

d) is relatively limited compared with a computer, that means of data collection or means of action are referred to

**40.3.7.2 (3268)**

**How can a pilot avoid automation complacency?**

**a) Regard the automatic system as additional crew members that needs to be crosschecked as well**

- b) Always try to enhance your aviation related knowledge during low workload periods
- c) Always fly the whole flight manually to remain in man-machine loop
- d) Nothing, because it is system-inherent

**40.3.7.2 (3269)**

**A high degree of cockpit automation may alter the traditional tasks of the pilots in a way, that**

**a) the attention of the cockpit crew will become reduced with the consequence of 'being out of the loop'**

- b) it is guaranteed that the crew maintains always situational awareness
- c) Crew Coordination can be neglected on long haul flights without compromising safety
- d) the crew can pay more attention to solve the problem in an abnormal situation without monitoring the automatic systems

**40.3.7.2 (3270)**

**One negative aspect of the highly automated cockpit results in :**

**a) complacency among the crewmembers**

- b) pilots disregarding the automatic equipment
- c) constantly high crew overload with regard to the monitoring tasks
- d) less experienced crews because of more transparent system details

**40.3.7.3 (3271)**

**As a result of automation in cockpits,**

**a) communication and coordination call for an even greater effort on the part of the crew members**

- b) man-man communication has been significantly improved
- c) coordination between the members is facilitated by the provision of more precise and more important information
- d) communication and coordination have clearly improved in man-man and man-machine relations

**50.1.1.1 (3272)**

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

**a) It decreases from south to north.**

- b) It remains constant from north to south.
- c) It increases from south to north.
- d) It remains constant throughout the year.

**50.1.1.1 (3273)**

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

**a) 16 km**

- b) 8 km

c) 11 km

d) 40 km

**50.1.1.1 (3274)**

**In which layer is most of the atmospheric humidity concentrated ?**

**a) Troposphere.**

- b) Tropopause.
- c) Stratosphere.
- d) Stratopause.

**50.1.1.1 (3275)**

**What is the boundary layer between troposphere and stratosphere called?**

**a) Tropopause.**

- b) Ionosphere.
- c) Stratosphere.
- d) Atmosphere.

**50.1.1.1 (3276)**

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

**a) Cumulonimbus**

- b) Cirrostratus
- c) Altocumulus
- d) Altostratus

**50.1.1.1 (3277)**

**Which one of the following statements applies to the tropopause?**

**a) It separates the troposphere from the stratosphere**

- b) It is, by definition, an isothermal layer
- c) It indicates a strong temperature lapse rate
- d) It is, by definition, a temperature inversion

**50.1.1.1 (3278)**

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

**a) Troposphere**

- b) Lower stratosphere
- c) Upper stratosphere
- d) Ionosphere

**50.1.1.1 (3279)**

**The thickness of the troposphere varies with**

**a) latitude**

- b) longitude
- c) rotation of the earth
- d) the wind

**50.1.1.1 (3280)**

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

**a) 21 % oxygen, 78 % nitrogen, and the rest other gasses**

- b) 10 % oxygen, 89 % nitrogen, and the rest other gasses

- c) 88 % oxygen, 9 % nitrogen, and the rest other gasses
- d) 50 % oxygen, 40 % nitrogen, and the rest other gasses

**50.1.1.1 (3281)**

**Going from the equator to the north pole, the altitude of the tropopause**

**a) decreases and its temperature increases**

- b) increases and its temperature increases
- c) increases and its temperature decreases
- d) decreases and its temperature decreases

**50.1.1.1 (3282)**

**The troposphere**

**a) has a greater vertical extent above the equator than above the poles**

- b) contains all oxygen of the stratosphere
- c) is the separation layer between the stratosphere and atmosphere
- d) reaches the same height at all latitudes

**50.1.1.1 (3283)**

**The troposphere is the**

**a) part of the atmosphere below the tropopause**

- b) part of the atmosphere above the stratosphere
- c) boundary between the mesosphere and thermosphere
- d) boundary between the stratosphere and the mesosphere

**50.1.1.1 (3284)**

**The tropopause is a level at which**

**a) temperature ceases to fall with increasing height**

- b) water vapour content is greatest
- c) pressure remains constant
- d) vertical currents are strongest

**50.1.1.1 (3285)**

**The tropopause is lower**

**a) over the North Pole than over the equator**

- b) in summer than winter in moderate latitudes
- c) south of the equator than north of it
- d) over the equator than over the South Pole

**50.1.1.1 (3286)**

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

**a) 11 km**

- b) 8 km
- c) 14 km
- d) 16 km

**50.1.1.1 (3287)**

**The height and the temperature of the tropopause are respectively in the order of**

**a) 16 km and -75°C over the equator**

- b) 8 km and -40°C over the equator

- c) 8 km and - 75°C over the poles

- d) 16 km and -40°C over the poles

**50.1.1.1 (3288)**

**In the mid-latitudes the stratosphere extends on an average from**

**a) 11 to 50 km**

- b) 0 to 11 km
- c) 50 to 85 km
- d) 85 to more than 200 km

**50.1.2.1 (3289)**

**The temperature at FL 140 is -12°C. What will the temperature be at FL 110 if the ICAO standard lapse rate is applied ?**

**a) -6°C.**

- b) -18°C.
- c) -9°C.
- d) -15°C.

**50.1.2.1 (3290)**

**At a certain position, the temperature on the 300 hPa chart is -48°C, according to the tropopause chart, the tropopause is at FL 330. What is the most likely temperature at FL 350 ?**

**a) -54°C.**

- b) -50°C.
- c) -56,5°C.
- d) -58°C.

**50.1.2.1 (3291)**

**An outside air temperature of -35°C is measured while cruising at FL 200. What is the temperature deviation from the ISA at this level?**

**a) 10°C colder than ISA.**

- b) 10°C warmer than ISA.
- c) 5°C warmer than ISA.
- d) 5°C colder than ISA.

**50.1.2.1 (3292)**

**What is the most likely temperature at the tropical tropopause?**

**a) -75°C.**

- b) -55°C.
- c) -35°C.
- d) -25°C.

**50.1.2.1 (3293)**

**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 20
- c) FL 100
- d) FL 110

**50.1.2.1 (3294)**

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) -4°C
- b) -6°C
- c) 0°C
- d) +2°C

**50.1.2.1 (3295)**

The temperature at FL 110 is -5°C. What will the temperature be at FL 50 if the ICAO standard lapse rate is applied ?

- a) +7°C
- b) +3°C
- c) 0°C
- d) -3°C

**50.1.2.1 (3296)**

The temperature at FL 160 is -22°C. What will the temperature be at FL 90 if the ICAO standard lapse rate is applied ?

- a) -8°C
- b) -4°C
- c) 0°C
- d) +4°C

**50.1.2.1 (3297)**

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) +2°C
- b) +4°C
- c) 0°C
- d) -2°C

**50.1.2.1 (3298)**

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

- a) Low
- b) High
- c) Within +/-5°C of ISA
- d) 20°C below standard

**50.1.2.1 (3299)**

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

- a) High
- b) Within +/-5°C of ISA
- c) Low
- d) Very low

**50.1.2.1 (3300)**

How would you characterise an air temperature of -55°C at the 200 hPa level over

western Europe?

a) Within +/-5°C of ISA

- b) High
- c) Low
- d) Very high

**50.1.2.1 (3301)**

In the lower part of the stratosphere the temperature

a) is almost constant

- b) decreases with altitude
- c) increases with altitude
- d) increases at first and decreases afterward

**50.1.2.1 (3302)**

Which is true of the temperature at the tropopause?

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

- b) It is higher in equatorial regions than in polar regions
- c) It is highest in middle latitudes
- d) There is no significant difference with change of latitude

**50.1.2.2 (3303)**

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

a) Convection and condensation.

- b) Solar radiation and conduction.
- c) Absorption and vaporization.
- d) Absorption and evaporation.

**50.1.2.2 (3304)**

Convective activity over land in mid-latitudes is greatest in

a) summer in the afternoon.

- b) winter during the night and early morning.
- c) summer during the night and early morning.
- d) winter in the afternoon.

**50.1.2.2 (3305)**

Advection is :

a) horizontal motion of air

- b) vertical motion of air
- c) the same as subsidence
- d) the same as convection

**50.1.2.2 (3306)**

The radiation of the sun heats

a) the surface of the earth, which heats the air in the troposphere

- b) the air in the troposphere directly
- c) the water vapour in the air of the troposphere
- d) the air in the troposphere only directly if no clouds are present

**50.1.2.3 (3307)**

**A layer is conditionally unstable if the air**

**a) is unstable for saturated air and stable for dry air.**

- b) is stable for saturated air and unstable for dry air.
- c) becomes stable by lifting it.
- d) is unstable for saturated air as well as for dry air.

