" at 0600UTC?

(refer to figure below)



- A) Polar maritime
- B) Tropical continental
- C) Polar continental
- D) Tropical maritime

Q556. Where does polar continental air originate?

A) Areas of arctic water
# **B)** Siberian landmass

- C) The region of Greenland
- D) The region of the Baltic sea

Q557. What are the typical differences between the temperature and humidity between an air mass with its origin in the Azores and an air mass with its origin over northern Russia?

- A) The North-Russian air is colder and more humid than the air of the Azores
- B) The North-Russian air is warmer and dryer than the air of the Azores
- C) The air of the Azores is warmer and more humid than the North-Russian air
- D) The air of the Azores is warmer and dryer than the North-Russian air

Q558. In which air mass are extremely low temperatures encountered?

- A) Arctic maritime air
- B) Polar maritime air
- C) Polar continental air
- D) Tropical continental air

Q559. In which of the following regions does polar maritime air originate?

- A) Baltic Sea
- **B)** East of Greenland
- C) Black Sea
- D) Region of British Isles

Q560. In which air mass can extreme cold temperatures be found?

A) Polar maritime.

#### **B)** Polar continental.

- C) Arctic maritime.
- D) Tropical maritime.

Q561. Which of these phenomena usually forms in the transition zone between two air masses?

- A) a ridge of high pressure.
- B) a frontal low pressure.
- C) radiation fog.
- D) an unstable low pressure.

Q562. A source region is an area in which:

A) frontal depressions form or originate.

#### B) an air mass type forms or originates.

- C) tropical revolving storms form.
- D) thunderstorms form or originate.

Q563. FL180, Northern Hemisphere with a wind from the left, what can you say about temperature with a heading of 360?

A) Nothing.

- B) Increases from South to North.
- C) Not possible to tell without a pressure.

#### D) Increases from North to South.

Q564. The polar front is the boundary between:

#### A) polar air and tropical air

- B) maritime polar air and continental polar air
- C) arctic air and tropical air
- D) arctic air and polar air

Q565. What type of low pressure are is associated with a surface front?

#### A) Polar front low

- B) A cold air pool
- C) A low on lee side of a mountain
- D) Heat low

Q566. At what time of the year are the paths of north Atlantic lows moving from west to east generally at their most southerly position?

## A) Winter

- B) Autumn
- C) Summer
- D) Spring

Q567. Examining the pictures, on which one of the tracks (dashed lines) is this cross-section to be expected?

(refer to figure below)



## A) Track B-D

- B) Track A-D
- C) Track B-C
- D) Track A-E

Q568. On an aerodrome, when a warm front is approaching

- A) QFE increases and QNH decreases
- B) QFE and QNH increase

#### C) QFE and QNH decrease

D) QFE decreases and QNH increases

Q569. The main factor which contributes to the formation of very low clouds ahead of a warm front is the

A) warm air moving over a cold surface

## B) saturation of the cold air by rain falling into it and evaporation

C) saturation of the warm air by rain falling into it and evaporation

D) reduction of outgoing radiation due to clouds

Q570. Read this decription: "After such a fine day, the ring around the moons was a bad sign yesterday evening for the weather today. And, sure enough, it is pouring down outside. The clouds are making an oppresively low ceiling of uniform grey; but at least it has become a little bit warmer." Which of these weather phenomena is being described?

- A) A cold front
- B) A blizzard
- C) Weather at the back of a cold front
- D) A warm front

Q571. What types of cloud will you meet flying towards a warm front?

- A) Extensive areas of fog. At some 100km from the front NS begin
- B) At some 500km AS, later CS and at some 80km before the front CB
- C) At some 800km CS, later AS, and at some 300km NS until the front
- D) At some 500km from the front, groups of CB, later at some 250km thickening AS

Q572. Thunderstorms in exceptional circumstances can occur in a warm front if

# A) the warm air is convectively unstable

- B) the warm air is convectively stable
- C) the cold air is convectively unstable
- D) the cold air is convectively stable

Q573. The approximate inclined plane of a warm front is:

#### A) 1/150

- B) 1/300
- C) 1/500
- D) 1/50

Q574. During a cross-country flight at FL50, you observe the following sequence of clouds: Nimbostratus, Altostratus, Cirrostratus, Cirrus. Which of the following are you most likely to encounter?

A) Increasing temperatures

- B) A strong downdraught
- C) Strong, gusty winds

#### D) Decreasing temperatures

Q575. Which of the following conditions are you most likely to encounter when approaching an active warm front at medium to low level?

A) Severe thunderstorms at low altitude

#### B) Low cloud base and poor visibility

- C) Extreme turbulence and severe lightning striking the ground
- D) High cloud base, good surface visibility, and isolated thunderstorms

Q576. What type of fronts are most likely to be present during the winter in Central Europe when temperatures close to the ground are below 0°C, and freezing rain starts to fall?

- A) Cold occlusions
- B) High level cold fronts
- C) Cold fronts

## D) Warm fronts, warm occlusions

Q577. How does air masses move at a warm front?

## A) Warm air overrides a cold air mass

- B) Warm air undercuts a cold air mass
- C) Cold air undercuts a warm air mass
- D) Cold air overrides a warm air mass

Q578. Which of the following is typical for the passage of a cold front in the summer?

## A) Mainly towering clouds

- B) Rapid drop in pressure once the front has passed
- C) Rapid increase in temperature once the front has passed
- D) Mainly layered clouds

Q579. What change in pressure, will occur at point A, during the next hour?

(refer to figure below)



A) A drop in pressureB) A rise in pressure

- C) Irregular fluctuations
- D) Approximately constant pressure

Q580. What is the surface visibility most likely to be, in a warm sector of tropical maritime air, during the summer?

# A) Moderate (several km)

- B) Very good (greater than 50km)
- C) Good (greater than 10km)
- D) Very poor (less than 1km)

Q581. What weather conditions are prevalent during the summer, over the North Sea, approximately 300km behind a quickly moving cold front?

- A) Showers and thunderstorms
- B) Rain covering a large area, 8 octas NS
- C) Cloud cover mostly scattered, isolated showers
- D) 8 octas CS, AS without precipitation

Q582. Which cross-section of air mass and cloud presentation is applicable to the straight line A-B?

(refer to figure below)



- A) 1
- B) 4
- C) 2
- D) 3

Q583. Which one of the tracks (dashed lines) is represented by the cross-section shown on the left? (refer to figure below)



- A) Track C-A B) Track B-A
- C) Track D-A
- D) Track B-C

Q584. Which of the following describes a warm occlusion?

- A) The air mass ahead of the front is drier than the air mass behind the front
- B) The coldest air mass is ahead of the original warm front
- C) The air mass behind the front is more unstable than the air mass ahead of the front
- D) The warmer air mass is ahead of the original warm front

Q585. How are the air masses distributed in a cold occlusion?

- A) The coldest air behind and the warm air in front of the occlusion; the less cold air mass is above ground level
- B) The coldest air in front of and the less cold air is behind the occlusion; the warm air mass is above ground level
- C) The coldest air in front of and the warm air behind the occlusion; the less cold air is above ground level
- D) The coldest air mass behind and the less cold air in front of the occlusion; the warm air mass is above ground level

Q586. In a polar front depression, an occlusion is called a warm occlusion when the cold air

- A) behind is colder than the cold air in front
- B) in front of the surface position of front is only at a high altitude
- C) behind is colder than the cold air front, with the warm air being at a high altitude

# D) behind is less cold than the cold air in front, with the warm air at a high altitude

Q587. In a warm front occlusion

- A) the warm front overtakes the cold front
- B) the warm front becomes a front aloft
- C) the warm air is lifted

D) the cold air is lifted

Q588. What characterizes a stationary front?

- A) The warm air moves at approximately half the speed of the cold air
- B) The surface wind usually has its direction parallel to the front
- C) The surface wind usually has its direction perpendicular to the front
- D) The weather conditions that it originates is a combination between those of an intense cold front and those of a warm and very active front

Q589. An observer on the northern hemisphere is under influence of the wind system of a depression, which is moving from West to East. The centre of the depression passes to the South of the observer. For this observer the wind direction is

- A) initially backing, then veering
- B) continuously veering
- C) continuously backing
- D) initially veering, than backing

Q590. A frontal depression passes through the airport. What form of precipitation do you expect?

- A) Continuous rain or snow during 6 hours until the warm front arrives. The precipitation stops for several hours within the warm sector. On the arrival of the cold front, showers within a couple of hours
- B) Showers during some 2 hours until the warm front arrives. Drizzle in the warm sector within 12 hours. Rain or snow on the passage of the cold front
- C) Continuous rain or snow while the frontal wave passes for a period of some 24 hours
- D) Rain or snow during about 12 hours until the warm front arrives. Within the warm sector the rain increases. Improvement on the passage of the cold front

Q591. In which approximate direction does the centre of a frontal depression move?

- A) In the direction of the isobars behind the cold front
- B) In the direction of the isobar ahead of the warm front
- C) In the direction of the sharpest pressure increase
- D) In the direction of the warm sector isobars

Q592. This chart shows the weather conditions on the ground at 0600UTC on May 4th. Which of the following reports reflects weather development at Geneva Airport?

(refer to figure below)



- A) TAF LSGG 230716 23016KT -RA BKN030 OVC070 BECMG 0810 5000 RA BKN020 OVC050 TEMPO 3000 +RA BKN010 OVC030 BECMG 1215 25014KT 8000 SCT030 BKN090=
- B) TAF LSGG 230716 26012 9999 SCT030 BKN080 TEMPO 1013 25020G35KT 3000 TSRA or +SHRA BKN030CB BECMG 1316 VRB02KT 3000 BCFG SCT100=
- C) TAF LSGG 230716 VRB03KT 6000 BR SCT020 BECMG 0811 23005KT 9999 SCT025TCU PROB40 TEMPO 1216 34012G30KT 3000 TSRA BKN020CB=
- D) TAF LSGG 230716 05014KT 5000 OVC015 BECMG 0810 8000 BKN018 BECMG 1013 05015G30KT 9999 SCT025=

Q593. Refer to the diagram. Assuming the usual direction of movement, where will this polar frontal wave have moved?

(refer to figure below)



- A) Position 4 B) Position 3
- C) Position 2
- D) Position 1

Q594. Refer to the diagram. Assuming the usual direction of movement, where will the polar frontal wave have moved?

(refer to figure below)



- A) POSICION D
- B) Position A
- C) Position B
- D) Position C

Q595. In which main direction does a polar front depression move?

- A) Across the front towards the south
- B) Along the front towards the west
- C) Across the front towards the north
- D) Along the front towards the east

Q596. Describe a cold occlusion at a polar front depression:

- A) The air ahead of the warm front is colder than the air behind the cold front.
- B) The air ahead of the warm front is warmer than the air behind the cold front.
- C) The air behind the cold front is less cold than the air ahead of the warm front.
- D) Both, the air ahead of the warm front and the air behind the cold front are of approximately the same temperature.

Q597. After such a downpour yesterday, the visibility is today now better. There are now isolated rain showers with sunny spells. It is a little colder though. What is being described?

# A) Weather behind the cold.

- B) Warm sector.
- C) Warm front.
- D) Tropical storm.

Q598. What type of low is usually associated with frontal activity?

- A) Cold low.
- B) Polar front low.
- C) Warm low.
- D) Mountain lee low.

Q599. How would you find the velocity of the warm front?

- A) 70% of the speed found by measuring the distance between the isobars in the warm sector.
- B) The speed found by measuring the distance between the isobars along the front itself.
- C) Two thirds of the speed found by measuring the distance between the isobars along the front itself.
- D) 70% of the speed found by measuring the distance between the isobars ahead of the front itself.

Q600. In a warm front occlusion:

- A) the warm front becomes a front aloft.
- B) the warm front overtakes the cold front.
- C) the warm air is lifted.

D) the cold air is lifted.

Q601. Shortly after the passage of an active cold front you observe the aneroid altimeter of a parked aircraft. The indication of the instrument will...

A) show no appreciable change due to such minor pressure fluctuation.

B) not be influenced by the air pressure.

#### C) decrease.

D) increase.

Q602. What is the name of the pressure system found between two polar front depressions:

- A) Warm anticyclone.
- B) Cold anticyclone.
- C) Blocking anticyclone.

#### D) Cold temporary anticyclone.

Q603. A warm front occlusion is approaching the east coast of the UK. What WX would you expect in the North Sea during summer?

A) Medium level cloud 3/8 octas, isolated showers.

#### **B)** Low level stratus.

- C) High level Ci.
- D) TS/showers/CB.

Q604. The weather most likely as a warm front passes is:

#### A) moderate continuous rain, intermittent light drizzle.

- B) moderate continuous rain, rain showers.
- C) light showers, moderate continuous drizzle.
- D) heavy continuous rain, occasional thunderstorm.

Q605. Flying towards a warm front, at what distances might you expect the following cloud types from the surface position of the front?

- A) CS 400km: AS 600km: NS 800km.
- B) CS 800km: AS 200km: NS 400km.
- C) CS 600km; AS 400km: NS 200km.
- D) CS 200km: AS 400 km: NS 600km.

Q606. The mean position of the polar front in the N Atlantic is:

- A) from Florida to North of the UK in January.
- B) from Florida to SW UK in July.
- C) from SW UK to Newfoundland in January.

## D) from north of UK to Newfoundland in July.

Q607. Behind a cold front:

- A) winds veer and increase with height.
- B) winds back and decrease with height.

## C) winds may back slowly and increase with height.

D) winds veer and decrease with height...

Q608. When flying in the warm sector of a well developed frontal depression, well clear of all fronts, which of the following statements are correct:

- a. Severe windshear occurs on the approach to landing at inland airfields
- b. There is little or no cloud above 6500 ft
- c. The air will be generally unstable
- d. There will be widespread poor visibility, possibly advection fog at low level

## A) a, b & c are correct

#### B) b & d are correct

- C) a & d are correct
- D) b & c are correct

Q609. What characterizes a stationary front?

- A) The surface wind usually has its direction perpendicular to the front.
- B) The weather conditions that it originates is a combination between those of an intense cold front and those of a warm and very active front.
- C) The warm air moves at approximately half the speed of the cold air.

# D) The surface wind usually has its direction parallel to the front.

Q610. At a quasi-stationary front:

- A) winds are always very strong.
- B) winds blow perpendicular to the isobars.
- C) winds blow parallel to the isobars and front.
- D) winds are usually gusty and variable.

Q611. What type of low pressure area is associated with a surface front?

- A) A low on lee side of a mountain.
- B) Polar front low.

C) Heat low.

D) A cold air pool.

Q612. What type of precipitation would you expect at an active unstable cold front?

#### A) Light to moderate continuous rain

#### B) Showers associated with thunderstorms

- C) Freezing rain
- D) Drizzle

Q613. Frontal depressions can be assumed to move in the direction of the 2000 feet wind

- A) in front of the warm front
- B) at the apex of the wave
- C) behind the cold front

#### D) in the warm sector

Q614. If you have to fly through a warm front when freezing level is at 10000 feet in the warm air and at 2000 feet in the cold air, at which altitude is the probability of freezing rain the lowest ?

#### A) 12000 feet

- B) 9000 feet
- C) 3000 feet
- D) 5000 feet

Q615. In which of the following areas do surface high pressure systems usually predominate over the North Atlantic region between 30°N and 65°N and the adjoining land areas during the northern summer?

- A) Greenland, Azores, NE Canada
- B) Iceland, SW USA, Azores
- C) Greenland, SW Europe, NE Canada

#### D) Azores, SE USA, SW Europe

Q616. Considering the North Atlantic region between 30°N and 65°N and the adjacent land areas during winter, the normal disposition of the main anticyclones at the surface is

# A) Azores, Siberia

B) Siberia, Iceland, Canaries

C) NE Canada, Iceland

D) Greenland, Iberian peninsula

Q617. Select the answer which you consider will complete correctly the following statement in relation to the main pressure systems affecting the North Atlantic region between 30°N and 65°N. During winter the predominant mean low pressure system at the surface is usually centred over

#### A) USA B) Iceland/Greenland

C) Siberia

D) Azore

Q618. With low pressures dominating the Med, which of the following would likely be found in central Europe?

A) Thunderstorms and snow.

B) Thermal depressions.

#### C) Northerly Foehn wind over the Alps.

D) Warm clear sunny spells.

Q619. In the Northern Hemisphere a man observes a low pressure system passing him to the south, from west to east. What wind will he experience?

A) Veers then Backs.

B) Backs then steady.

C) Constantly Packs

C) Constantly Backs.

D) Backs then Veers.

Q620. With two pressure systems at different latitudes, but with the same isobar spacing, it would be possible to have the same gradient wind speed with:

A) a low at low latitude and a high at low latitude.

B) a low at high latitude and a high at low latitude.

C) a low at high latitude and a high at high latitude.

D) a low at low latitude and a high at high latitude.

Q621. What generates air movement and is the cause of wind?

A) Pressure.

B) Frontal systems.

# C) Difference in temperature.

D) Rotation of the earth.

Q622. A polar air low is usually formed by:

A) returning polar maritime air moving over warm sea in summer.

B) polar maritime air moving SE over the sea in winter.

C) polar continental air moving over warmer land in the spring.

D) a depression forming on the polar front in summer.

Q623. The stable layer at some height in the low troposphere of an older high pressure area in the mid-latitudes is called

- A) friction inversion
- B) trade wind inversion
- C) subsidence inversion
- D) radiation inversion

Q624. What is the most likely cause of a lack of clouds at higher levels in a stationary high?

- A) Rising air
- **B)** Sinking air
- C) Instability
- D) Divergence at higher levels

Q625. A blocking anticyclone on the northern hemisphere is

- A) quasi stationary/situated between 50°N and 70°N/a cold anticyclone
- B) situated between 50°N and 70°N/a cold anticyclone/steering depressions
- C) a warm anticyclone/quasi stationary/situated between 50°N and 70°N
- D) a cold anticyclone/steering depressions/situated over Scandinavia

Q626. Areas of sinking air are generally cloudless because as air sinks it

## A) is heated by compression

- B) reaches warmer layers
- C) loses water vapour
- D) is heated by expansion

Q627. The most effective way to dissipate clouds is by

- A) a decrease in pressure
- B) a decrease in temperature

#### C) subsidence

D) conversion

Q628. Subsidence is:

- A) the same as convection
- B) vertically upwards motion of air
- C) horizontal motion of air

## D) vertically downwards motion of air

Q629. What surface weather is associated with a stationary high pressure region over land in the winter?

## A) A tendency for fog and slow ST

- B) The possibility of snow showers
- C) Thunderstorms
- D) NS with continuous rain

Q630. Subsidence in an anticyclone produces...

- A) increased pressure at the surface.
- B) saturated air and an inversion.
- C) isothermal dry and stable air.

D) dry air and an inversion.

Q631. A blocking anticyclone:

## A) is often a warm anticyclone which usually converts the west east movement of polar front lows into a meridional flow.

- B) is always a cold anticyclone.
- C) usually takes the form of a wedge of warm air aligned east west.
- D) a deep depression which dominates all other weather in the vicinity.

Q632. A ridge of high pressure is generally associated with:

- A) divergence causing increased cloud and precipitation.
- B) convergence causing increased cloud and precipitation.
- C) divergence causing cloud to break up and more precipitation.

# D) divergence and subsidence causing clear skies and good weather.

Q633. Lack of cloud at low level in a stationary high is due to:

- A) instability.
- B) sinking air.
- C) rising air.
- D) divergence at high level.

Q634. If the pressure level surface bulges upwards, the pressure system is a:

- A) cold, low.
- B) cold, high.

#### C) warm, high.

D) warm, low.

Q635. Which is true of a typical non frontal thermal depression?

#### A) It forms over land in summer

- B) It forms over land in winter
- C) It forms over the ocean in winter
- D) It forms over the ocean in summer

Q636. How do you recognize a cold air pool?

- A) As a high pressure area aloft (e.g. on the 500hPa chart)
- B) A cold air pool may only be recognized on the surface chart as a low pressure area
- C) As a low pressure area aloft (e.g. on the 500hPa chart)
- D) As cold air pool may only be recognized on the surface chart as a high pressure area

Q637. What type of air movement is associated with the centre line of a trough?

#### A) Convergence with lifting

- B) Divergence with lifting
- C) Divergence with descending air
- D) Convergence with descending air

Q638. With an intense trough of low pressure over Iceland during wintertime the weather likely to be experienced is:

A) light wind, good visibility and a high cloud ceiling

# B) strong wind shear, convection and snow showers

- C) strong wind associated with an almost clear sky
- D) strong wind with subsidence at low levels

Q639. Extensive cloud and precipitation is often associated with a non frontal thermal depression because of:

- A) surface divergence and upper level convergence causing widespread ascent of air in the depression
- B) surface divergence and upper level convergence causing widespread descent of air in the depression
- C) surface convergence and upper level divergence widespread causing ascent of air in the depression
- D) surface convergence and upper level divergence causing widespread descent of air in the depression

Q640. Which is true of a secondary depression in the northern hemisphere?

## A) It tends to move round the primary in a cyclonic sense

- B) It tends to maintain its position relative to the primary
- C) It tends to move round the primary in an anticyclonic sense
- D) It rapidly closes on, and merges with the primary

Q641. A trough of low pressure on a surface synoptic chart is an area of

A) divergence and subsidence

## B) convergence and widespread ascent

- C) convergence and subsidence
- D) divergence and widespread ascent

Q642. Secondary depressions move:

- A) around the primary in an anticyclonic fashion.
- B) westwards.
- C) eastwards.

## D) around the primary in a cyclonic fashion.

Q643. Why do tropical revolving storms tend to develop mostly in the western parts of the tropical oceans?

## A) Because there is a maximum of humidity as a result of the trade

#### winds'long sea passage

- B) Because they are areas in which there is a strong progressive windshear with increase of height
- C) Because the gulf formation of the coastlines triggers a strong rotary circulation
- D) Because there is a maximal temperature difference between land mass and sea

Q644. Which statement is true for hurricanes in the North Atlantic?

- A) They intensify rapidly after landfall
- **B)** From the earth's surface up to the tropopause their core is warmer than its surroundings
- C) The diameter is 50- 500m
- D) Their greatest frequency of occurence is in winter

Q645. What is the track most likely to be taken by a hurricane in the Carribean area?

#### A) East

- B) West in the earlier stages and later south east
- C) West in the earlier stages and later north east
- D) West deep into the U.S.

Q646. What is the main energy source of a tropical revolving storm?

- A) Temperature difference between equatorial low pressure trough and subtropical high pressure belt
- B) The equatorial jet stream
- C) Latent heat released from condensing water vapour
- D) Cold air advancing from temperature latitudes

Q647. Tropical revolving storms do not occur in the southeast Pacific and the south Atlantic because

- A) the southeast trade winds cross over into the northern hemisphere
- B) there is no coriolis force present
- C) of the low water temperature
- D) of the strong southeast wind

Q648. Where is the most dangerous zone in a tropical revolving storm?

# A) In the wall of clouds around the eye

- B) In the centre of the eye
- C) Anywhere in the eye
- D) About 600km away from the eye

Q649. The arrows labelled "u" represent the tracks of tropical revolving storms which occur mainly from?

60 40 20 0 20 apricara 40 U 0 20 40 60 120 140 160 180 80 100

(refer to figure below)

A) May to July and are called cyclones

B) July to October and are called typhoons

C) December to April and are called tornadoes

D) January to March and are called willy-willies

Q650. The arrows labelled "t" represent the tracks of tropical revolving storms which occur mainly from?

(refer to figure below)



A) December to April and are called hurricanes

B) June to October and are called tornadoes

C) June to October and are called cyclones

D) June to October and are called hurricanes

Q651. The arrows labelled "s" represent the tracks of tropical revolving storms which occur mainly from?

(refer to figure below)



A) December to April and are called typhoons

B) December to April and are called cyclones

C) May to November and are called cyclones

D) May to November and are called hurricanes

Q652. The arrows labelled "r" represent the tracks of tropical revolving storms which occur mainly from?

(refer to figure below)



# A) December to April and are called cyclones

- B) June to October and are called typhoons
- C) June to October and are called hurricanes
- D) December to April and are called tornadoes

Q653. The region of the globe where the greatest number of tropical revolving storms occur is

- A) the south-western Indian ocean, affecting Madagascar, Mauritius and the island of Reunion
- B) the northern Indian ocean, affecting India, Sri Lanka and Bangladesh
- C) the carribean sea, affecting the West Indies, Mexico and the south-east coastline of the USA
- D) the north-west Pacific, affecting Japan, Formosa, Korea and the Chinese coastline

Q654. During which months is the Hurricane season in the Carribean?

A) October until January

B) January until April

C) April until July

**D) July until November** 

Q655. When do you get TRS at Darwin (Australia)?

- A) July October.
- B) Never.
- C) November April.
- D) In the winter.

Q656. Where are the fastest winds in a Tropical Revolving Storm?

- A) In a ring 20nm outside the eye wall.
- B) To the right of the track in Hurricanes and Cyclones.

#### C) In the wall of cloud surrounding the eye.

D) To the left of the track in Typhoons.

Q657. Most frequent tropical revolving storms are:

- A) hurricanes in the Caribbean.
- B) tornadoes in Western Africa.
- C) cyclones in the Indian Ocean.

D) typhoons in the Pacific.

Q658. Where does a TRS gain its energy from?

#### A) Latent heat from water in oceans.

- B) The very fast winds.
- C) The very low pressures inside the storm.
- D) Energy gained directly from the sun.

Q659. Where are TRS not likely to form?

- A) South China sea.
- B) South Pacific.
- C) South Atlantic.
- D) South Indian Ocean.

Q660. Where is the most severe weather in a TRS?

- A) within the eye.
- B) in the centre of the eye.
- C) 300km from the eye.

# D) in the wall of cloud surrounding the eye.

Q661. Considering that portion of the route indicated from 30°E to 50°E, the upper winds in January above FL300 are most likely to be?