**50.1.2.3 (3308)**

**Absolute instability exists whenever the environmental lapse rate**

**a) exceeds the dry adiabatic lapse rate.**

- b) exceeds the saturated adiabatic lapse rate.
- c) is less than the saturated adiabatic lapse rate.
- d) is between the dry and saturated adiabatic lapse rate.

**50.1.2.3 (3309)**

**In an air mass with no clouds the surface temperature is 15°C and 13°C at 1000m.**

**This layer of air is:**

**a) stable**

- b) unstable
- c) a layer of heavy turbulence
- d) conditionally unstable

**50.1.2.3 (3310)**

**The dry adiabatic lapse rate**

**a) has a constant fixed value**

- b) is greater in summer than in winter
- c) is greater during the night than during the day
- d) has a variable value

**50.1.2.3 (3311)**

**An air mass is called stable when**

**a) the vertical motion of rising air tends to become weaker and disappears**

- b) the temperature in a given air mass decreases rapidly with height
- c) the pressure in a given area is constant
- d) the environmental lapse rate is high, with little vertical motion of air currents

**50.1.2.3 (3312)**

**A layer can be**

**a) stable for unsaturated air and unstable for saturated air**

- b) stable for saturated air and unstable for unsaturated air
- c) unstable for unsaturated air and neutral for saturated air
- d) unstable for unsaturated air and conditionally unstable

**50.1.2.3 (3313)**

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

**a) Environmental lapse rate**

- b) Surface temperature
- c) Dry adiabatic lapse rate
- d) Pressure at the surface

**50.1.2.3 (3314)**

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

**a) stability increases in the layer**

- b) stability decreases in the layer
- c) wind will back with increasing height in the northern hemisphere
- d) wind speed will always decrease with increasing height in the northern hemisphere

**50.1.2.3 (3315)**

**An inversion is a layer of air which is**

**a) absolutely stable**

- b) absolutely unstable
- c) conditionally unstable
- d) conditionally stable

**50.1.2.3 (3316)**

**The environmental lapse rate in an actual atmosphere**

**a) varies with time**

- b) has a fixed value of 1°C/100m
- c) has a fixed value of 0.65°C/100m
- d) has a fixed value of 2°C/1000 FT

**50.1.2.3 (3317)**

**The dry adiabatic lapse rate has a value of**

**a) 1°C/100m**

- b) 2°C/1000FT
- c) 0.65°C/100m
- d) 0.5°C/100m

**50.1.2.3 (3318)**

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

**a) environmental lapse rate**

- b) saturated adiabatic lapse rate
- c) dry adiabatic lapse rate
- d) normal lapse rate

**50.1.2.3 (3319)**

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

**a) cirrus**

- b) freezing fog
- c) stratus
- d) cumulus

**50.1.2.4 (3320)**

**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) Warm air being lifted rapidly aloft, in the vicinity of mountainous terrain.
- c) The movement of colder air under warm air, or the movement of warm air over cold air.
- d) Heating of the air by subsidence

**50.1.2.4 (3321)**

**Which of the following is a common result of subsidence ?**

**a) An inversion over a large area with haze, mist.**

- b) CB-clouds and thunderstorms over a large area.
- c) Wide spread NS and AS clouds and intense precipitation.
- d) Clear air turbulence at higher altitudes .

**50.1.2.4 (3322)**

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

**a) Inversion**

- b) Subsidence
- c) Adiabatic
- d) Advection

**50.1.2.4 (3323)**

**What characteristic is associated with a temperature inversion ?**

**a) Stability**

- b) Instability
- c) Clear ice
- d) Area of active storms

**50.1.2.4 (3324)**

**A significant inversion at low height is a characteristic of**

**a) nocturnal radiation**

- b) the passage of cold front
- c) advection fog
- d) cumulus clouds

**50.1.2.4 (3325)**

**An inversion is a layer of air in which the temperature**

**a) increases with height**

- b) remains constant with height
- c) increases with height more than 1°C/100m
- d) decreases with height more than 1°C/100m

**50.1.2.4 (3326)**

**An isothermal layer is a layer of air in which the temperature**

**a) remains constant with height**

- b) increases with height
- c) decreases with height at a constant rate
- d) increases with height at a constant rate

**50.1.2.4 (3327)**

**An inversion is**

**a) an increase of temperature with height**

- b) an increase of pressure with height
- c) a decrease of pressure with height
- d) a decrease of temperature with height

**50.1.2.5 (3328)**

**The diurnal variation in temperature is largest when the sky is**

**a) clear and winds are weak**

- b) clear and winds are strong
- c) overcast and winds are weak
- d) overcast and winds are strong

**50.1.2.5 (3329)**

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

**a) slightly below +3°C.**

- b) significantly below 0°C.
- c) slightly above +3°C.
- d) significantly above +3°C.

**50.1.2.5 (3330)**

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

**a) half an hour after sunrise**

- b) half an hour before sunrise
- c) at the moment the sun rises
- d) one hour before sunrise

**50.1.3.1 (3331)**

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

**a) Positions with the same air pressure at a given level**

- b) Positions with the same temperature at a given level
- c) Positions with the same wind velocity at a given level
- d) Positions with the same relative pressure heights

**50.1.3.1 (3332)**

**The station pressure used in surface weather charts is**

**a) QFF**

- b) QFE
- c) QNH
- d) QNE

**50.1.3.1 (3333)**

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

**a) reduced to sea level**

- b) at flight level
- c) at height of observatory
- d) at a determined density altitude

**50.1.3.1 (3334)**

**Isobars on a surface chart are lines of equal**

**a) QFF**

- b) QFE

- c) QNE
- d) QNH

**50.1.3.1 (3335)**

**(For this question use annex 050-10850A)The pressure distribution located mainly in square 2A is a**

**a) ridge of high pressure**

- b) col
- c) trough of low pressure
- d) depression

**50.1.3.1 (3336)**

**(For this question use annex 050-10784A)The pressure system at position ""D"" is a**

**a) col**

- b) secondary low
- c) trough of low pressure
- d) ridge of high pressure

**50.1.3.2 (3337)**

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

**a) is smaller at higher levels than at lower levels.**

- b) remains constant at all levels.
- c) is greater at higher levels than at lower levels.
- d) is in the order of 27 hPa near MSL.

**50.1.3.2 (3338)**

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

**a) 15 m (50 FT).**

- b) 8 m (27 FT).
- c) 32 m (105 FT).
- d) 64 m (210 FT).

**50.1.3.2 (3339)**

**Which of the following is true concerning atmospheric pressure ?**

**a) It decreases with height**

- b) It is higher in winter than in summer
- c) It is higher at night than during the day
- d) It always decreases with height at a rate of 1 hPa per 8m

**50.1.3.2 (3340)**

**An isohypse (contour)**

**a) indicates the true altitude of a pressure level**

- b) is the longest slope line of a frontal surface
- c) is the limit between two air masses of different temperature
- d) indicates the altitude of the zero degree isotherm

**50.1.3.3 (3341)**

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

**a) Elevation of the airfield.**

- b) Temperature at the airfield.
- c) Elevation of the airfield and the temperature at MSL.
- d) Elevation and the temperature at the airfield.

**50.1.3.3 (3342)**

**The QFF at an airfield located 400 metres above sea level is 1016 hPa. The air temperature is 10°C higher than a standard atmosphere. What is the QNH?**

**a) More than 1016 hPa**

- b) 1016 hPa
- c) Less than 1016 hPa
- d) It is not possible to give a definitive answer

**50.1.3.3 (3343)**

**The QFF at an airfield located 400 metres above sea level is 1016 hPa. The air temperature is 10°C lower than a standard atmosphere. What is the QNH?**

**a) Less than 1016 hPa**

- b) More than 1016 hPa
- c) 1016 hPa
- d) It is not possible to give a definitive answer

**50.1.3.3 (3344)**

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

**a) More than 1009 hPa**

- b) 1009 hPa
- c) Less than 1009 hPa
- d) It is not possible to give a definitive answer

**50.1.3.3 (3345)**

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

**a) It is not possible to give a definitive answer**

- b) More than 1022 hPa
- c) 1022 hPa
- d) Less than 1022 hPa

**50.1.3.3 (3346)**

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

**a) 1022 hPa**

- b) Less than 1022 hPa
- c) More than 1022 hPa
- d) It is not possible to give a definitive answer

**50.1.3.3 (3347)**

**The QNH at an airfield in California located 69 metres below sea level is 1018 hPa. The air temperature is 10°C higher than a standard atmosphere. What is the QFF?**

**a) More than 1018 hPa**

- b) Less than 1018 hPa

- c) 1018 hPa
- d) It is not possible to give a definitive answer

**50.1.3.3 (3348)**

**The QFF at an airfield in California located 69 metres below sea level is 1030 hPa. The air temperature is 10°C lower than a standard atmosphere. What is the QNH?**

**a) More than 1030 hPa**

- b) Less than 1030 hPa
- c) 1030 hPa
- d) It is not possible to give a definitive answer

**50.1.3.3 (3349)**

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

**a) 1005 hPa**

- b) 1000 hPa
- c) 1015 hPa
- d) 1010 hPa

**50.1.3.3 (3350)**

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

**a) 1025 hPa**

- b) 985 hPa
- c) 990 hPa
- d) 1035 hPa

**50.1.3.3 (3351)**

**If the QNH at Locarno (200 metres above sea level) is 1015 hPa, what is the approximate QFE?(Assume 1hPa = 8m)**

**a) 990 hPa**

- b) 995 hPa
- c) 1000 hPa
- d) 1005 hPa

**50.1.3.3 (3352)**

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

**a) 1000 hPa**

- b) 995 hPa
- c) 1005 hPa
- d) 1025 hPa

**50.1.3.3 (3353)**

**QNH is defined as**

**a) QFE reduced to MSL using the values of the standard atmosphere**

- b) pressure at MSL in the standard atmosphere
- c) pressure at MSL in the actual atmosphere
- d) QFE reduced to MSL using the values of the actual atmosphere

**50.1.3.3 (3354)**

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

**a) Elevation of the airfield**

- b) Temperature at the airfield
- c) Elevation of the airfield and the temperature at MSL
- d) Elevation of the airfield and the temperature at the airfield

**50.1.4.1 (3355)**

**At FL 180, the air temperature is -35°C. The air density at this level is:**

**a) Greater than the density of the ISA atmosphere at FL 180.**

- b) Less than the density of the ISA atmosphere at FL 180.
- c) Equal to the density of the ISA atmosphere at FL 180.
- d) Unable to be determined without knowing the QNH.

**50.1.4.1 (3356)**

**Under what condition does pressure altitude have the same value as density altitude ?**

**a) At standard temperature.**

- b) At sea level when the temperature is 0°C.
- c) When the altimeter has no position error.
- d) When the altimeter setting is 1013,2 hPa.

**50.1.4.1 (3357)**

**Half the mass of the atmosphere is found in the first**

**a) 5 km**

- b) 3 km
- c) 8 km
- d) 11 km

**50.1.5.1 (3358)**

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

**a) -56.5°C**

- b) -273°C
- c) -44.7°C
- d) -100°C

**50.1.5.1 (3359)**

**A 200 hPa pressure altitude level can vary in height. In temperate regions which of the following average heights is applicable ?**

**a) FL 390.**

- b) FL 300.
- c) FL 100.
- d) FL 50.

**50.1.5.1 (3360)**

**A 300 hPa pressure level can vary in height. In temperate regions which of the following average heights is applicable ?**

**a) FL 300**

- b) FL 390

- c) FL 100
- d) FL 50

**50.1.5.1 (3361)**

**A 500 hPa pressure level can vary in height. In temperate regions which of the following average heights is applicable ?**

- a) FL 180**
- b) FL 160
- c) FL 100
- d) FL 390

**50.1.5.1 (3362)**

**A 700 hPa pressure level can vary in height. In temperate regions which of the following average heights is applicable ?**

- a) FL 100**
- b) FL 180
- c) FL 300
- d) FL 390

**50.1.5.1 (3363)**

**A 850 hPa pressure level can vary in height. In temperate regions which of the following average heights is applicable ?**

- a) FL 50**
- b) FL 100
- c) FL 300
- d) FL 390

**50.1.5.1 (3364)**

**If you are flying at FL 300 in an air mass that is 15°C warmer than a standard atmosphere, what is the outside temperature likely to be?**

- a) -30°C**
- b) -45°C
- c) -60°C
- d) -15°C

**50.1.5.1 (3365)**

**If you are flying at FL 100 in an air mass that is 10°C warmer than a standard atmosphere, what is the outside temperature likely to be?**

- a) +5°C**
- b) +15°C
- c) -10°C
- d) -15°C

**50.1.5.1 (3366)**

**If you are flying at FL 120 and the outside temperature is -2°C, at what altitude will the "freezing level" be?**

- a) FL 110**
- b) FL 130
- c) FL 150
- d) FL 90

**50.1.5.1 (3367)**

**How does temperature vary with increasing altitude in the ICAO standard atmosphere below the tropopause?**

- a) Decreases**
- b) Increases
- c) At first it increases and higher up it decreases
- d) Remains constant

**50.1.5.1 (3368)**

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

- a) 6.5°C per 1000 m**
- b) 4.5°C per 1000 m
- c) 3°C per 1000 m
- d) 2°C per 1000 m

**50.1.5.1 (3369)**

**In the International Standard Atmosphere the decrease in temperature with height below 11 km is**

- a) 0.65°C per 100m**
- b) 1°C per 100m
- c) 0.5°C per 100m
- d) 0.6°C per 100m

**50.1.5.1 (3370)**

**Which statement is correct regarding the International Standard Atmosphere ?**

- a) At MSL temperature is 15°C and pressure is 1013.25hPa**
- b) At MSL temperature is 15°C and the decrease in temperature with height is 1°C per 100m
- c) At MSL temperature is 10°C and the decrease in temperature with height is 1°C per 100m
- d) At MSL pressure is 1013.25 hPa and the decrease of temperature with height is 1°C per 100m

**50.1.5.1 (3371)**

**In what hPa range is an upper weather chart for FL 340 situated?**

- a) 300 - 200 hPa**
- b) 400 - 300 hPa
- c) 500 - 400 hPa
- d) 600 - 500 hPa

**50.1.5.1 (3372)**

**The temperature at 10000 FT in the International Standard Atmosphere is :**

- a) -5°C**
- b) 0°C
- c) -20°C
- d) -35°C

**50.1.5.1 (3373)**

**The rate of decrease of temperature with height per 100 m in the International Standard Atmosphere is :**

- a) 0.65°C**
- b) 1°C



- c) 0.5°C
- d) variable

**50.1.6.1 (3374)**

The QNH of an airport at sea level is 983 hPa and the temperature deviation from ISA is -15°C below FL 100. What is the true altitude of FL 100?

- a) 8590 FT.
- b) 10210 FT.
- c) 9790 FT.
- d) 11410 FT.

**50.1.6.1 (3375)**

You plan a flight over a mountain range at a true altitude of 15000 FT/AMSL. The air is on an average 15°C colder than ISA, the pressure at sea level is 1003 hPa. What indication must the altimeter (setting 1013.2 hPa) read?

- a) 16230 FT.
- b) 15690 FT.
- c) 14370 FT.
- d) 13830 FT.

**50.1.6.1 (3376)**

During a flight at FL 100 from Marseille (QNH 1012 hPa) to Palma de Mallorca (QNH 1015 hPa), an aircraft remains at a constant true altitude. The reason for this is that :

- a) the air at Marseille is warmer than that at Palma de Mallorca.
- b) the altimeters are erroneous, and need to be tested.
- c) the air at Marseille is colder than that at Palma de Mallorca.
- d) one of the two QNH values may be incorrect.

**50.1.6.1 (3377)**

You intend to overfly a mountain range. The recommended minimum flight altitude is, according to the aviation chart, 15000 FT/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 (1023 hPa). At what altimeter reading will you effectively be at the recommended minimum flight altitude?

- a) 14100 FT.
- b) 13830 FT.
- c) 14370 FT.
- d) 15900 FT.

**50.1.6.1 (3378)**

You are flying at FL 130, and your true altitude is 12000 FT. What is the temperature deviation from that of the standard atmosphere at FL 130 (QNH 1013,2 hPa) ?

- a) ISA -20°C
- b) ISA +/-0°C
- c) ISA +20°C
- d) ISA +12°C

**50.1.6.1 (3379)**

An aircraft flying at FL 100 from Marseille (QNH 1012 hPa) to Palma de Mallorca

(QNH 1006 hPa) experiences no change to true altitude. The reason for this is that :

- a) the air at Palma de Mallorca is warmer than that at Marseille
- b) the air at Palma de Mallorca is colder than that at Marseille
- c) the altimeters are erroneous, and need to be tested
- d) one of the two QNH values may be incorrect

**50.1.6.1 (3380)**

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

**50.1.6.1 (3381)**

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 air at Marseille is warmer than that at Palma de Mallorca
- b) One of the QNH values must be wrong
- c) The altimeter is faulty
- d) The aircraft is being blown off track to the left

**50.1.6.1 (3382)**

During a flight over the sea at FL 135, the true altitude is 13500 feet, local QNH is 1019 hPa. What information, if any, can be gained about the air mass in which the aircraft is flying?