(refer to figure below)



- A) light easterlies
- B) a subtropical westerly jet stream, maximum speed exceeding 90kt

C) a westerly polar front jet stream, maximum speed exceeding 90kt

D) variable in direction and less than 30kt

Q662. At about what geographical latitude as average is assumed for the zone of prevailing westerlies?

## A) 50°N

- B) 10°N
- C) 80°N
- D) 30°N

Q663. The lowest relative humidity will be found:

- A) at the south pole.
- B) around 30 deg S in January.
- C) between latitudes 30 deg and 40 deg N in July.
- D) in equatorial regions.

Q664. During July flights from Bangkok (13°N- 100°E) to Karachi (25°N- 67°E) experience an average tailwind component of 22kt. In January the same flights, also operating at FL370, have an average headwind of 50kt. What is the reason for this difference?

# A) The wind components correspond to the seasonal change of the regional wind

- B) The flights happen to be in the area of the polar front jet stream
- C) The flights in January encountered, by chance, very unusual, adverse conditions
- D) The flights during the summer encountered, by chance, very unusual, favourable conditions

Q665. The dotted line designated "Z" represents the?

(refer to figure below)



# A) mean position of the intertropical front (ITCZ) during July

- B) northerly limit of the SE trade winds during January
- C) mean position of the intertropical front (ITCZ) during January

D) northerly limit of the sub tropical jet stream during July

Q666. Which one of the following statements regarding the intertropical convergence zone (ITCZ) is correct?

# A) Frequent and widespread thunderstorms are to be expected within the area of the ITCZ

- B) Thunderstorms seldom occur within the area of the ITCZ
- C) The ITCZ is always associated with a strong jet stream
- D) The ITCZ does not change its position during the course of the year

Q667. The dotted line labelled "Y" represents the?

(refer to figure below)



- A) mean position of the intertropical convergence zone (ITCZ) during July
- B) axis of the subtropical jet stream during January

# C) mean position of the intertropical convergence zone (ITCZ) during January

D) mean position of the temperature/tropical front during July

Q668. In which of the following bands of latitude is the intertropical convergence zone most likely to be encountered in January, between Dakar and Rio de Janeiro?

# A) 0°- 7°N

- B) 8°- 12°S
- C) 3°- 8°S
- D) 7°- 12°N

Q669. What weather conditions are most likely to affect an approach to Dakar during July? (refer to figure below)



- A) Generally clear skies- NW trade winds
- B) Dry and clear due to the influence of the Azores high pressure system
- C) Wet and thundery due to the proximity of intertropival convergence zone (ITCZ)
- D) Reduced visibility due to the rising sand of the Harmattan

Q670. Which of the following statements is correct concerning the movement of the ITCZ in the region of West Africa?

A) It oscillates during the year between the Equator and 10 degrees North **B) It reaches its maximum northerly position of 15°- 20°N in July** 

- C) It oscillates during the year between the Equator and 10 degrees North
- D) It reaches its maximum southerly position of 5°S in January

Q671. The intertropical convergence zone (ITCZ) particularly affects

- A) western Africa, where it is situated between the 10°N and the 30°N parallels, depending on the time of the year
- B) western Africa between 10° and 20°N and the northern coasts of the Arabian sea in July
- C) western Africa, at a latitude of 25°N in July
- D) the atlantic ocean, between latitudes 10°N and 30°N, depending on the time of the year

Q672. Which wind systems converge on the ITCZ, when it lies at the equator?

- A) NW monsoon and SW trade winds
- B) SW monsoon and NW monsoon
- C) SE trade winds and NE trade winds
- D) SW monsoon and NW trade winds

Q673. Where, during a flight from Marseille to Dakar, in July, may the ITCZ be encountered?

A) At the latitudes of Gibraltar

#### B) In the vicinity of Dakar

- C) Near the Canary Islands
- D) At the latitudes of Algeria

Q674. The transition from SW to NE monsoon in India occurs in

- A) July, August, September
- B) February, March, April

#### C) September, October, November

D) December, January, February

Q675. Weather conditions at Bombay during January are mainly influenced by the?

(refer to figure below)



Q676. Weather conditions at Bombay during early July are mainly influenced by the? (refer to figure below)



A) passage of frontal system generated in the south Indian ocean

# B) SW monsoon

- C) NE monsoon and the proximity of the ITCZ
- D) high incidence of tropical revolving storms originating in the persian gulf

Q677. From which direction do the trade winds blow, in the southern hemisphere?

- A) NE
- B) SW
- C) N
- D) SE

Q678. The prevailing surface wind in the area of the west coast of Africa north of the equator (gulf of Guinea) is a

## A) SW monsoon in summer and NE tradewind in winter

- B) NE tradewind in summer and SE tradewind in winter
- C) SW monsoon in winter and NE monsoon in summer
- D) NE monsoon in winter and SE tradewind in summer

Q679. What winds are mainly associated with the winter monsoon in the monsoon regions of the Indian sub-continent?

A) Northwesterly winds bringing dry and hazy air

#### B) Northeasterly winds bringing dry and hazy air

- C) Southwesterly winds carrying warm and humid air
- D) Southeasterly winds carrying warm and humid air

Q680. An easterly wave is a

- A) wave-like disturbance in the monsoon regime of India, moving from east to west, with severe convective activity ahead of its trough
- B) small scale wave disturbance in the tropics, moving from east to west, with severe convective activity ahead of its trough
- C) wave in a trade wind belt, moving from east to west, with severe convective activity in rear of its trough
- D) disturbance in the higher levels associated with the equatorial easterly jet, moving from east to west, with severe convective activity in rear of its trough

Q681. What weather is prevalent in the zone of easterly waves?

- A) Frontal weather
- B) Continuous rain
- C) Clear skies
- D) Thunderstorms and rain

Q682. Flying from Dakar to Rio de Janeiro in winter where would you cross the ITCZ?

A) 7 to 120N.
B) 12 to 180S.
C) 0 to 70N.
D) 7 to 120S.

Q683. The Doldrums are:

- A) cols between weak fronts encountered in low latitudes.
- B) associated with light and variable monsoon winds.

## C) weak inter-tropical convergence zones.

D) another name for the sub-tropical anticyclones.

Q684. The ITCZ moves north in July. The furthest point north that it reaches is:

- A) Southern Arabia.
- B) West Africa.
- C) North China.
- D) Central America.

Q685. In July light easterly upper winds are apparent:

## A) at 20N over Asia and Northern Africa.

- B) between 20N and 05S over the Pacific Ocean.
- C) all along the Equator.
- D) at 10S.

Q686. What is the Easterly wave?

- A) A wave travelling south-north.
- B) A wave travelling west-east.
- C) A wave travelling north-south.
- D) A wave travelling east-west.

Q687. When are the rains most likely in Equatorial Africa?

- A) March to May, August to October.
- B) December to January.
- C) March to May, October to November.
- D) June to July.

Q688. Horse latitudes are:

- A) Reduced visibility due to the rising sand of the Harmattan.
- B) Wet and thundery due to the proximity of Intertropical convergence zone (ITCZ).
- C) Dry and clear due to the influence of the Azores high pressure system.

D) Generally clear skies - NW trade winds.

Q689. In the areas of the ITCZ why are the heights of the tropopause not reported?

- A) Because it is in the stratosphere.
- B) Because it is likely to be above your FL.
- C) Because it's too cold.
- D) Because it cannot be measured.

Q690. ITCZ weather is:

A) usually clear Wx, especially during the winter.

#### B) often thundery through strong convergence.

- C) occasional showers with continuous rain.
- D) light winds from the south-west.

Q691. The line labelled " Y" represents the:

- A) mean position of the temperate/tropical front during July.
- B) axis of the subtropical jet stream during January.
- C) mean position of the Intertropical convergence zone (ITCZ) during July.
- D) mean position of the Intertropical convergence zone (ITCZ) during January.

Q692. The ITCZ in July is?

- A) over West Africa at 25 deg N and stretches up to the north of the Arabian sea.
- B) 20 deg N over west Africa.
- C) passing through Freetown.
- D) near the Canaries.

Q693. What height is the tropopause and at what temperature?

- A) At the equator 8km and -40 ° C.
- B) At the poles 8km and -16 ° C.
- C) At the equator 18km and -76 ° C.
- D) At the pole 18km and -75 ° C.
Q694. Which typical weather condition is shown by the design for the area of Central Europe?

(refer to figure below)



#### A) Westerly waves

- B) Cutting wind
- C) Uniform pressure pattern
- D) Easterly waves

Q695. The weather most likely to be experienced at position "R" is?



# A) fine and warm with little or no cloud

- B) increasing high and medium cloud cover and generally good visibility
- C) mainly overcast with anticyclonic gloom
- D) early morning fog lifting to low stratus

Q696. Which typical weather condition is shown by the design for northern Italy?

(refer to figure below)



- A) Westerly wind
- B) Warm southerly wind
- C) High pressure
- D) Easterly wind

Q697. The attached chart shows the weather conditions on the ground at 1200UTC on October 10. Which of the following reports reflects weather development at Zurich Airport?



- A) TAF LSZH 101601 23012KT 6000 RA BKN012 OVC030 TEMPO 2023 22025G40KT 1600 +SNRA BKN003 OVC015=
- B) TAF LSZH 101601 05020G35KT 8000 BKN015 TEMPO 1720 05018KT 0300 +SHSN VV002=
- C) TAF LSZH 101601 32008KT 9999 SCT030TCU TEMPO 2201 32020G32KT 3000 TSRA BKN020CB=
- D) TAF LSZH 101601 VRB02KT 9000 SCT280 BECMG 1618 00000KT 3500 MIFG BECMG 1820 1500 BCFG BECMG 2022 0100 FG VV001=

Q698. With a uniform pressure pattern and no thunderstorms around, what will the indication of the aneroid altimeter of an aircraft parked on the ground do over a period of about ten minutes?

- A) Show strong fluctuations
- B) Increase rapidly
- C) Apparently nothing, because any changes would be small
- D) Decrease rapidly

Q699. The weather most likely to be experienced at position "R" is?

(refer to figure below)



A) increasing amounts of AS and NS- heavy rain

- B) early morning fog lifting to low stratus
- C) fine and warm at first -AC Castellanus and CB in late afternoon with thunderstorms
- D) overcast with drizzle and hill fog

Q700. Which typical weather situation is shown on the weather chart? (spacing of the isobars: 5hPa)

(refer to figure below)



- A) Warm south wind condition ("Foehn")
- B) Cutting wind

# C) Uniform pressure pattern

D) West wind condition

Q701. A cold pool

- A) develops usually in winter when very unstable maritime polar or maritime arctic air currents stream southwards along the eastern side of an extensive ridge of high pressure, in association with occluded systems
- B) is usually most evident in the circulation and temperature fields of the middle troposphere and may show little or no sign on a surface chart
- C) occurs frequently in winter to the south of the Alps when this region is under the influence of cold north-westerly airstream
- D) normally disappears at night and occurs almost exclusively in summer

Q702. What pressure systems affect the North Atlantic in summer?

- A) Azores low, Scandinavian high.
- B) Azores low, North Canadian low.
- C) Azores high, Scandinavian High.

# D) North Canadian low, Azores High.

Q703. The greatest annual range of temperature will be found:

- A) in polar regions.
- **B)** over large land masses
- C) over large oceanic areas.
- D) in equatorial regions.

Q704. What kind of weather system might you typically find between the 45 deg - 70 deg N?

- A) Arctic front depression.
- B) Polar high.
- C) Polar front depression
- D) Sub tropical high.

Q705. Considering the route indicates from Lisbon to Freetown, the Harmattan is a?



- A) localised depression giving squally winds
- B) NE wind affecting north-west Africa during November to April reducing visibility in rising dust
- C) SW monsoonal wind causing extensive areas of advecting fog along the West African coast south of 15°N
- D) warm southerly dust-bearing wind affecting the coast of North Africa

Q706. A strong, dry and warm katabatic wind, produced by prior enforced ascent of air over hills or mountains is known as a

- A) Mistral
- B) Bora
- C) Foehn
- D) Harmattan

Q707. A dry, sand- and dust-laden North Easterly wind that blows in winter over large parts of North West Africa is known as a

A) Scirocco

#### **B)** Harmattan

- C) Khamsin
- D) Pampero

Q708. What is the name of the northerly, cold and strong wind, that sometimes blows over a certain part of Europe?

- A) Typhoon
- B) Bora

#### C) Mistral

D) Foehn

Q709. What is characteristic of the pamperos?

A) A marked advance of cold artic air in North America

#### B) A marked advance of cold air in South America

C) Katabatic winds in the Atlas Mountains

D) Foehn conditions in the Spanish Pyrenees

Q710. The Chinook is a

A) warm anabatic wind up the slopes of snowfields or glaciers

B) warm and dry wind that forms as air descends on the leeward

# side of the Rocky Mountains

- C) donwslope wind that occurs particularly at night as air cools along mountain slopes
- D) very cold wind blowing snow
- Q711. A Foehn wind occurs on the
- A) windward side of a mountain range and is caused by surface heating
- B) leeward side of a montain range and is caused by significant moisture loss by precipitation from cloud
- C) windward side of a mountain range and is caused by surface cooling and reserve air flow
- D) leeward side of a mountain range and is caused by the condensation level being lower on the leeward side than on the windward side

Q712. Under the weather conditions depicted, which of the following statements is likely to apply?