- a) It is colder than ISA
- b) Its average temperature is the same as ISA
- c) It is warmer than ISA
- d) There is insufficient information to make any assumption

**50.1.6.1 (3383)**

An aircraft is flying over the sea at FL 90, the true altitude is 9100 feet, local QNH is unknown. What assumption, if any, can be made about the air mass in which the aircraft is flying ?

- a) There is insufficient information to make any assumption
- b) It is colder than ISA
- c) It is warmer than ISA
- d) Its average temperature is the same as ISA

**50.1.6.1 (3384)**

An aircraft is flying over the sea at FL 120, with a true altitude of 12000 feet, local QNH is 1013 hPa. 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 colder than ISA

- c) It is warmer than ISA
- d) There is insufficient information to come to any conclusion

**50.1.6.1 (3385)**

**An aircraft is flying over the sea at FL 100, with a true altitude of 10000 feet, local QNH is 1003 hPa. What assumption, if any, can be made about the air mass in which the aircraft is flying ?**

**a) It is warmer than ISA**

- b) Its average temperature is about ISA
- c) It is colder than ISA
- d) There is insufficient information to come to any conclusion

**50.1.6.1 (3386)**

**An aircraft is flying through the Alps on a very cold winter's day. The regional QNH is 1013 hPa. 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) A higher altitude than the elevation of the summit**

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

**50.1.6.1 (3387)**

**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) A lower altitude than the elevation of the summit**

- b) A higher altitude than the elevation of the summit
- c) The same altitude as the elevation of the summit
- d) There is insufficient information to come to a conclusion

**50.1.6.1 (3388)**

**(For this question use annex 050-4246A)An aircraft is flying from Point A to Point B on the upper level contour chart. The altimeter setting is 1013,2 hPa. Which of these statements is correct?**

**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 A is higher than at B
- d) Wind speed at Paris is higher than at B

**50.1.6.1 (3389)**

**(For this question use annex 050-4247A)An aircraft is flying from Point A to Point B on the upper level contour chart. The altimeter setting is 1013,2 hPa. Which of these statements is correct?**

**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 A is higher than at B
- d) Wind speed at A and at B is the same

**50.1.6.1 (3390)**

**(For this question use annex 050-4248A)An aircraft is flying from Point A to Point B on the upper level contour chart. The altimeter setting is 1013,2 hPa. Which of these statements is correct?**

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

- b) The true altitude will be higher at A than at B
- c) Wind speed at Madrid is higher than at A
- d) Wind speed at B is higher than at A

**50.1.6.1 (3391)**

**(For this question use annex 050-4249A)An aircraft is flying from Point A to Point B on the upper level contour chart. The altimeter setting is 1013,2 hPa. Which of these statements is correct?**

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

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

**50.1.6.1 (3392)**

**You are flying at FL 200. Outside air temperature is -40°C, and the pressure at sea level is 1033 hPa. What is the true altitude?**

**a) 19340 feet**

- b) 20660 feet
- c) 21740 feet
- d) 18260 feet

**50.1.6.1 (3393)**

**You are flying at FL 160. Outside air temperature is -27°C, and the pressure at sea level is 1003 hPa. What is the true altitude?**

**a) 15090 feet**

- b) 15630 feet
- c) 16370 feet
- d) 16910 feet

**50.1.6.1 (3394)**

**You are planning to fly across a mountain range. The chart recommends a minimum altitude of 12000 feet 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 1023 hPa (QNH of a nearby airport at nearly sea level). What altitude will the altimeter show when you have reached the recommended minimum altitude?**

**a) 11520 feet**

- b) 12210 feet
- c) 11250 feet
- d) 11790 feet

**50.1.6.1 (3395)**

**Which of the following conditions would cause the altimeter to indicate a lower altitude than that actually flown ?**

**a) Air temperature higher than standard**

- b) Atmospheric pressure lower than standard

- c) Pressure altitude the same as indicated altitude.
- d) Air temperature lower than standard.

**50.1.6.1 (3396)**

**The pressure altitude is equal to the true altitude if**

**a) standard atmospheric conditions occur**

- b) the outside air temperature is standard for that height
- c) the air pressure is 1013.25 hPa at the surface
- d) the indicated altitude is equal to the pressure altitude

**50.1.6.1 (3397)**

**The following temperatures have been observed over a station at 1200 UTC.**

**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) Assuming that the MSL pressure is 1013.25 hPa the true altitude of an aircraft would actually be higher than the indicated altitude.**

- b) The height of the freezing level over the station is approximately 12000 FT.
- c) The temperature at 10000 FT is in agreement with the temperature in the International Standard Atmosphere.
- d) The layer between 16000 and 18000 FT is absolutely unstable

**50.1.6.1 (3398)**

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

**a) If in this pressure surface the wind comes from the direction 360 degrees, then true altitude is increasing**

- b) If in this pressure surface the wind comes from the direction 180 degrees, then true altitude is increasing
- c) If in this pressure surface the wind comes from the direction 270 degrees, then true altitude is increasing
- d) If in this pressure surface the wind comes from the direction 090 degrees, then true altitude is increasing

**50.1.6.1 (3399)**

**An aircraft is flying at FL 180 on the northern hemisphere with a crosswind from the left. Which of the following is correct concerning its true altitude ?**

**a) It decreases**

- b) It increases
- c) It remains constant
- d) Without knowing temperatures at FL 180 this question can not be answered.

**50.1.6.3 (3400)**

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

**a) QFE is greater than QNH.**

- b) QFE is smaller than QNH.
- c) QFE equals QNH.
- d) No clear relationship exists.

**50.1.6.3 (3401)**

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

**a) 1375 FT.**

- b) 1200 FT.
- c) 1105 FT.
- d) 1280 FT.

**50.1.6.3 (3402)**

**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) 1015 hPa.
- c) 1013 hPa.
- d) 998 hPa.

**50.1.6.3 (3403)**

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

**a) It will decrease**

- b) It will increase
- c) It will remain the same
- d) It will not be affected

**50.1.6.3 (3404)**

**After landing at an aerodrome (QNH 993 hPa) it is noticed that the altimeter is still set to 1013,2 hPa and that it reads 1200 feet. What is the elevation of the aerodrome above mean sea level ?**

**a) 660 feet.**

- b) 1200 feet.
- c) 1740 feet.
- d) 2280 feet.

**50.1.6.3 (3405)**

**During the climb after take-off, the altimeter setting is adjusted at the transition altitude. If the local QNH is 1023 hPa, what will happen to the altimeter reading during the resetting procedure ?**

**a) It will decrease**

- b) It will increase
- c) It will remain the same
- d) It is not possible to give a definitive answer

**50.1.6.3 (3406)**

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

**a) It will increase**

- b) It will decrease
- c) It will remain the same
- d) It is not possible to give a definitive answer

**50.1.6.3 (3407)**

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

**a) 1080 FT**

- b) 700 FT
- c) 380 FT
- d) 0 FT

**50.1.6.3 (3408)**

**What pressure is defined as QFE?**

**a) The pressure at field elevation**

- b) The pressure of the altimeter
- c) The pressure reduced to sea level using actual temperatures
- d) The pressure reduced to sea level using ISA temperatures

**50.1.6.3 (3409)**

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

**a) 3006 FT.**

- b) 2922 FT.
- c) 4278 FT.
- d) 4194 FT.

**50.1.6.3 (3410)**

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

**a) 942 hPa.**

- b) 967 hPa.
- c) 961 hPa.
- d) 948 hPa.

**50.1.6.3 (3411)**

**An aircraft is flying at FL 80. The local QNH is 1000 hPa. After the second altimeter has been adjusted to the local QNH, the reading will be approximately**

**a) 7650 FT.**

- b) 8600 FT.
- c) 8350 FT.
- d) 8000 FT.

**50.1.6.3 (3412)**

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

**a) 20 FT.**

- b) 11 FT.
- c) -10 FT.
- d) 560 FT.

**50.1.6.3 (3413)**

**Which of the following statements is true ?**

**a) QNH can be equal to QFE**

- b) QNH is always lower than QFE
- c) QNH is always higher than QFE
- d) QNH is always equal to QFE

**50.1.6.3 (3414)**

**Which statement is true ?**

**a) QNH can be lower as well as higher than 1013.25 hPa**

- b) QNH can not be 1013.25 hPa
- c) QNH is lower than 1013.25 hPa at any time
- d) QNH can be 1013.25 only for a station at MSL

**50.1.6.3 (3415)**

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

**a) elevation while landing**

- b) zero while landing
- c) elevation while landing only if conditions are as in the International Standard Atmosphere
- d) zero while landing only if conditions are as in the International Standard Atmosphere

**50.1.6.3 (3416)**

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

**a) Less than 0 FT**

- b) 0 FT
- c) More than 0 FT, but less than 4000 FT
- d) 4000 FT

**50.1.6.3 (3417)**

**The QNH is equal to the QFE if**

**a) the elevation = 0**

- b) T actual = T standard
- c) T actual > T standard
- d) T actual < T standard

**50.1.6.3 (3418)**

**Which of the following conditions gives the highest value of the QNH?**

**a) QFE = 995 hPa, elevation = 1600 FT (488m)**

- b) QFE = 1000 hPa, elevation = 1200 FT (366m)
- c) QFE = 1003 hPa, elevation = 1200 FT (366m)
- d) QFE = 995 hPa, elevation = 1200 FT (366m)

**50.1.6.3 (3419)**

**For a given airfield the QFE is 980 hPa and the QNH is 1000 hPa. The approximate elevation of the airfield is**

**a) 160 metres**

- b) 600 metres
- c) 540 metres
- d) 120 metres

**50.1.6.3 (3420)**

**Before landing, an altimeter set to QFE indicates**

**a) in standard atmosphere, the height of the aircraft above the official airport elevation.**

- b) the flight level.
- c) the aircraft's altitude above the mean sea level.
- d) the height of the aircraft's wheels above the runway.

**50.1.6.4 (3421)**

**If atmospheric conditions exist such that the temperature deviation is ISA +10°C in the lower troposphere up to 18000 FT, what is the actual layer thickness between FL 60 and FL 120 ?**

**a) 6240 FT.**

- b) 6000 FT.
- c) 5900 FT.
- d) 5760 FT.

**50.1.6.4 (3422)**

**What information is required to convert a minimum safe altitude into a lowest usable flight level?**

**a) Lowest value of QNH and the highest negative temperature deviation from ISA.**

- b) Highest value of QNH and the highest negative temperature deviation from ISA.
- c) Highest value of QNH and the highest positive temperature deviation from ISA
- d) Lowest value of QNH and the lowest negative temperature deviation from ISA

**50.1.6.4 (3423)**

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

**a) Cold low.**

- b) Warm depression.
- c) Cold high.
- d) Warm high.

**50.1.6.4 (3424)**

**A vertical spacing of 1000 FT, 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 1000 FT**

- b) It remains 1000 FT
- c) More than 1000 FT
- d) Without QNH information, it can not be determined

**50.1.6.4 (3425)**

**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) At a temperature greater than or equal to that of the ISA and where the QNH is greater than or equal to 1013 hPa**

- b) In a cold low pressure region
- c) At a temperature less than or equal to that of the ISA and where the QNH is less than 1013

hPa

- d) In a warm high pressure region

**50.2.1.1 (3426)**

**What is the approximate speed of a 25-knot wind, expressed in kilometres per hour?**

**a) 45 km/h**

- b) 35 km/h
- c) 55 km/h
- d) 60 km/h

**50.2.1.1 (3427)**

**What is the approximate speed of a 90 km/h wind, expressed in knots?**

**a) 50 kt**

- b) 55 kt
- c) 60 kt
- d) 70 kt

**50.2.1.1 (3428)**

**What is the approximate speed of a 40-knot wind, expressed in m/sec?**

**a) 20 m/sec**

- b) 15 m/sec
- c) 25 m/sec
- d) 30 m/sec

**50.2.1.1 (3429)**

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

**a) Direction relative to true north and speed in knots**

- b) Direction relative to magnetic north and speed in knots
- c) Direction relative to magnetic north and speed in kmh
- d) Direction relative to grid north and speed in kmh

**50.2.2.1 (3430)**

**Whilst flying at FL 180 on the northern hemisphere an aircraft experiences right drift. What effect, if any, will this have on the aircraft's true altitude ?**

**a) It decreases**

- b) It increases.
- c) It remains constant.
- d) Without knowing the pressure change this question cannot be answered.

**50.2.2.1 (3431)**

**Which forces are balanced with geostrophic winds?**

**a) Pressure gradient force, Coriolis force.**

- b) Friction force, pressure gradient force, Coriolis force.
- c) Pressure gradient force, Coriolis force, centrifugal force.
- d) Pressure gradient force, centrifugal force, friction force.

**50.2.2.1 (3432)**

**In the southern hemisphere what wind effect would you expect when flying from a high pressure area towards a low pressure area at FL 100?**

**a) Wind from the right.**

- b) Wind from the left.
- c) Tailwind with no drift.
- d) Headwind with no drift.

**50.2.2.1 (3433)**

**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) Behind.
- c) To the left.
- d) To the right.

**50.2.2.1 (3434)**

**The geostrophic wind is greater than the gradient wind around a low pressure system because the**

**a) centrifugal force opposes the pressure gradient**

- b) centrifugal force is added to the pressure gradient
- c) coriolis force is added to the pressure gradient
- d) coriolis force opposes to the centrifugal force

**50.2.2.1 (3435)**

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

**a) centrifugal force is added to the pressure gradient**

- b) centrifugal force opposes the pressure gradient
- c) effect of coriolis is added to friction
- d) coriolis effect opposes the centrifugal force

**50.2.2.1 (3436)**

**An aircraft is flying in the southern hemisphere at low altitude (less than 2000 feet) and going directly away from a centre of low pressure. What direction, relative to the aircraft, does the wind come from ?**

**a) From the left and slightly on the nose**

- b) From the right and slightly on the nose
- c) From the right and slightly on the tail
- d) From the left and slightly on the tail

**50.2.2.1 (3437)**

**What prevents air from flowing directly from high-pressure areas to low-pressure areas ?**

**a) Coriolis force**

- b) Surface friction
- c) Katabatic force
- d) The pressure gradient force

**50.2.2.1 (3438)**

**Geostrophic wind**

**a) is perpendicular to the horizontal pressure gradient force**

- b) is directly proportional to the density of the air

c) always increases with increasing height

d) veers with height if cold air is advected in the northern hemisphere

**50.2.2.1 (3439)**

**Wind is caused by**

**a) horizontal pressure differences**

- b) the rotation of the earth
- c) friction between the air and the ground
- d) the movements of fronts

**50.2.2.1 (3440)**

**You are flying from east to west in the northern hemisphere at the 500 hPa pressure surface. Which of the following statements is correct?**

**a) If the wind is from the north you are gaining altitude**

- b) If the wind is from the south you are gaining altitude
- c) If you have a head wind you are gaining altitude
- d) If you have a tail wind you are losing altitude

**50.2.2.1 (3441)**

**Geostrophic wind is the wind when isobars are**

**a) straight lines and no friction is involved.**

- b) curved lines and no friction is involved
- c) straight lines and friction is involved.
- d) curved lines and friction is involved.

**50.2.2.1 (3442)**

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

**50.2.2.1 (3443)**

**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 higher
- c) always lower
- d) higher if curvature is cyclonic

**50.2.2.1 (3444)**

**The geostrophic wind depends on**

**a) density, earth's rotation, geographic latitude**

- b) earth's rotation, geographic latitude, centripetal force
- c) geographic latitude, centripetal force, height
- d) centripetal force, height, pressure gradient

**50.2.2.1 (3445)**

**The difference between geostrophic wind and gradient wind is caused by**

**a) curvature of isobars**

- b) friction
- c) horizontal temperature gradients
- d) slope of pressure surfaces

**50.2.2.1 (3446)**

**The geostrophic wind speed is directly proportional to the**

**a) horizontal pressure gradient**

- b) curvature of isobars
- c) sine of latitude
- d) density of the air

**50.2.2.1 (3447)**

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

**a) greater at 30°N than at 60°N**

- b) greater at 60°N than at 30°N
- c) the same at all latitudes north or south of 15°
- d) equivalent to gradient wind  $\pm$  thermal component

**50.2.2.1 (3448)**

**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 latitudes
- c) greatest at 60°N
- d) least at 50°N

**50.2.2.1 (3449)**

**Under anticyclone conditions in the northern hemisphere, with curved isobars the speed of the gradient wind is**

**a) greater than the geostrophic wind**

- b) less than the geostrophic wind
- c) the same as the thermal component
- d) proportional only to the Coriolis force

**50.2.2.2 (3450)**

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

**a) Strong and flowing across the isobars.**

- b) Very weak but gusty and flowing across the isobars.
- c) Strong and parallel to the isobars.
- d) Moderate and parallel to the isobars.