- A) Radiation fog is unlikely in Central Europe in the winter
- B) Moderate to strong Foehn in the Alps
- C) Severe gradient wind likely over Central Europe
- D) Thunderstorms may occur in the summer months over Central Europe

Q713. The Foehn is a

- A) cold fall wind
- B) warm anabatic wind
- C) warm fall wind
- D) cold anabatic wind

Q714. The Bora is a

A) squally warm catabatic wind which occurs mainly in summer

# B) cold catabatic wind with the possibility of violent gusts

- C) cold catabatic wind with gusts associated with a maritime air mass
- D) cold catabatic wind always associated with clouds and heavy showers

Q715. What are the characteristics of the Bora?

- A) It is a very cold wind that blows mainly in winter from a northwesterly direction in the Mediterranean
- B) It is a warm and moist, southwesterly wind experienced in the eastern Mediterranean, that usually carries precipitation
- C) It is a dry and hot southerly wind experienced in the Sahara desert, that often carries dust

# D) It is a cold and very strong wind that blows mainly in winter from a tableland downwards to the Adriatic

Q716. For an aircraft what are the meteorological dangers associated with a Harmattan wind?

- A) Thunderstorms
- B) Sand up to FL150
- C) Hail

# D) Dust and poor visibility

Q717. x8/8 stratus base 200 FT/AGL is observed at sunrise at an aerodrome in the north of France; the QNH is 1028 hPa and there is a variable wind of 3 kt. What change in these clouds is likely at 12:00 UTC in summer and winter?

A) Winter: BKN base 2.500 FT/AGL; summer BKN base 3.500 FT/AGL.

- B) Winter: clear sky; summer BKN CB base 1.500 FT/AGL.
- C) Winter: SCT base 3.000 FT/AGL; summer OVC base 500 FT/AGL.
- D) Winter: OVC base 500 FT/AGL; summer SCT base 3.000 FT/AGL.

Q718. Flying form London to Bombay in January, what average wind might you expect?

- A) Tropical Easterly jet.
- B) Westerly polar front jet stream.
- C) Light easterly.

#### D) Light westerly.

Q719. Which of the following statements about the West African Tornado (WAT) is correct?

- A) the WAT is another name for TRSs off the west African coast.
- B) the WAT is the E/W line of thunderstorms on the ITCZ.
- C) the WAT is similar to the North American tornado.

#### D) the WAT is a line squall caused by atmospheric waves.

Q720. In a Tropical Downpour the visibility is sometimes reduced to:

# A) less than 100m.

- B) 1000m.
- C) 500m.
- D) 200m.

Q721. What is the reason for seasonal changes in climate?

- A) Because the Earths spin axis is inclined to the plane of its orbit round the Sun.
- B) Because of the difference between the Tropical Year and the Calendar Year.
- C) Because the distance between the Earth and the Sun varies over a year.
- D) Because the Earth's orbital speed round the Sun varies according to the time of the year.

Q722. Local winds can affect the Mediterranean in winter. Which of the following lists of three is correct?

- A) Simoom; Khamsin; shamal.
- B) Bora; mistral; sirocco.
- C) Mistral; Pampero; bora.
- D) Shamal; sirocco; bora.

Q723. In which of the following situations is an aircraft most susceptible to icing?

# A) Level flight below a rain producing cloud when OAT is below zero

# degrees C

- B) Flying in heavy drizzle
- C) Level flight in snowfall below a nimbostratus layer
- D) Flying in dense cirrus clouds

Q724. You have been flying for some time in dense layered cloud. The outside air temperature is - 25°C. Which of the following statements is true?

A) In a dense layered cloud icing is unlikely also at an outside air temperature of -5°C

#### **B)** Severe airframe icing is unlikely under these conditions

- C) Severe airframe icing is quite likely under these conditions
- D) If you do not have weather radar on board there is no need to worry, as CB is unlikely to form in such cloud

Q725. Atmospheric soundings give the following temperature profile:

3000ft: +15°C 6000ft: +8°C 10000ft: +1°C 14000ft: -6°C 18000ft: -14°C 24000ft: -26°C

At which of the following flight levels is the risk for aircraft icing, in cloud, greatest?

# A) FL150

- B) FL220
- C) FL80
- D) FL180

Q726. Freezing fog exists if fog droplets

- A) are frozen
- B) are freezing very rapidly

# C) are supercooled

D) freeze when temperature falls below zero

Q727. On the approach, the surface temperature is given as -5°C. The freezing level is at 3000ft/AGL. At 4000ft/AGL, there is a solid cloud layer from which rain is falling.

According to the weather briefing, the clouds are due to an inversion caused by warm air sliding up and over an inclined front. Would you expect icing?

A) Yes, but only between 3000 and 4000ft/AGL

B) Yes, between ground level and 3000ft/AGL

- C) No, absolutely no icing will occur
- D) No, flights clear of cloud experience no icing

Q728. Which of the following conditions is most likely to cause airframe icing?

A) GR B) PE **C) +FZRA** D) SHSN

Q729. Which of the following statements is true regarding moderate-to-severe airframe icing?

- A) It always occurs in altostratus cloud
- B) It is unlikely to occur in nimbostratus cloud

#### C) It will not occur in clear-sky conditions

D) It may occur in the uppermost levels of a cumulonimbus capillatus formation

Q730. Clear ice is dangerous because it

- A) is translucent and only forms at the leading edges
- B) is heavy and is difficult to remove from the aircraft surfaces
- C) spreads out and contains many air particles
- D) is not translucent and forms at the leading edges

Q731. Clear ice forms as a result of

- A) water vapour freezing to the aircraft
- B) ice pellets splattering on the aircraft

#### C) supercooled water droplets spreading during the freezing process

D) supercooled droplets freezing on impact

Q732. Hoar frost forms on an aircraft as a result of

- A) water vapour turning directly into ice crystals on the aircraft surface
- B) small super-cooled droplets striking the aircraft
- C) freezing rain striking the aircraft
- D) droplets forming on the aircraft and then freezing

Q733. A small supercooled droplet that collides with an airfoil will most likely

- A) travel back over the wing, creating rime ice
- B) freeze immediately and create clear ice

C) travel back over the wing, creating clear ice

#### D) freeze immediately and create rime ice

Q734. While descending through a cloud cover at high level, a small amount of a white and rough powderlike contamination is detected along the leading edge of the wing. This contamination is called:

- A) Clear ice
- B) Mixed ice
- C) Rime ice
- D) Frost

Q735. Two aircraft, one with a sharp profile (S), and the other with a thick profile (T), are flying through the same cloud with the same true airspeed. The cloud consits of small supercooled droplets. Which of the following statements is most correct concerning ice accretion?

A) Aircraft T experiences more icing than S

B) Neither of the aircraft accumulate ice due to small size of droplets

- C) Aircraft S experiences more icing than T
- D) Aircraft S and T experience the same amount of icing

Q736. At what degree of icing can ICAO's "No change of course and altitude necessary" recommendation be followed?

- A) Moderate
- B) Severe
- C) Light
- D) Extreme

Q737. How does a pilot react to heavy freezing rain at 2000ft/AGL, when he is unable to deice, nor land?

A) He descends to the warm air layer below

- B) He continues to fly at the same altitude
- C) He turns back before the aircraft loses manoeuvrability
- D) He ascends to the cold air layer above

Q738. At what airframe temperature would you expect the worst icing effects:

- A) -20 degrees Celsius.
- B) -15 degrees Celsius.
- C) -30 degrees Celsius.

#### D) -5 degrees Celsius.

Q739. Rime ice is caused by:

- A) slow freezing of water droplets onto the wing.
- B) rapid re-freezing of large water droplets.

#### C) small Supercooled water droplets.

D) large Supercooled water droplets.

Q740. If you encounter freezing rain, do you:

- A) accelerate.
- B) descend.
- C) climb to the warmer air above.
- D) climb to the cooler air above.

Q741. The icing in cloud which forms over hills is likely to be more severe than in the same type of cloud over level terrain because:

- A) adiabatic cooling lowers the freezing level and the water content of the cloud.
- B) orographic lifting causes the freezing level to rise and increases the free water content of the cloud.
- C) enforced ascent of air releases more water, which is retained in the cloud by the increased upward components.
- D) increases the temperature inside the cloud by forcing the release of latent heat so causing the air to hold more water vapour.

Q742. Icing and raindrops on the wings of an aircraft normally causes:

- A) the interference drag to decrease.
- B) the stalling speed to decrease.
- C) the stalling speed to increase.
- D) the interference drag to increase.

Q743. A thin coating of hoar frost on the airfoil surface:

# A) has deleterious effects on the lift of the wing.

- B) only affects stability.
- C) does not affect take-off performance.
- D) affects the aspect ratio of the wing.

Q744. You would expect mixed clear and rime icing in the temperature range... and no icing below...

A) -25° C to -45° C; -45° C
B) -3° C to -45° C; -55° C
C) -25° C to -45° C; -55° C
D) -3° C to -25° C; -45° C

Q745. Flying in freezing rain a hard, partly transparent layer of ice rapidly forms on the aircraft and in response the pilot intends to make an immediate change of altitude and/or heading. What do we call this type of icing and how is it classified according to ICAO?

# A) Clear ice/coating of clear ice severe icing

- B) Rime ice Moderate icing.
- C) Clear ice Light icing.
- D) Frost Severe icing.

Q746. Airframe icing:

- A) Cannot occur outside cloud or precipitation.
- B) Can only occur if the Outside Air Temperature (OAT) is below freezing.
- C) Can only occur in side cloud or precipitation if the Outside Air Temperature (OAT) is below freezing.

# D) Can occur outside cloud or precipitation.

Q747. If flying en-route and you encounter severe icing, according to ICAO recommendations, you should...

A) climb below the clouds.

#### B) divert.

- C) climb above the clouds.
- D) continue.

Q748. Aircraft A has a sharp leading edge and a thin aerofoil. Aircraft B has a thick cambered wing aerofoil. If they are flying at the same TAS into clouds with small supercooled water droplets then:

- A) icing depends upon the differential kinetic heating.
- B) B gets more icing than A.
- C) both get the same.

#### D) A gets more icing than B.

Q749. In which cloud type does moderate to severe airframe icing most probably occur?

- A) NS
- B) CS
- C) AC
- D) ST

Q750. Which of the following, without orographic intensification, will give rise to light to moderate icing conditions?

- A) It will occur in clear-sky conditions.
- B) It may occur in the uppermost levels of a cumulonimbus capillatus formation.
- C) It always occurs in altostratus cloud.

# D) It is likely to occur in nimbostratus cloud.

Q751. A flight is to depart from an airport with runways 09 and 27. Surface wind is 270/05; an inversion is reported at 300ft with turbulence and wind shear. The wind just above the inversion is 090/30. What is the safest departure procedure?

#### A) Depart on runway 09 with a tailwind

- B) Depart runway 27 with as steep an ascent as possible
- C) Depart runway 27 with maximum throttle during the passage through the inversion
- D) Take-off is not possible under these conditions

Q752. The turbulence which occurs at high flight levels (above FL250) is mainly of the type Clear Air Turbulence. In what way can moderate to severe clear air turbulence affect an aircraft, the flight and the passengers?

- A) The turbulence is wave like which makes the flight unpleasant for the passengers but the manoeuvring will not be affected essentially
- B) The turbulence can be resembled with the roughness of a washing-board (small scale) and will not have influence on the aircraft and its solidity, but will make flight a little more difficult. The passengers will seldom

notice anything of this turbulence

- C) The turbulence is a small scale one and can cause damage of worn out type. The manoeuvring of the aircraft will be made more difficult or even impossible. For the passengers the flight will be pleasant
- D) The turbulence is a large scale one (waving) so that the aircraft will be difficult to manoeuvre. The passengers will feel some discomfort

Q753. Clear air turbulence (CAT) should be anticipated when:

- A) A sharp trough area aloft is present, even though the wind speeds may be considerably less than that of jetstream winds.
- B) A sharp trough area aloft is present with wind speed considerably higher than that of jetstream winds.
- C) Whenever a high pressure is present close to a thunderstorm area.
- D) Immediately after the passage of a thunderstorm.

Q754. Conditions favourable for low-level frictional turbulence are:

A) strong wind, smooth terrain, stable lapse rate.

# B) strong wind, rough terrain, steep lapse rate.

- C) light wind, rough terrain, stable lapse rate.
- D) strong wind, rough terrain, stable lapse rate.

Q755. Wake turbulence is created by:

- A) behind high buildings less than 300 m from the runway.
- B) cumulonimbus clouds.
- C) wind forces greater than 50 kts.

# D) the wingtips of heavy aircraft during takeoff and landing.

Q756. Clear Air Turbulence can be expected:

- A) near a jet stream and in Stratus cloud.
- B) with an upper level trough and in a col.
- C) near a jet stream and around and above a CB cloud.
- D) near a jet stream and with an anabatic wind.

Q757. Turbulence is worst in a Jet stream:

# A) between the boundaries of the cold and warm air.

B) in the core.

- C) along the axis of the core to the left.
- D) along the axis of the core to the right.

Q758. All pilots encountering Clear Air Turbulence are requested to report it. You experience CAT which causes passengers and crew to feel definite strain against their seat belt or shoulders straps. Unsecured objects are dislodged. Food service and walking are difficult. This intensity of CAT should be reported as

- A) severe
- B) light

#### C) moderate

D) extreme

Q759. What is the effect of a strong low level inversion?

- A) It promotes extensive vertical movement of air
- B) It prevents vertical windshear
- C) It results in good visual conditions

#### D) It promotes vertical windshear

Q760. Low level wind shear is likely to be greatest

- A) at the condensation level when there is strong surface friction
- B) at the condensation level when there is no night radiation
- C) at the top of the friction layer

#### D) at the top of a marked surface-based inversion

Q761. Vertical wind shear is

- A) horizontal variation in the vertical wind
- B) vertical variation in the vertical wind
- C) vertical variation in the horizontal wind
- D) horitontal variation in the horizontal wind

Q762. The most dangerous low level wind shears are encountered?



- A) during any period when wind speed is greater than 35kt an near valleys
- B) in areas with layered clouds and wind speeds higher than 35kt
- C) near valleys and at the windward side of mountains
- D) when strong ground inversions are present and near thunderstorms

Q763. A gustfront is

# A) formed by the cold air outflow from a thunderstorm

- B) characterized by heavy lightning
- C) normally encountered directly below a thunderstorm
- D) another name for a cold front

Q764. What feature is normally associated with the cumulus stage of a thunderstorm?

- A) Roll cloud
- B) Frequent lightning
- C) Continuous updraft
- D) Rain or hail at the surface

Q765. A squall line usually is most likely to be encountered

- A) in an airmass with cold mass properties
- B) behind a stationary front
- C) at an occluded front
- D) ahead of a cold front

Q766. Where is a squall line to be expected?

A) Behind a cold front

# B) In front of an active cold front

- C) In front of a cold front occlusion at higher levels
- D) At the surface position of a warm front

Q767. What are squall lines?

- A) Unusual intensive cold fronts
- B) The paths of tropical revolving storms
- C) The surface weather associated with upper air troughs

# D) Bands of intensive thunderstorms

Q768. What weather condition would you expect at a squall line?

A) Strong steady rain

#### **B)** Thunderstorms

- C) Strong whirlwinds reaching up to higher levels
- D) Fog

Q769. Thunderstorms reach their greatest intensity during the

# A) mature stage

- B) period in which precipitation is not falling
- C) cumulus stage
- D) dissipating stage

Q770. Continuous updraughts occur in a thunderstorm during the

- A) mature stage
- B) dissipating stage

# C) cumulus stage

D) period in which precipitation is falling

Q771. In which of the following areas is the highest frequency of thunderstorms encountered?

#### A) Temperate

- B) Tropical
- C) Polar
- D) Subtropical

Q772. The initial phase of a thunderstorm is characterized by

- A) rain starting at surface
- B) frequent lightning
- C) continuous updraughts
- D) continuous downdraughts

Q773. Which thunderstorms move forward the fastest?

- A) Orographic thunderstorms
- B) Thunderstorms formed by lifting process

# **C)** Frontal thunderstorms

D) Thermal thunderstorms

Q774. Isolated thunderstorms of a local nature are generally caused by

- A) frontal lifting (warm front)
- B) frontal occlusion
- C) thermal triggering
- D) frontal lifting (cold front)

Q775. Which of the following meteorological phenomenon indicates upper level instability which may lead to thunderstorm development?

- A) Halo
- B) AC lenticularis
- C) Red cirrus

# D) AC castellanus

Q776. Thunderstorms can occur on a warm front if the

- A) cold air is moist and the environmental lapse rate is less than the dry adiabatic lapse rate
- B) cold air is moist and the environmental lapse rate exceeds the saturated adiabatic lapse rate
- C) warm air is moist and the environmental lapse rate is less than the saturated adiabatic lapse rate
- D) warm air is moist and the environmental lapse rate exceeds the saturated adiabatic lapse rate

Q777. What are the meteorological prerequisites, at low level, for thunderstorms formed by lifting process, over land?

- A) Low temperatures, low humidity
- B) Subsidence, inversion
- C) High air pressure (>1013hPa), high temperatures
- D) High temperatures, high humidity

Q778. The most hazardous type of cloud that may be encountered on a cross country flight is

- A) stratocumulus
- **B)** cumulonimbus
- C) cumulus
- D) cirrus

Q779. What is the approximate maximum diameter of a microburst?

- A) 20km
- B) 400km
- C) 4km
- D) 50km

Q780. What is a microburst?

- A) An extremely strong wind gust in a tropical revolving storm
- B) A concentrated downdraft with high speeds and a higher temperature than the surrounding air
- C) A small low pressure system where the wind circulates with very high speeds
- D) A concentrated downdraft with high speeds and a lower temperature than the surrounding air

Q781. How long does a typical microburst last?

- A) Less than 1 minute
- B) About 30 minutes
- C) 1 to 2 hours

#### D) 1 to 5 minutes

Q782. A microburst phenomenon can arise in the

A) updraught of a cumulonimbus at the growth stage

- B) updraught of a cumulonimbus at the mature stage
- C) downdraught of a cumulonimbus at the mature stage
- D) downdraught of a cumulonimbus at the formation stage

Q783. Which of the following statements describes a micro burst?

- A) A small low pressure system where the wind circulates at high speed
- B) A high speed downdraft of air with a higher temperature than its

surroundings

# C) A high speed downburst of air with a generally lower temperature than its surroundings

D) An extremely strong wind gust associated with a tropical revolving storm

Q784. Aircraft struck by lightning may sometimes get considerable damage and at least temporarily the manoeuvring of the aircraft will be made more difficult. Which one of the following statements is correct?

- A) An aircraft has in the atmosphere the same qualities as a "Faradays cage", which means that the struck of lightning seldom occurs. But if it happens, the result will be an occasional engine failure. The crew may get a shock
- B) Aircraft made by composite material may get severe damage, the crew may be blinded and temporarily lose the hearing
- C) An aircraft made by steel has a certain capacity to attract a lightning, but the lightning will follow the surface and therefore no damage will be caused
- D) Aircraft made by composite material can't conduct a lightning and will therefore very seldom be struck

Q785. The expected inclusive time period of the initial stage of a thunderstorm is:

- A) 1 hours.
- B) 2 to 3 hours.
- C) 1 hour.
- D) 15 to 30 minutes.

Q786. Which of the options below would most likely lead to the formation of a thunderstorm?

- A) An inversion, high absolute humidity, convective uplift.
- B) Very stable air, orographic uplift, increasing windspeed, saturated air.
- C) Instability, convective uplift, high absolute humidifies.
- D) Unstable air, convergent subsidence, a wide temperature and dewpoint spread.

Q787. A gust is a rapid increase in wind speed lasting ... and spread over ... A squall is a sudden increase of wind speed of at least ... and lasting...

- A) at least 1 minute, some distance, 16 kts, less than 1 minute.
- B) at least 1 minute, a short distance, 43 kts, less than 1 minute.
- C) less than 1 minute, some distance, 16 kts, at least 1 minute.

# D) less than 1 minute, a short distance, 16 kts, at least 1 minute.

Q788. The final stage of a thunderstorm is reached when:

#### A) a well developed anvil can be seen.

- B) no further electrical charge is developed.
- C) the lower portion of the cloud dissipates.
- D) all of the above.

Q789. Air mass thunderstorms are triggered off by:

- A) standing waves in the lee of hills.
- B) fronts and/or orographic uplift.

#### C) convection and/or orographic uplift.

D) convection at air mass boundaries.

Q790. The building stage of a thunderstorm last for approximately:

- A) 30 min
- B) 20/30 min
- C) 20 min
- D) 40 min

Q791. Low level windshear is likely to be greatest:

- A) at cloud base.
- B) in fog.
- C) below a surface inversion.

# D) at the surface position of a cold front.

Q792. A super-cell thunderstorm requires the same start conditions as an ordinary thunderstorm, and in addition:

- A) cold, dry air at low level.
- B) a warm front nearby.

#### C) a lot of moisture and a wind vector change aloft.

D) a cold front nearby.

Q793. The mature stage of a thunderstorm lasts for approximately:

A) 15 min

B) 30 min
C) 20/30 min
D) 40 min

Q794. Which weather phenomenon signals the beginning of the mature stage of a thunderstorm:

A) Growth rate of cloud is maximum.

- B) The appearance of an anvil top.
- C) The start of precipitation.
- D) The start of strong wind gusts.

Q795. During their life single-cell thunderstorms move according to the ... winds

#### A) 700mb

- B) 1000mb
- C) 500mb
- D) 200mb

Q796. Which of the following are not essential factors for thunderstorm development?

- A) An unstable atmosphere.
- B) All above mentioned are essential.
- C) A supply of moist air.

#### D) High temperature.

Q797. If you cannot avoid penetrating a thunderstorm, which is the best area to penetrate?

- A) The middle.
- **B**) The sides.
- C) The top.
- D) The bottom.

Q798. Concerning the radar reflectivity in relation to a thunderstorm, the following is true:

#### A) Both b) and c) are correct.

- B) Reflectivity decreases with severity and frequency of turbulence.
- C) Reflectivity is a function of the number and size of water droplets in a given unit of volume.
- D) Reflectivity increases with severity and frequency of turbulence.

Q799. The average wind vector change - headwind to tailwind - encountered in microbursts is ... and the maximum recorded is...

A) 25kt; 75kt.
B) 100kt; 200kt.
C) 50kt; 100kt.
D) 25kt; 40kt.

Q800. The diameter of a typical tornado is

A) about 2 to 6km
B) 100 to 150 metres
C) in the order of 10km
D) only a few metres

Q801. Which of the following phenomena are formed when a moist, stable layer of air is forced to rise against a mountain range?

A) Areas of severe turbulence

- B) Showers and thunderstorms
- C) Stratified clouds
- D) Inversions

Q802. You intend to carry out a VFR flight over the Alps, on a hot summer day, when the weather is unstable. What is the best time of day to conduct this flight?

#### A) Early morning

- **B)** Morning
- C) Mid-day
- D) Afternoon

Q803. Which conditions lead to mountain waves?

- A) Stable air, speed > 30kts, parallel to the ridge.
- B) Unstable air, speed > 20 kts across the ridge.
- C) Unstable moist air, speeds < 5 kts across the ridge.

D) Stable air, speed , > 20 kts across the ridge.

Q804. The worst turbulence associated with mountain waves will be experienced:

A) in the cap cloud.

B) in lenticularis cloud at the tropopause.

C) in lenticularis cloud above the rotor cloud.

# D) in the rotor zone.

Q805. Conditions favourable for the formation of mountain (lee) waves are:

- A) approximately a 90° change in wind direction with height, wind speeds increasing upwards through the troposphere, wind blowing within 30° of the perpendicular to the ridge, wind speed at the crest above 15 kts for small mountains and above 30 kts for large mountains.
- B) little change in wind direction with height, wind speeds increasing upwards through the troposphere, wind blowing within 30° of the perpendicular to the ridge, wind speed at the crest above 15 kts for small mountains and above 30 kts for large mountains.
- C) approximately a 90° change in wind direction with height, wind blowing within 30° of the perpendicular to the ridge, wind speed at the crest above 15 kts for small mountains and above 30 kts for large mountains...
- D) little change in wind direction with height, wind speeds increasing upwards through the troposphere, wind blowing within 090° of the perpendicular to the ridge, wind speed at the crest above 15 kts for small mountains and above 30 kts for large mountains

Q806. The meteorological conditions required to form mountain waves are among others:

- A) The height of the mountain must be at least 3000 ft.
- B) Wind velocity on top of the mountain must be 50 kts or more.
- C) A wind profile whereby the wind velocity increases with increasing altitude and a strong, steady wind flow at higher levels often extending to the tropopause.
- D) The air must be unstable.

Q807. A north/south mountain range, height 10,000 ft, is producing marked mountain waves. For the formation of powerful mountain waves, the air at the level of the ridge and the first few thousand feet above the ridge was:

- A) conditionally stable.
- B) unstable.
- C) stable with less stable layers above and below.
- D) unstable with stable air above and below.

Q808. A north/south mountain range, height 10.000 ft, is producing marked mountain waves. The greatest potential danger exists for an aircraft flying:

A) above a line of clouds parallel to the ridge at FL 250.

# B) towards the ridge from the lee side at FL 140.

- C) on the windward side of the ridge.
- D) at FL 350 over and parallel to the ridge.

Q809. In a mountain wave environment:

- A) downwind flight may not be safe, as height variations are out of phase with the waves.
- B) when flying upwind, the aircraft is liable to be at its maximum height, when over high ground.
- C) downwind flight is safer as height variations are out of phase with the waves.
- D) upwind flight may not be safe, as height variations are usually out of phase with the waves.