**50.2.2.2 (3451)**

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

**a) In the transition zone between two air masses**

- b) At the centre of a low-pressure system
- c) At the centre of a high-pressure system
- d) Where there is little variation in pressure over a large area during the winter months

**50.2.2.2 (3452)**

**Select the true statement concerning isobars and wind flow patterns around high- and low-pressure systems that are shown on a surface weather chart.**

**a) When the isobars are close together, the pressure gradient force is greater and wind velocities are stronger.**

- b) Surface winds flow perpendicular to the isobars.
- c) Isobars connect contour lines of equal temperature.
- d) When the isobars are far apart, crest of standing waves may be marked by stationary lenticular clouds.

**50.2.2.2 (3453)**

**The greater the pressure gradient the**

**a) closer the isobars and the stronger the wind**

- b) further the isobars will be apart and the weaker the wind
- c) closer the isobars and the lower the temperatures
- d) further the isobars will be apart and the higher the temperature

**50.2.2.2 (3454)**

**When isobars, for an area in the mid-latitudes on a weather map, are close together, the wind is most likely to be**

**a) strong**

- b) blowing perpendicular to the isobars
- c) changing direction rapidly
- d) light

**50.2.2.2 (3455)**

**Which of the following is true concerning an aircraft that is flying at FL180 in the northern hemisphere, where wind is geostrophic and the true altitude remains constant ?**

**a) There is no cross wind**

- b) There is a cross wind from the left
- c) There is a cross wind from the right
- d) Without knowing temperature at FL 180 this question can not be answered

**50.2.2.3 (3456)**

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

**a) frictional forces**

- b) centripetal forces
- c) the imbalance of the horizontal gradient force and the Coriolis force
- d) the curvature of the isobars

**50.2.2.3 (3457)**

**In an area of converging air**

**a) clouds can be formed**

- b) convective clouds can be dissolved
- c) stratified clouds can be dissolved
- d) clouds can not be formed

**50.2.2.3 (3458)**

**Divergence in the upper air results, near the surface, in**

**a) falling pressure and likely formation of clouds**

- b) rising pressure and likely formation of clouds
- c) rising pressure and likely dissipation of clouds
- d) falling pressure and likely dissipation of clouds

**50.2.3.1 (3459)**

**Between which latitudes are you most likely to find the subtropical high-pressure belt ?**

- a) 25° - 35°.**
- b) 10° - 15°.
- c) 35° - 55°.
- d) 55° - 75°.

**50.2.3.1 (3460)**

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

- a) 55° - 75°**
- b) 35° - 55°
- c) 25° - 35°
- d) 10° - 15°

**50.2.3.1 (3461)**

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

- a) NE trade winds**
- b) NE monsoon in winter and SW monsoon in summer
- c) SE trade winds
- d) SW winds throughout the whole year

**50.2.3.1 (3462)**

**(For this question use annex 050-10721A) Assuming a generalised zonal system of world wind circulation, the SE trade winds are applicable to zone**

- a) w**
- b) t
- c) u
- d) v

**50.2.3.1 (3463)**

**(For this question use annex 050-10722A) Assuming a generalised zonal system of world climatic and wind circulation, zone "t" is an area of**

- a) subtropical high pressure systems**
- b) SE trade winds
- c) travelling low pressure systems
- d) NE trade winds

**50.2.3.1 (3464)**

**(For this question use annex 050-10723A) Assuming a generalised zonal system of world wind circulation the travelling low pressure systems are applicable to zone**

- a) s and y**
- b) t only
- c) t and x
- d) u and w

**50.2.3.1 (3465)**

**(For this question use annex 050-10724A) Considering Melbourne (C) in July, the weather is predominantly influenced by the zone of**

**a) subtropical high pressure, with the occasional passage of fronts originating in the adjacent zone of disturbed temperate low pressure**

- b) antarctic high pressure due to the absence of any protective land mass between south Australia and Antarctica
- c) disturbed temperate low pressure, bringing an almost continuous succession of fronts resulting in strong winds, low cloud and rain
- d) equatorial low pressure due to the proximity of the intertropical convergence zone over central Australia

**50.2.3.1 (3466)**

**(For this question use annex 050-10725A) Assuming a generalised zonal system of world climatic and wind circulation, zone "y" is an area of**

- a) travelling low pressure systems**
- b) NE trade winds
- c) SE trade winds
- d) subtropical high pressure systems

**50.2.3.1 (3467)**

**(For this question use annex 050-10726A) Assuming a generalised zonal system of world wind circulation, the NE trade winds are applicable to zone**

- a) u**
- b) t
- c) v
- d) w

**50.2.3.1 (3468)**

**(For this question use annex 050-10727A) Assuming a generalised zonal system of world climatic and wind circulation, zone "u" is in area of**

- a) NE trade winds**
- b) travelling depressions
- c) SW trade winds
- d) subtropical high pressure

**50.2.4.1 (3469)**

**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 1.0 g at the aircraft's center of gravity. Occupants feel strain against seat belts. Loose objects move about. Food service and walking are difficult."**

- a) Moderate.**
- b) Light.
- c) Severe.
- d) Violent.

**50.2.4.1 (3470)**

**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) moderate**

- b) light
- c) severe
- d) extreme

**50.2.4.2 (3471)**

**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) Severe turbulence in CB cloud.**

- b) Moderate turbulence in NS cloud.
- c) Light turbulence in CB cloud.
- d) Light turbulence in ST cloud.

**50.2.4.2 (3472)**

**Which cloud type may indicate the presence of severe turbulence ?**

**a) Altocumulus lenticularis**

- b) Stratocumulus
- c) Cirrocumulus
- d) Nimbostratus

**50.2.4.2 (3473)**

**Fair weather cumulus often is an indication of**

**a) turbulence at and below the cloud level**

- b) poor visibility at surface
- c) smooth flying conditions below the cloud level
- d) a high risk of thunderstorms

**50.2.4.2 (3474)**

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

**a) during the early afternoon**

- b) immediately after sunset
- c) during early morning hours before sunrise
- d) about midmorning

**50.2.5.1 (3475)**

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

**a) Friction between the wind and the surface.**

- b) A strong pressure gradient at higher altitudes.
- c) Stronger Coriolis force at the surface.
- d) The influence of warm air at the lower altitude.

**50.2.5.1 (3476)**

**Friction between the air and the ground results in the northern hemisphere in:**

**a) backing of the wind and decrease of wind speed at the surface.**

- b) veering of the wind and decrease of wind speed at the surface.
- c) backing of the wind and increase of wind speed at the surface.
- d) veering of the wind and increase of wind speed at the surface.

**50.2.5.1 (3477)**

**You are flying at 2 500 FT/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-southeast.**

- b) South-southwest.
- c) Southwest.
- d) South.

**50.2.5.1 (3478)**

**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) 22030KT**

- b) 16020KT
- c) 25025KT
- d) 22010KT

**50.2.5.1 (3479)**

**If Paris reports a wind of 08010KT on the METAR, what wind velocity would you expect to encounter at a height of 2000 feet above the ground ?**

**a) 11020KT**

- b) 08015KT
- c) 05020KT
- d) 08005KT

**50.2.5.1 (3480)**

**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) 19040KT**

- b) 16030KT
- c) 14020KT
- d) 17015KT

**50.2.5.1 (3481)**

**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) 33025KT**

- b) 23030KT
- c) 30025KT
- d) 27020KT

**50.2.5.1 (3482)**

**In the lower layers of the atmosphere due to friction the wind changes direction towards the low pressure area because :**

**a) wind speed decreases and therefore coriolis force decreases**

- b) the pressure gradient increases
- c) turbulence is formed and pressure increases
- d) turbulence is formed and pressure decreases

**50.2.5.1 (3483)**

**What causes surface winds to flow across the isobars at an angle rather than**

**parallel to the isobars ?**

**a) Surface friction**

- b) Coriolis force
- c) Greater density of the air at the surface
- d) Greater atmospheric pressure at the surface

**50.2.5.1 (3484)**

**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) left and behind**

- b) right and behind
- c) about 45 degrees to the right of directly ahead
- d) directly ahead

**50.2.5.1 (3485)**

**In the northern hemisphere the wind at the surface blows**

**a) counter-clockwise around, and toward the centre of, a low pressure area**

- b) from a low pressure area to a high pressure area
- c) clockwise around, and away from the centre of, a low pressure area
- d) counter-clockwise around, and away from the centre of, a high pressure area.

**50.2.5.1 (3486)**

**During a descent from 2000 FT above the surface to the surface (no frontal passage) the wind normally**

**a) backs and decreases**

- b) veers and increases
- c) backs and increases
- d) veers and decreases

**50.2.5.1 (3487)**

**What relationship exists between the wind at 3000 feet and the surface wind?**

**a) The wind at 3000 feet is parallel to the isohypses and the surface wind direction is across the isobars toward the low pressure and the surface wind is weaker.**

- b) They have the same direction, but the surface wind is weaker, caused by friction
- c) They are practically the same, except when eddies exist, caused by obstacles
- d) The surface wind is veered compared to the wind at 3000 feet and is usually weaker.