Q810. In the vicinity of industrial areas, smoke is most likely to affect surface visibility when

# A) there is a low level inversion

- B) a rapid moving cold front has just passed the area
- C) the surface wind is strong and gusty
- D) cumulus clouds have developed in the afternoon

Q811. Visibility is reduced by haze when

- A) a light drizzle falls
- B) small waterdroplets are present

# C) dust particles are trapped below an inversion

D) a cold front just passed

Q812. Below a level inversion visibility is often

# A) moderate or poor because there is no vertical exchange

- B) moderate or poor due to heavy snow showers
- C) very good at night
- D) very good in the early morning

Q813. R23L/P1500. What does this imply?

# A) RVR is more than 1500m.

- B) RVR is persistently 1500m.
- C) RVR is improving.
- D) RVR is unchanged during the last 10 mins.

Q814. Reduction in visibility due to precipitation depends on:

- A) precipitation intensity and duration.
- B) precipitation type and duration.
- C) precipitation duration and droplet size.

# D) precipitation intensity and type.

Q815. R23L/P1200. What does this imply?

- A) RVR is unchanged during the last 10 minutes.
- B) RVR is persistently 1200m.
- C) RVR is improving.
- D) RVR is more than 1200m.

Q816. What is the relationship between meteorological visibility (met.vis) and RVR in homogeneous fog?

A) There is no specific relationship between the two

# B) The met.vis. is generally less than the RVR

- C) The met.vis. generally is greater than the RVR
- D) The met.vis. generally is the same as the RVR

Q817. Runway Visual Range (RVR) is

A) reported in TAF and METAR

B) measured with ceilometers alongside the runway

# C) usually better than meteorological visibility

D) reported when meteorological visibility is less than 2000m

Q818. While approaching your target aerodrome you receive the following message: RVR runway 23: 400m This information indicates the

# A) length of runway which a pilot in an aircraft on the ground would see, on the threshold of runway 23

- B) meteorological visibility on runway 23
- C) minimum visibility at this aerodrome, with runway 23 being the one in

service

D) portion of runway which a pilot on the threshold of any of the runways would see, with runway 23 in service

Q819. When will the surface wind in a METAR record a gust factor?

- A) When gusts are at least 15kt above the mean wind speed
- B) With gusts of at least 25kt
- C) When gusts are at least 10kt above the mean wind speed
- D) With gusts of at least 35kt

Q820. When is the RVR reported at most airports?

- A) When the RVR decreases below 2000m
- B) When the meteorological visibility decreases below 800m
- C) When the RVR decreases below 800m

# D) When the meteorological visibility decreases below 1500m

Q821. The wind indicator for a weather observation receives the measured value from an anemometer. Where is this instrument placed?

- A) On the roof of the weather station
- B) 1m above the runway
- C) Close to the station about 2m above the ground

# D) On a mast 8- 10m above the ground

Q822. The wind direction in a METAR is measured relative to

# A) true north

- B) magnetic north
- C) grid north
- D) the 0- meridian

Q823. What is the meaning of the abbreviation "BKN"?

A) 8 octas

- B) 5- 7 oktas
- C) 3- 4 oktas
- D) 6-8 oktas

Q824. Of the four radio soundings, select the one that indicates ground fog:





Q825. Of the four radio soundings, select the one that indicates low stratus:

(refer to figure below)



Q826. What are the images of satellites provided daily by the Weather Service used for?

- A) To measure wind currents on the ground
- B) To help provide 14- day forecasts
- C) To locate precipitation zones

# D) To locate fronts in areas with few observation stations

Q827. An airborne weather radar installation makes it possible to detect the location of

- A) stratocumulus and its vertical development
- B) all clouds
- C) zones of precipitation, particularly liquid-state precipitation, and also their intensity
- D) cumulonimbus, but provided that cloud of this type is accompanied by falls of hail

Q828. Area forecasts for low-level flights exchanged between meteorological offices in support of issuance of AIRMET information are prepared in standard format. When plain language is used, the forecast is known as a GAMET area forecast. The horizontal visibility reported in such a forecast refers to:

# A) the meteorological visibility up to 500 m.

- B) the flight visibility below clouds.
- C) surface visibility.
- D) the average flight visibility of the distance in question.

Q829. On the Boeing 737-400 EFIS EHSI, on which modes is a Weather Radar Display available?

# A) MAP, EXP VOR/ILS, EXP NAV.

B) MAP, FULL VOR/ILS, FULL NAV.

- C) MAP, PLAN, EXP VOR/ILS.
- D) MAP, PLAN, FULL VOR/ILS.

Q830. Given : True altitude 9.000 FTOAT -32° C CAS 200 kt What is the TAS?

A) 210 kt B) 220 kt C) 215 kt D) 200 kt

Q831. Surface air temperature is recorded at a height of:

A) 1 inch

- B) 1 metre
- C) 1 foot
- D) 4 feet

Q832. Occasionally a frost thermometer will be placed ... at a point ... above short cut grass:

- A) vertically 4 feet.
- B) horizontally 40 cm.

#### C) horizontally 40 mm.

D) vertically 40 mm.

Q833. At an airport various types of visibility values are reported. One of these is determined by the observer by means of marks and/or lights at known distances. What is this known as?

A) slant range visibility.

#### B) runway visual range.

- C) meteorological visibility.
- D) vertical visibility.

Q834. What does a Transmissiometer measure?

- A) Cloud base.
- B) Wind speed.
- C) Visibility.
- D) Breaking action.

Q835. Reading of the wet and dry bulb thermometers can be used to obtain:

- A) saturation vapour pressure, dew point and relative humidity.
- B) relative humidity, dew point and absolute humidity only.
- C) relative humidity, absolute humidity, dew point and air temperature.
- D) absolute humidity, general humidity and relative humidity.

Q836. An instrument for measuring humidity is known as:

#### A) all of the above.

- B) a hygrometer.
- C) a psychrometer.
- D) a pair of wet and dry bulb thermometers.

Q837. The four temperatures normally recorded in a Stevenson Screen are as follows:

#### A) dry bulb, wet bulb, maximum, minimum.

- B) air temperature, dry bulb, wet bulb, and hygrometer.
- C) dry bulb, wet bulb, maximum/minimum and frost.

D) air temperature, dry bulb, wet bulb, maximum/minimum.

Q838. ACARS is:

- A) a means of automatically transmitting weather information from aircraft to meteorological stations.
- B) a means of transmitting operational messages including TAFs/METARs from ground to air.
- C) automated VOLMET messages from ground to air.
- D) a means of automatically transmitting weather information from meteorological stations to aircraft.

Q839. While approaching your target aerodrome you receive the following message: RVR runway 23: 400m This information indicates the:

- A) length of runway which a pilot in an aircraft on the ground would see, on the threshold of runway 23.
- B) portion of runway which a pilot on the threshold of any of the runways would see, with runway 23 in service.
- C) meteorological visibility on runway 23.
- D) minimum visibility at this aerodrome, with runway 23 being the one in service.

Q840. Barometric tendency is measured on ... and recorded on...

# A) aneroid barometer; barograph.

- B) an anemometer; an aneroid barometer.
- C) an anemograph; an anemometer.
- D) barograph; aneroid barometer.

Q841. Which of the following causes echoes on meteorological radar screens?

- A) FogB) Any cloudC) Hail
- D) Water vapour

Q842. What information is given on a Significant Weather Chart?

# A) The significant weather forecast for the time given on the chart

B) The significant weather in a period 3 hours before and 3 hours after the time given on the chart

- C) The significant weather that is observed at the time given on the chart
- D) The significant weather forecast for a period 6 hours after the time given on the chart

Q843. On which of the following aviation weather charts can a pilot most easily find a jetstream?

- A) Surface chart
- B) Wind/temperature chart
- C) Upper air chart

#### D) Significant weather chart

Q844. How is the direction and speed of upper winds described in forecasts?

- A) The direction is relative to magnetic north and the speed is in miles per hour
- B) The direction is relative to magnetic north and the speed is in knots
- C) The direction is relative to true north and the speed is in miles per hour
- D) The direction is relative to true north and the speed is in knots

Q845. What positions are connected with contour lines on the weather chart?

- A) Positions with the same thickness between two constant pressure levels
- B) Positions with the same wind velocity

# C) Positions with the same height in a chart of constant pressure

D) Positions with the same air density

Q846. According to ICAO, which symbol indicates a tropical revolving storm?

# a) b) c) d) A) Symbol b

- B) Symbol c C) Symbol a
- D) Symbol d

Q847. The front labelled "Z" is a:



- A) Cold front
- B) Warm front
- **C) Warm front occlusion** D) Cold front occlusion

Q848. How are well separated CB clouds described ob the Significant Weather Chart?

A) ISOL CBB) FREQ CBC) EMBD CBD) OCNL CB

Q849. The cold front is indicated with a number at position:

(refer to figure below)



- A) 1
- B) 2
- C) 4
- D) 3

Q850. What does the symbol indicate on a significant weather chart?



- A) The center of a high pressure area at 400hPa
- B) The center of a tropopause "high", where the tropopause is at FL400
- C) The lower limit of the tropopause
## D) The upper limit of significant weather at FL400

Q851. Which of the following symbols represents a squall line?

(refer to figure below)



Q851. Which of the following symbols represents a tropical revolving storm?

(refer to figure below)

D) Symbol b



D) Symbol b

Q852. According to ICAO, which symbol indicates severe icing?

(refer to figure below)



D) Symbol d

Q853. According to ICAO, which symbol indicates danger to an aircraft in flight?

(refer to figure below)







A) Symbol dB) Symbol aC) Symbol b

## D) Symbol c

Q854. Which of the following best describes Zone A?

(refer to figure below)



- A) Ridge of high pressureB) Trough of low pressureC) Depression
- D) Col

Q855. Which of the following best describes Zone D?



- A) Anticyclone **B) Depression**
- C) Trough of low pressure
- D) Ridge of high presssure

Q856. Which of the following best describes Zone B?

(refer to figure below)



## A) Col

- B) Trough of low pressureC) Depression

# D) Ridge of high pressure

Q857. The warm sector is indicated by letter:

(refer to figure below)



**A) C** B) A С́) В

D) D

Q858. A trough is indicated by letter:



- **A) A** B) C C) B

- D) D

Q859. According to ICAO, which symbol indicates danger to an aircraft in flight?

(refer to figure below)



C) Symbol b

#### D) Symbol c

Q860. On a significant weather chart the thunderstorm symbol signifies:

A) severe turbulence and severe icing.

B) moderate turbulence and moderate icing.

C) moderate/severe turbulence and moderate/severe icing.

D) moderate turbulence and severe icing.

Q861. The lines on a contour chart join points of:

A) equal humidity.

#### B) equal height.

C) equal pressure.

D) equal temperature.

Q862. An isohypse of the 500 hPa pressure surface is labelled with the number 552. This means that for all points on the isohypse the

#### A) topography is 552 decameters above MSL

B) topography is 552 meters above MSL

- C) pressure is 552 hPa
- D) pressure altimeter will overread by 552 FT

Q863. In what hPa range is an upper weather chart for FL 340 situated?

A) 500 - 400 hPa B) 600 - 500 hPa **C) 300 - 200 hPa** D) 400 - 300 hPa

Q864. Which of the following phenomena should be described as precipitation at the time they are observed?

- A) TS
- B) DZ
- C) SQ
- D) SA

Q865. Refer to the following TAF extract: BECMG 1821 2000 BKN004 Prob30 BECMG 2124 0500 FG VV001 What does the abbreviation "PROB30" mean?

#### A) Probability of 30%

B) Change expected in less than 30 minutes

- C) Conditions will last for at least 30 minutes
- D) The cloud ceiling should lift to 3000ft

Q866. Which of these foue METAR reports suggests that rain is most likely in the next few hours?

#### A) 16002KT 0100 FG SCT300 06/06 Q1022 BECMG 1000=

#### B) 23015KT 8000 BKN 030 OVC070 17/14 Q1009 BECMG 4000=

- C) 34004KT 9999 SCT040 SCT100 m05/m08 Q1014 NOSIG=
- D) 05016G33KT 8000 OVC015 08/06 Q1028 NOSIG=

Q867. Which of the following phenomena can produce a risk of aquaplaning?

- A) FG
- B) +RA
- C) SA
- D) BCFG

Q868. Which of the following phenomena should be described as precipitation at the time they are observed?

- A) BR
- B) VA
- C) +SHSN

D) MIFG

Q869. What does the term TREND signify?

## A) It is a brief landing forecast added to the actual weather report

- B) It is the actual weather report at an aerodrome and is generally issued at half-hourly intervals
- C) It is a warning of dangerous meteorological conditions
- D) It is a flight forecast, issued by the meteorological station several times daily

Q870. Refer to TAF below.