**50.2.5.1 (3488)**

**The vertical extent of the friction layer depends primarily on**

**a) stability, wind speed, roughness of surface**

- b) wind speed, roughness of surface, temperature
- c) roughness of surface, temperature, local time
- d) temperature, local time, environmental lapse rate

**50.2.5.1 (3489)**

**During periods of prolonged clear skies associated with anticyclonic conditions, the**

**a) surface wind speed tends to be highest during the early afternoon**

- b) surface wind speed tends to be highest at night
- c) angle between isobars and surface wind direction tends to be greatest in the early afternoon
- d) wind tends to back from early morning until early afternoon

**50.2.5.1 (3490)**

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

**a) 340/20**

- b) 030/20
- c) 340/28
- d) 030/28

**50.2.5.1 (3491)**

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

**a) 045/12**

- b) 060/12
- c) 060/18
- d) 075/12

**50.2.5.2 (3492)**

**At the approach of a warm front (northern hemisphere) the wind direction changes from the surface up to the tropopause. The effect of this change is that the wind**

**a) veers in the friction layer and veers above the friction layer**

- b) backs in the friction layer and veers above the friction layer
- c) veers in the friction layer and backs above the friction layer
- d) backs in the friction layer and and backs above the friction layer

**50.2.6.1 (3493)**

**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 stronger than the sea-breeze.
- c) during the day and is weaker than the sea-breeze.
- d) during the night and is stronger than the sea-breeze.

**50.2.6.1 (3494)**

**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) Sea to land.**

- b) Land to sea.
- c) Variable.
- d) Parallel to the coastline.

**50.2.6.1 (3495)**

**A mountain breeze (katabatic wind) blows**

**a) down the slope during the night.**

- b) up the slope during the day.
- c) down the slope during the day.
- d) up the slope during the night.

**50.2.6.1 (3496)**

**Which of the following is true of a land breeze?**

**a) It blows from land to water**

- b) It blows from water to land
- c) It blows by day
- d) It blows only at noon

**50.2.6.1 (3497)**

**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 right. What wind effect should be anticipated on final approach and landing during a sunny afternoon?**

**a) Crosswind from the right**

- b) Crosswind from the left
- c) Tailwind
- d) Headwind

**50.2.6.1 (3498)**

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

**a) mountain during daylight hours.**

- b) mountain at night.
- c) valley during daylight hours.
- d) valley during daylight as much as at night.

**50.2.6.1 (3499)**

**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) Crosswind from the left**

- b) Crosswind from the right
- c) Tailwind
- d) Headwind

**50.2.6.1 (3500)**

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

**a) from the water in daytime and from the land at night**

- b) continually from land to water
- c) continually from water to the land
- d) from the land in daytime and from the water at night

**50.2.6.1 (3501)**

**The sea breeze is a wind from the sea**

**a) occurring only in the lower layers of the atmosphere in daytime**

- b) that reaches up to the tropopause in daytime
- c) blowing at night in mid-latitudes
- d) occurring only in mid-latitudes and in daytime

**50.2.6.1 (3502)**

**In a mountain-valley wind circulation, the mountain wind blows**

**a) at night down from the mountains**

- b) at night up from the valley

- c) during the day down from the mountains
- d) during the day up from the valley

**50.2.7.1 (3503)**

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

**a) The north-south horizontal temperature gradient at the polar front**

- b) The pressure difference, close to the ground, between a high over the Azores and a low over Iceland
- c) The varied elevations of the tropopause in the polar front region
- d) Strong winds in the upper atmosphere

**50.2.7.2 (3504)**

**An aircraft is flying through the polar front jet stream from south to north, beneath the core. How would the OAT change, in the northern hemisphere, during this portion of the flight?**

**a) It decreases.**

- b) It increases.
- c) It first increases, then decreases.
- d) It remains constant.

**50.2.7.2 (3505)**

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

**a) 1/100**

- b) 01-Jan
- c) 10-Jan
- d) 1/1000

**50.2.7.2 (3506)**

**An aircraft is flying from south to north, above the polar front jet stream, at FL 400 in the southern hemisphere. What change, if any, in temperature will be experienced ?**

**a) It falls.**

- b) It rises.
- c) It stays the same.
- d) It falls and then rises.

**50.2.7.2 (3507)**

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

**a) possible but a very rare phenomenon.**

- b) not possible.
- c) a common occurrence.
- d) not unusual in polar regions.

**50.2.7.2 (3508)**

**An aircraft over Western Europe is crossing a jet stream 2500 FT below its core at right angles. While crossing, the outside temperature is increasing. The prevailing wind is**

**a) from the right**

- b) from the left.

- c) tailwind.
- d) headwind.

**50.2.7.2 (3509)**

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

**a) Just below the tropopause**

- b) At about 5500 metres altitude
- c) Close to the ground
- d) In the stratosphere

**50.2.7.2 (3510)**

**Which jet stream is connected with a surface front system?**

**a) The polar front jet stream**

- b) The arctic jet stream
- c) The subtropical jet stream
- d) The equatorial jet stream

**50.2.7.2 (3511)**

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

**a) 60 kt.**

- b) 50 kt.
- c) 70 kt.
- d) 100 kt.

**50.2.7.2 (3512)**

**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 260/60kt 400hPa 280/85kt300hPa 300/100kt250hPa 310/120kt 200hPa 310/80ktWhich system is the jet stream associated with?**

**a) With a warm front.**

- b) With a cold front.
- c) With a ITCZ.
- d) With an easterly wave.

**50.2.7.2 (3513)**

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

**a) In the warm air mass.**

- b) In the cold air mass.
- c) Just above the warm-air tropopause.
- d) Just below the cold-air tropopause.

**50.2.7.2 (3514)**

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

**a) This phenomenon is absolutely normal as you are crossing the jet core.**

- b) You assume the front associated with the jet stream to be very weak with practically no temperature difference between the two airmasses.
- c) Since the result of such readings seems impossible, you will after landing have the instruments tested.

d) This phenomenon does not surprise you at all, since normally no large temperature differences are possible at these heights.

**50.2.7.2 (3515)**

**What jet streams are likely to be crossed during a flight from Stockholm to Rio de Janeiro (23°S) at FL 350 in July ?**

**a) A polar front jet stream followed by one or two subtropical jet streams.**

- b) A subtropical jet stream followed by a polar front jet stream.
- c) A polar front jet stream followed by a subtropical jet stream and later, a second polar front jet stream.
- d) One subtropical jet stream.

**50.2.7.2 (3516)**

**While crossing a jet stream at right angles in Western Europe (3000 FT below its core) and OAT is decreasing, what would be the prevailing wind?**

**a) Crosswind from the left**

- b) Crosswind from the right
- c) A headwind.
- d) A tailwind.

**50.2.7.2 (3517)**

**Which of the following statements concerning jet streams is correct?**

**a) In the northern hemisphere both westerly and easterly jet streams occur**

- b) In the northern hemisphere only westerly jet streams occur
- c) In the southern hemisphere no jet streams occur
- d) In the southern hemisphere only easterly jet streams occur

**50.2.7.2 (3518)**

**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 and its surface projection lie in the warm air
- c) It lies in the warm air, its pressure surfaces are horizontal at the height of the core
- d) It lies in the cold air, the thermal wind reverses direction at the height of the core

**50.2.7.2 (3519)**

**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 to the east of the core of the jet**

- b) the polar air is on the eastern side and above the core of the jet
- c) below the core of the jet the horizontal temperature gradient runs from north to south
- d) above the core of the jet the horizontal temperature gradient runs from north to south

**50.2.7.3 (3520)**

**(For this question use annex 050-2541A)What name is given to the jet stream lying over North Africa (B) ?**

**a) Sub-tropical jet stream**

- b) Equatorial jet stream
- c) Polar front jet stream
- d) Arctic jet stream

**50.2.7.3 (3521)**

**(For this question use annex 050-3017A) What name is given to the jet stream lying across India (A) ?**

**a) Equatorial jet stream.**

- b) Polar front jet stream.
- c) Arctic jet stream.
- d) Sub-tropical jet stream.

**50.2.7.3 (3522)**

**What is the average height of the arctic jet stream core?**

**a) 20000 FT.**

- b) 30000 FT.
- c) 40000 FT.
- d) 50000 FT.

**50.2.7.3 (3523)**

**Which jet stream blows all year round, over the northern hemisphere?**

**a) The subtropical jet stream.**

- b) The polar night jet stream.
- c) The equatorial jet stream.
- d) The arctic jet stream.

**50.2.7.3 (3524)**

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

**a) 30000 FT.**

- b) 20000 FT.
- c) 40000 FT.
- d) 50000 FT.