EGBB 261812 28015G25KT 9999 SCT025 TEMPO 1822 29018G35KT 5000 SHRASN BKN010CB PROB30 TEMPO 1821 1500 TSGR BKN008CB BECMG 2124 26010KT From the TAF above you can assume that visibility at 2055Z in Birmingham (EGBB) will be:

## A) not less than 1.5km but could be in excess of 10km

- B) more than 10km
- C) a minimum of 1.5km and a maximum of 5km
- D) a maximum of 5km

Q871. Which of the following weather reports could be, in accordance with the regulations, abbreviated to "CAVOK"?

# A) 24009KT 6000 RA SCT010 OVC030 12/11 Q1007 TEMPO 4000=

- B) 15003KT 9999 BKN100 17/11 Q1024 NOSIG=
- C) 04012G26KT 9999 BKN030 11/07 Q1024 NOSIG=

D) 29010KT 9999 SCT045TCU 16/12 Q1015 RESHRA NOSIG=

Q872. Refer to the following TAF extract: BECMG 1821 2000 BKN PROB30 BECMG 2124 0500 FG VV001 What does the abbreviation "BKN004" mean?

#### A) 1-4 oktas, ceiling 400ft

#### B) 5- 7 oktas, ceiling 400ft

- C) 1- 4 oktas, ceiling 400m
- D) 4-8 oktas, ceiling 400m

Q873. Refer to the following TAF extract: BECMG 1821 2000 BKN PROB30 BECMG 2124 0500 FG VV001 What does the "BECMG" data indicate for the 18 to 21 hour time frame?

## A) The new conditions are achieved between 1800 and 2100UTC

B) Many short term changes in the original weather

C) Many long term changes in the original weather

D) A quick change to new conditions between 1800UTC and 1900UTC

Q874. Appended to a METAR you get the following runway report: 01650428 What must you consider when making performance calculations?

A) Aquaplaning conditions

#### B) The friction coefficient is 0.28

- C) The braking action will be mediun to good
- D) The runway will be wet

Q875. What is a SPECI?

- A) A routine aerodrome weather report issued every 3 hours
- B) An aerodrome forecast issued every 9 hours
- C) A selected special aerodrome weather report, issued when a significant change of the weather conditions have been observed
- D) A warning of meteorological dangers at an aerodrome, issued only when required

Q876. How long from the time of observation is a TREND in a METAR valid?

## A) 2 hours

- B) 1 hour
- C) 9 hours
- D) 30 minutes

Q877. What does the term METAR signify?

- A) A METAR signifies the actual weather report at an aerodrome and is generally issued in half-hourly intervals
- B) A METAR is a landing forecast added to the actual weather report as a brief prognostic report
- C) A METAR is a warning of dangerous meteorological conditions within a FIR
- D) A METAR is a flight forecast, issued by the meteorological station several times d

Q878. Refer to the following TAF extract: BECMG 1821 2000 BKN PROB30 BECMG 2124 0500 FG VV001 What does the abbreviation "VV001" mean?

A) RVR greater than 100m

B) Vertical visibility 100ft

- C) RVR less than 100m
- D) Vertical visibility 100m

Q879. Refer to the following TAF extract: BECMG 1821 2000 BKN PROB30 BECMG 2124 0500 FG VV001 What visibility is forecast for 2400UTC?

- A) Between 0m and 1000m
- B) 2000m
- C) Between 500m and 2000m

D) 500m

Q880. You receive the following METAR: LSGG 0750Z 00000KT 0300 R05/0700N FG VV001 M02/M02 Q1014 NOSIG= What will be the RVR at 0900UTC?

A) 900m

#### **B)** The RVR is unknown, because the "NOSIG" does not refer to RVR C) 700m

D) 300m

Q881. Refer to the TAF for Amsterdam airport. FCNL31 281500 EHAM 281601 14010KT 6000 -RA SCT025 BECMG 1618 12015G25KT SCT008 BKN013 TEMPO 1823 3000 RA BKN005 OVC010 BECMG 2301 25020KT 8000 NSW BKN020= Flight from Bordeaux to Amsterdam, ETA 2100UTC. At ETA Amsterdam what surface wind is forecast?

- A) 250°/20kt
  B) 300°/15kt maximum wind 25kt
  C) 120°/15kt gusts 25kt
- D) 140°/10kt

Q882. What is the wind speed given in a METAR report based on?

A) The average speed of the previous 30 minutes

B) The actual speed at the time of recording

C) The strongest gust in the previous hour

#### D) The average speed of the previous 10 minutes

Q883. The following weather report EDDM 241322 VRB03KT 1500 HZ OVC004 BECMG 1517 00000KT 0500 FG VV002 TEMPO 2022 0400 FG VV001 is a:

- A) METAR
- B) SPECI
- C) 24 hour TAF
- D) 9 hour TAF

Q884. At a weather station, at 0600UTC, the air temperature and dew point are respectively: T= - 0.5°C, Td= -1.5°C

In the METAR message transmitted by this station, the "temperature group" will be:

- A) M01/M01
- B) M01/M02

#### C) M00/M01

D) 00/M01

Q885. Given the following METAR: EDDM 250850Z 33005KT 2000 R26R/P1500N R26L/1500N BR SCT002 OVC003 05/05 Q1025 NOSIG

#### A) Visibility is reduced by water droplets

- B) Runway 26R and runway 26L have the same RVR
- C) There is a distinct change in RVR observed
- D) RVR on runway 26R is increasing

Q886. The RVR, as reported in a METAR, is always the

A) average value of the A-, B- and C- position

#### B) value representative of the touchdown zone

- C) lowest value of the A-, B- and C- position
- D) highest value of the A-, B- and C- position

Q887. On the European continent METARs of main airports are compiled and distributed with intervals of

#### A) 1 hour

#### B) 0.5 hours

- C) 3 hours
- D) 2 hours

Q888. SIGMET information is issued as a warning for significant weather to

#### A) all aircraft

B) VFR operations onlyC) heavy aircraft onlyD) light aircraft only

Q889. Runway visual range can be reported in

#### A) a METAR

B) a SIGMET C) a TAF D) both a TAF and a METAR

Q890. If CAVOK is reported then

#### A) no low drifting snow is present

- B) no clouds are present
- C) any CB's have a base above 5000ft
- D) low level windshear has not been reported

Q891. The validity of a TAF is

A) 2 hours

#### **B)** stated in the TAF

- C) 9 hours from the time of issue
- D) between 6 and 9 hours

Q892. Which of the statements is true concerning squall lines?

A) For severe squall lines a TAF is issued

- B) Severe squall lines always move from northwest to southeast
- C) Severe squall lines only occur in the tropics

#### D) For severe squall lines a SIGMET is issued

Q893. In METAR messages, the pressure group represents the

A) QFE rounded to the nearest hPa

#### B) QNH rounded down to the nearest hPa

- C) QFE rounded down to the nearest hPa
- D) QNH rounded up to the nearest hPa

Q894. Which of these four METAR reports suggests that a thunderstorm is likely in the next few hours?

A) 1350Z 34003KT 0800 SN VV002 m02/m04 Q1014 NOSIG=

B) 1350Z 04012KT 3000 OVC012 04/03 Q1022 BECMG 5000=

- C) 1350Z 21005KT 9999 SCT040CB SCT100 26/18 Q1016 TEMPO 24018G30 TS=
- D) 1350Z 16004KT 8000 SCT110 OVC220 02/mo2 Q1008 NOSIG=

Q895. Refer to the following TAF for Zurich. LSZH 061019 20018G30KT 9999 -RA SCT050 BKN080 TEMPO 23012KT 6000 -DZ BKN015 BKN030 BECMG 1518 23020G35KT 4000 RA OVC010= The lowest cloud base forecast at ETA Zurich (1200UTC) is: A) 1500m
B) 1500ft
C) 5000ft
D) 1000ft

Q896. Which of the following statements is an interpretation of the METAR? 00000KT 0200 R14/0800U R16/P1500U FZFG VV001 m03/m03 Q1022 BECMG 0800=

- A) Meteorological visibility 200 metres, RVR for runway 16 1500 metres, temperature -3°C, vertical visibility 100 metres
- B) Meteorological visibility for runway 14 800 metres, fog with hoar frost, RVR for runway 16 more than 1500 metres
- C) Meteorological visibility 200ft, RVR for runway 16 more than 1500 metres, vertical visibility 100ft, fog with hoar frost
- D) RVR for runway 14 800 metres, vertical visibility 100 ft, calm, meteorological visibility improving to 800 metres in the next 2 hours

Q897. Which of the following statements is an interpretation of the METAR? 25020G38KT 1200 +TSGR BKN006 BKN015CB 23/18 Q1016 BECMG NSW=

#### A) Gust of 38kt, thunderstorm with heavy hail, dew point 18°C

- B) Wind 250°, thunderstorm with moderate hail, QNH 1016hPa
- C) Broken, cloudbase 600ft and 1500ft, temperature 18°C
- D) Mean wind speed 20- 38kt, meteorological visibility 1200 metres, temperature 23°C

Q898. Within a short interval, several flight crews report that they have experienced strong clear air turbulence in a certain airspace. What is the consequence of these reports?

A) The airspace in question, will be temporarily closed

## B) The competent aviation weather office will issue a SIGMET

- C) The competent aviation weather office will issue a SPECI
- D) The competent aviation weather office will issue a storm warning

Q899. In which of the following METAR reports, is the probability of fog formation in the coming night the highest?

## A) 1850Z 15003KT 6000 SCT120 05/04 Q1032 BECMG 1600=

- B) 1850Z 21003KT 8000 SCT250 12/m08 Q1028 NOSIG=
- C) 1850Z 25010KT 4000 RA BKN012 OVC030 12(10 Q1006 TEMPO 1500=
- D) 1850Z 06018G30KT 5000 OVC010 04/01 Q1024 NOSIG=

Q900. What is the meaning of the abbreviation "SCT"?

A) 1-4 oktas

B) 3- 4 oktas

C) 5-7 oktas

D) 1- 2 oktas

Q901. In which of the following 1850UTC METAR reports, is the probability of fog formation, in the coming night, the highest?

#### A) VRB02KT 2500 SCT120 14/M08 Q1035 NOSIG= B) VRB01KT 8000 SCT250 11/10 Q1028 BECMG 3000=

C) 00000KT 9999 SCT300 21/01 Q1032 NOSIG=

D) 22004KT 6000 -RA SCT012 OVC030 17/14 Q1009 NOSIG=

Q902. Refer to the TAF for Amsterdam airport. FCNL31 281500 EHAM 281601 14010KT 6000 -RA SCT025 BECMG 1618 12015G25KT SCT008 BKN013 TEMPO 1823 3000 RA BKN005 OVC010 BECMG 2301 25020KT 8000 NSW BKN020= Flight from Bordeaux to Amsterdam, ETA 2100UTC. What is the minimum visibility forecast for ETA Amsterdam?

- A) 6km
- B) 3km
- C) 5NM
- D) 5km

Q903. What does the abbreviation "nosig" mean?

A) Not signed by the meteorologist

#### **B)** No significant changes

- C) No weather related problems
- D) No report received

Q904. What does the expression "Broken (BKN)" mean?

- A) 3- 4 eigths of the sky is cloud covered
- B) 3- 5 eigths of the sky is cloud covered

#### C) 5- 7 eights of the sky is cloud covered

D) Nil significant cloud cover

Q905. What is trend forecast?

A) An aerodrome forecast valid for 9 hours

B) A landing forecast appended to METAR/SPECI, valid for 2 hours

#### C) A route forecast valid for 24 hours D) A routine report

Q906. In the weather briefing room during the pre-flight phase of a passenger flight from Zurich to Rome, you examine the following weather reports of pressing importance at the time: EINN SHANNON 2808 sigmet 2 valid 0800/1100 loc sev turb fcst einn blw fl 050 south of 53n wkn= LIMM MILANO 2809 sigmet 2 valid 0900/1500 mod sev cat btn fl 250 and fl 430 fcst limm fir stnr nc= EGLL LONDON 2808 sigmet nr01 valid 0800/1200 for london fir isol cb embd in lyr cloud fcst tops fl 300 btn 53n and 54n east of 002e sev ice sev turb ts also fcst mov e wkn= Which decision is correct?

- A) You show no further interest in these reports, since they do not concern the route to be flown
- B) Owing to these reports and taking into account the presence of heavy thunderstorms at planned FL310 you select a higher flight level (FL370)
- C) You cancel the flight since the expected dangerous weather conditions along the route would demand too much of the passengers

#### D) Because of the expected turbulence you select a flight level below FL250

Q907. Refer to the TAF for Bordeaux airport. LCFR31 281400 LFBD 1524 26015KT 9999 SHRA BKN020 TEMPO 1620 26020G30KT 8000 +SHRA BKN015CB PROB30 TSRA= Flight Lisbon to Bordeaux, ETA 1800 UTC.What type of precipitation is forecast on the approach to Bordeaux?

- A) Light drizzle and fog
- B) Continuous moderate rain
- C) Heavy rain showers
- D) Moderate snow showers

Q908. ATIS information contains

A) operational information and if necessary meteorological information

## B) meteorological and operational information

- C) only operational information
- D) only meteorological information

Q909. Compare the following TAF and VOLMET reports for Nice: TAF 249716 VRB02KT CAVOK= 0920Z 13012KT 8000 SCT040CB BKN100 20/18 Q1015 TEMPO TS= What can be concluded from the differences between the two reports?

A) That the weather in Nice after 0920 is also likely to be as predicted in the

TAF

- B) That the VOLMET speaker has got his locations mixed up, because there is no way the latest VOLMET report could be so different from the TAF
- C) That the weather conditions at 0920 were actually predicted in the TAF

# D) That the weather at Nice is clearly more volatile than the TAF could have predicted earlier in the morning

Q910. Marseille Information gives you the following meteorological information for Ajaccio and Calvi for 16:00UTC:

Ajaccio: wind 360°/2kt, visibility 2000m, rain, BKN stratocumulus at 1000ft, OVC altostratus at 8000ft, QNH 1023hPa

Calvi: wind 040°/2kt, visibility 3000m, mist, FEW stratus at 500ft, SCT stratocumulus at 2000ft, OVC altostratus at 9000ft, QNH 1023hPa

The ceilings (more than 4 oktas) are therefore:

- A) 1000ft at Ajaccio and 500ft at Calvi
- B) 1000ft at Ajaccio and 2000ft at Calvi
- C) 8000ft at Ajaccio and 9000ft at Calvi

## D) 1000ft at Ajaccio and 9000ft at Calvi

Q911. Judging by the chart, on which of these routes can you expect to encounter moderate and locally severe CAT at FL340?



- A) Zurich- Rome
- B) Paris- Bordeaux
- C) Zurich- Copenhagen
- D) London- Munich

Q912. What wind is forecast at FL390 over Paris?



Q913. Select from the map the average wind for the route Frankfurt- Roma at FL170:



A) 050/40
B) 200/50
C) 030/35
D) 230/40

Q914. Look at the chart. Assuming a normal vertical temperature gradient, at what altitude will the freezing level above Shannon be found?



- C) FL140
- D) FL120

Q915. A pilot is warned of severe icing at certain flight levels by information supplied in

A) TAF and SIGMET
B) TAF and METAR
C) METAR and SIGMET
D) SWC and SIGMET

Q916. Select from the map the average temperature for the route Zurich- Rome at FL 110 :



D) -9°C

Q916. You are flying from Munich to Amsterdam. Which of the following flight levels would you choose in order to avoid turbulence and icing?



A) FL140B) FL320C) FL180

D) FL260

Q917. Select from the map the average wind for the route Zurich- Rome at FL110 :



Q918. Judging by the chart, what windspeeds can you expect at FL400 above Rome?



- A) 340kt
- B) 145kt
- C) 140km/h
- D) 90kt

Q919. If you are flying from Zurich to Stockholm at FL240, what conditions can you expect at cruising altitude?



- A) Out of cloud throughout the flight
- B) Largely free of cloud; moderate icing half way along the route
- C) Cloud most of the way; little chance of CAT
- D) Scattered thunderstorms

Q920. On which of these routes would you not have to worry about turbulence at FL340?



A) Bordeaux- Copenhagen

#### **B)** Madrid- Munich

- C) Athens- Amsterdam
- D) Paris- Vienna

Q921. 8/8 stratus base 200ft/AGL is observed at sunrise at an aerodrome in the north of France; the QNH is 1028hPa and there is a variable wind of 3kt. What change in these clouds is likely at 1200UTC in summer and winter?

- A) Winter: BKN base 2500ft/AGL; summer BKN base 3500ft/AGL
- B) Winter: SCT base 3000ft/AGL; summer OVC base 500ft/AGL
- C) Winter: clear sky; summer BKN CB base 1500ft/AGL
- D) Winter: OVC base 500ft/AGL; summer SCT base 3000ft/AGL

Q922. How may the correct wind speed be found, for a level, which is between two upper air chart levels? (e.g. wind at FL250, when the 500hPa and the 300hPa chart are available)

- A) By reading wind direction and speed from the next higher chart
- B) By reading wind direction and speed from the 300hPa chart
- C) By interpolation of the wind information available from the two charts, while also considering the maximum wind information found on the Significant Weather Chart
- D) By simple interpolation of wind information available from the two charts

Q923. At which airport is the following weather development taking place? TAF 231322 24014G32KT 4000 +TSRA SCT005 BKN015 BKN020CB BECMG1416 29012KT 9999 BKN030TCU SCT100 TEMPO 8000 SHRA BKN025TCU BECMG 1922 27012KT 9999 SCT030 OVC220=



- A) ESSA
- B) EKCH
- C) LSZH
- D) EINN

#### Q924. Which of the following statements is true?

(refer to figure below)



# A) The front to the north of Frankfurt is moving north-east at about 5kt

- B) The jet stream above Italy has a maximum speed of 120km/h
- C) Thunderclouds have formed over the Iberian peninsula extending to some 25000 meters
- D) There is no significant cloud above Rome

Q925. On which of these routes would you not need to worry about icing at FL180?



#### A) Moscow- Athens

- B) Copenhagen- Zurich
- C) Shannon- Berlin
- D) Rome- Shannon

Q926. What is the wind direction and speed at position 2 at FL320?



#### A) 300°/90kt

- B) 120°/90kt
- C) 180°/90kt
- D) 300°/90km/h

Q927. At which airport, is the following weather development taking place? TAF 060716 25006KT 8000 BKN240 BECMG 0710 OVC200 BECMG 1013 23010KT 8000 OVC100 BECMG 1316 23014KT 6000 RA SCT030 OVC050=



D) LFPO

Q928. What weather conditions are expected at Paris airport (LFPO) around 0550UTC?

(refer to figure below)



A) 20004KT 8000 SCT110 SCT250 22/07 Q1016 NOSIG=

B) 26012KT 9999 SCT025 SCT040 14/09 Q1018 TEMPO 5000 SHRA=

C) 23014KT 3000 +RA SCT008 OVC025 15/13 Q1004 NOSIG=

#### D) 22020G36KT 1500 TSGR SCT004 BKN007 BKN025CB 18/13 Q1009 BECMG NSW=

Q929. What is the average temperature at FL160 between Oslo and Paris?

(refer to figure below)

#### DOCUMENT:



A) -15°C
B) -23°C
C) -25°C
D) -19°C

Q930. Select from the map the average temperature for the route Geneva- Stockholm at FL260 : (refer to figure below)



Q931. What is the approximate height of the tropopause between Munich and Helsinki? (refer to figure below)



- B) FL300C) FL340
- D) FL280

Q932. What OAT would you expect at FL200 over Geneva?



Q933. Assuming a normal vertical temperature gradient, at what altitude will the freezing level above Tunis be found?



## A) FL100

- B) FL20
- C) FL260
- D) FL180

Q934. What is the mean temperature deviation from ISA for the Frankfurt- Roma route?


- B) ISA+10°C C) ISA-4°C
- D) ISA+4°C

Q935. What is the deviation of the temperature at FL140 above Copenhagen compared to ISA? (refer to figure below)



## A) ISA-8°C

- B) ISA+4°C
- C) ISA-12°C
- D) ISA+8°C

Q936. Select from the map the average wind for the route Zurich- Hamburg at FL240:



B) 260°/25ktC) 200°/15kt

D) 020°/20kt

Q937. On which of the following routes can you expect icing to occur, on the basis of the chart?



- A) Hamburg- Oslo
- B) Rome- Frankfurt
- C) Copenhagen- Helsinki
- D) Tunis- Rome

Q938. If you are flying from Zurich to London at FL220, what conditions can you expect at cruising altitude?



- A) Flight largely in cloud; no turbulence
- B) CAT for the first half of the flight
- C) Prolonged severe turbulence and icing throughout the flight

#### **D)** Scattered thunderstorms

Q939. Which airport, at 1200UTC has the lowest probability of precipitation?



A) ENFB

B) LSZH

C) EFHK

D) ESSA

Q940. What units are used to report vertical wind shear?

- A) m/100ft
- B) kt

C) m/sec

D) kt/100ft

Q941. In which of the following circumstances is a SIGMET issued?

A) A sudden change in the weather conditions contained in the METAR

B) Fog or a thunderstorm at an aerodrome

#### C) Marked mountain waves

D) Clear ice on the runways of an aerodrome

Q942. Refer to the following TAF extract: BECMG 1821 2000 BKN004 PROB30 BECMG 2124 0500 FG VV001 What does the BECMG data indicate for the 18 to 21 hour time frame?

- A) Many long term changes in the original weather.
- B) Many short term changes in the original weather.
- C) The new conditions are achieved between 1800 and 2100 UTC.
- D) A quick change to new conditions between 1800 UTC and 1900 UTC.

Q943. Does the following report make sense? LSZH VRB02KT 5000 MIFG 02/02 Q1015 NOSIG

- A) The report is nonsense, because it is impossible to observe a meteorological visibility of 5 km if shallow fog is reported.
- B) The report would never be seen, because shallow fog is not reported when the meteorological visibility is more than 2 km.
- C) The report is not possible, because, with a temperature of 2° C and a dew point of 2° C there must be uniform fog.
- D) The report is possible, because shallow fog is defined as a thin layer of fog below eye level.

Q944. A METAR from an airfield reporting visibility 8 km. Added to the report is a BECMG 4000. From this you will expect the visibility to:

## A) Decrease to 4 km within the next 2 hours.

- B) Be variable between 4 and 8 km.
- C) Decrease to 4 km within 1 hour.
- D) Improve from 4 km to 8 km in the next 2 hours.

Q945. The TAF validity in terms of time is usually:

#### A) 6 hours.

#### B) 9 hours.

- C) 3 hours.
- D) 12 hours.

Q946. Where do you find information on ICING and CAT?

#### A) SWC and SIGMET.

- B) TAF.
- C) METAR.
- D) Analysis chart.

Q947. Which of the following is a landing forecast?

# A) METAR with TREND.

- B) SPECI.
- C) METAR.
- D) TAF.

Q948. If weather conditions are reported as CAVOK, which of the following could not be present:

# A) 1 oktas of CB at 9000ft.

B) All above mentioned cases can exist for CAVOK reported conditions.

- C) Winds 25 KT, gusting to 40 KT.
- D) Overcast cloud at 5100ft.

Q949. LLWAS is:

- A) a North American system for the detection of Marked Temperature Inversion.
- B) a low level warning system for the detection of thunderstorms.
- C) a North American radar network for the detection of tornadoes.
- D) a North American system for giving warning of low level windshear.

Q950. Refer to TAF below. EGBB 261812 28015G25KT 9999 SCT025 TEMPO 1822 29018G35KT 5000 SHRASN BKN010CB PROB30 TEMPO 1821 1500 TSGR BKN008CB BECMG 2124 26010 KT From the TAF above you can assume that visibility at 2055Z in Birmingham (EGBB) will be:

- A) more than 10 km.
- B) a minimum of 1,5 km and a maximum of 5 km.
- C) not less than 1,5 km but could be in excess of 10 km.
- D) a maximum 5 km.

Q951. In TAF and METAR decodes, DU, DZ and DS mean respectively:

- A) dust, dust devils, dust storms.
- B) dust, drizzle, dust storms.
- C) dust, drizzle, dust and sand.
- D) dust devils, drizzle, dust and sand.

Q952. EGCC 150820Z VRB03KT 3500N FU SKC 08/07 Q1024 TEMPO 0800 BCFG What type of weather message is this?

A) METAR B) 9-hour TAF **C) Trend-type METAR** D) 16-hour TAF

Q953. The abbreviation FEW means:

- A) 2-4 oktas cloud cover.
- B) 1-3 oktas of cloud cover.
- C) 1-2 oktas cloud cover.
- D) 5-7 oktas cloud cover.

Q954. The heights of cloud bases in TAFs are reported as being:

# A) AAL

- B) AMSL
- C) Pressure altitude.
- D) AGL

Q955. In the following METAR: METAR YUDO 1630Z 24015KMH 0600 R12/1000U FG DZ SCT010 17/16 Q1018:

- A) W/V is 240(T) at 15 kilometres per hour airfield visibility is 600m, runway visual range at touchdown on R/W 12 is 1000m showing a tendency to improve in the last 10 minutes, QNH is 1018 hPa.
- B) W/V is 240 deg (M) at 15 kt, runway visual range at touchdown on R/W 12 is 1000m showing a tendency to improve in the last 10 minutes, dewpoint is +16 deg C.
- C) airfield visibility is 600m, runway visual range is a maximum of 1000m on touchdown on R/W 12, weather is fog and drizzle.
- D) W/V is 240 deg (T) at 15 kilometres per hour, cloud is 4/8 at 100 ft, QNH is 1018 hPa.

Q956. A flight is to depart from an airport with runways 09 and 27. Surface wind is 270/05; an inversion is reported at 300 feet with turbulence and wind shear. The wind just above the inversion is 090/30. What is the safest departure procedure ?

# A) Depart on runway 09 with a tailwind.

- B) Take-off is not possible under these conditions.
- C) Depart runway 27 with maximum throttle during the passage through the inversion.
- D) Depart runway 27 with as steep an ascent as possible.