**50.2.7.3 (3525)**

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

**a) FL 400**

- b) FL 200
- c) FL 300
- d) FL 500

**50.2.7.3 (3526)**

**In the month of August you prepare a flight (cruising level FL 370) from Bombay (19°N - 73°E) to Bangkok (13°N - 100°E). What wind conditions can you expect?**

**a) Headwinds.**

- b) Light winds diagonal to the route.
- c) Tailwinds.
- d) Strong northerly winds.

**50.2.7.3 (3527)**

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

**a) Wind direction.**

- b) Vertical dimension.
- c) Horizontal dimension.
- d) Windspeed.

**50.2.7.3 (3528)**

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

**a) Subtropical jet stream / polar front jet stream.**

- b) Equatorial jet stream / polar front jet stream.
- c) Arctic jet stream / subtropical jet stream.
- d) Equatorial jet stream / arctic jet stream.

**50.2.7.3 (3529)**

**The equatorial easterly jet is a jet stream that occurs :**

**a) only in the summer of the northern hemisphere at approx. 45 000 FT**

- b) only in the winter of the northern hemisphere at approx. 30 000 FT
- c) during the whole year in the southern hemisphere
- d) during the whole year in the northern hemisphere

**50.2.7.3 (3530)**

**During the winter months in mid-latitudes in the northern hemisphere, the polar front jet stream moves toward the**

**a) south and speed increases**

- b) north and speed decreases
- c) south and speed decreases
- d) north and speed increases

**50.2.7.3 (3531)**

**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 south-east Asia extending over southern India to central Africa.**

- b) In winter along the Russian coast facing the Arctic ocean.
- c) In summer from the Middle East extending over the southern part of the Mediterranean to southern Spain.
- d) Throughout the year to the south of the Azorian high.

**50.2.7.4 (3532)**

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

**a) long streaks of cirrus clouds.**

- b) dust or haze at high level
- c) a constant outside air temperature
- d) a high-pressure centre at high level

**50.2.7.5 (3533)**

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

**a) The cold air side of the core.**

- b) The warm air side of the core.
- c) Exactly in the centre of the core.
- d) About 12000 FT above the core.

**50.2.7.5 (3534)**

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

**a) Looking downstream, the area to the left of the core.**

- b) Looking downstream, the area to the right of the core.
- c) In the core of the jet stream.
- d) Above the core in the boundary between warm and cold air.

**50.2.7.5 (3535)**

**Under which of the following conditions is the most severe CAT likely to be experienced ?**

**a) A curved jet stream near a deep trough**

- b) A jet stream, with great spacing between the isotherms
- c) A westerly jet stream at low latitudes in the summer
- d) A straight jet stream near a low pressure area

**50.2.8.1 (3536)**

**Which of the following conditions are most favourable to the formation of mountain waves ?**

**a) Stable air at mountain top altitude and a wind at least 20 knots blowing across the mountain ridge.**

- b) Unstable air at mountain top altitude and a wind at least 20 knots blowing across the mountain ridge.
- c) Either stable or unstable air at mountain top and a wind of at least 30 knots blowing parallel to the mountain ridge.
- d) Moist unstable air at mountain top and wind of less than 5 knots blowing across the mountain ridge.

**50.2.8.1 (3537)**

**At the top of orographic waves, in mountainous regions, the cloud most likely to be encountered is**

**a) altocumulus lenticularis.**

- b) cirrostratus.
- c) cirrus.
- d) cumulus mediocris.

**50.3.1.1 (3538)**

**What of the following is the most important constituent in the atmosphere from a weather stand-point ?**

**a) Water vapour**

- b) Nitrogen
- c) Oxygen
- d) Hydrogen

**50.3.1.2 (3539)**

**What does dewpoint mean?**

**a) The temperature to which a mass of air must be cooled in order to reach saturation.**

- b) The temperature at which ice melts.
- c) The freezing level (danger of icing).
- d) The temperature at which the relative humidity and saturation vapour pressure are the same.

**50.3.1.2 (3540)**

**Which of the following is the definition of relative humidity ?**

**a) Ratio between the actual mixing ratio and the saturation mixing ratio X 100**

- b) Ratio between air temperature and dewpoint temperature X 100
- c) Ratio between water vapour pressure and atmospheric pressure X 100
- d) Ratio between water vapour (g) and air (kg) X 100

**50.3.1.2 (3541)**

**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 increases with increasing water vapour.**

- b) It is not influenced by changing water vapour.
- c) It decreases with increasing water vapour.
- d) It is only influenced by temperature.

**50.3.1.2 (3542)**

**Relative humidity**

**a) changes when water vapour is added, even though the temperature remains constant.**

- b) is not affected when air is ascending or descending.
- c) is not affected by temperature changes of the air.
- d) does not change when water vapour is added provided the temperature of the air remains constant.

**50.3.1.2 (3543)**

**How, if at all, is the relative humidity of an unsaturated airmass influenced by temperature changes?**

**a) It decreases with increasing temperature.**

- b) It is not influenced by temperature changes.
- c) It increases with increasing temperature.
- d) It is only influenced by the amount of water vapour.

**50.3.1.2 (3544)**

**How does relative humidity and the dewpoint in an unsaturated air mass change with varying temperature?**

**a) When temperature increases, the relative humidity decreases, and the dewpoint remains constant.**

- b) When temperature increases, the relative humidity increases, and the dewpoint decreases.
- c) When temperature decreases, the relative humidity decreases, and the dewpoint increases.
- d) When temperature decreases, the relative humidity and the dewpoint remain constant.

**50.3.1.2 (3545)**

**When a given mass of air descends, what effect will it have on relative humidity?**

**a) It decreases.**

- b) It increases.
- c) It remains constant.
- d) It increases up to 100%, then remains stable.

**50.3.1.2 (3546)**

**During the late afternoon an air temperature of +12°C and a dew point of +5°C were measured. What temperature change must occur during the night in order to induce saturation?**

**a) It must decrease to +5°C.**

- b) It must decrease by 5°C.
- c) It must decrease to +6°C.
- d) It must decrease to +7°C.

**50.3.1.2 (3547)**

**Which of the following statements is true of the dew point of an air mass?**

**a) It can only be equal to, or lower, than the temperature of the air mass**

- b) It can be higher than the temperature of the air mass
- c) It can be used together with the air pressure to estimate the air mass's relative humidity
- d) It can be used to estimate the air mass's relative humidity even if the air temperature is unknown

**50.3.1.2 (3548)**

**Relative humidity**

**a) increases if the air is cooled whilst maintaining the vapour pressure constant**

- b) is higher in warm air than in cool air
- c) is higher in cool air than in warm air
- d) decreases if the air is cooled whilst maintaining the vapour pressure constant

**50.3.1.2 (3549)**

**The maximum amount of water vapour that the air can contain depends on the**

**a) air temperature**

- b) relative humidity
- c) stability of the air
- d) dewpoint

**50.3.1.2 (3550)**

**Dew point is defined as**

**a) the temperature to which moist air must be cooled to become saturated at a given pressure**

- b) the lowest temperature at which evaporation will occur for a given pressure
- c) the lowest temperature to which air must be cooled in order to reduce the relative humidity
- d) the temperature below which the change of state in a given volume of air will result in the absorption of latent heat

**50.3.1.2 (3551)**

**The difference between temperature and dewpoint is greater in**

**a) dry air**

- b) moist air
- c) air with high temperature
- d) air with low temperature

**50.3.1.2 (3552)**

**The dewpoint temperature**

**a) can be equal to the air temperature**

- b) is always lower than the air temperature
- c) is always higher than the air temperature
- d) can not be equal to the air temperature

**50.3.1.2 (3553)**

**Relative humidity depends on**

**a) moisture content and temperature of the air**

- b) moisture content and pressure of the air
- c) moisture content of the air only
- d) temperature of the air only

**50.3.1.2 (3554)**

**The dewpoint temperature**

**a) can be reached by cooling the air whilst keeping pressure constant**

- b) can be reached by lowering the pressure whilst keeping temperature constant
- c) can not be equal to the air temperature
- d) can not be lower than the air temperature

**50.3.1.2 (3555)**

**Relative humidity at a given temperature is the relation between**

**a) actual water vapour content and saturated water vapour content**

- b) water vapour weight and dry air weight
- c) water vapour weight and humid air volume
- d) dew point and air temperature

**50.3.2.1 (3556)**

**Which of the following changes of state is known as sublimation?**

**a) Solid direct to vapour**

- b) Solid direct to liquid
- c) Liquid direct to solid
- d) Liquid direct to vapour

**50.3.2.1 (3557)**

**Clouds, fog or dew will always be formed when:**

**a) water vapour condenses.**

- b) water vapour is present.
- c) relative humidity reaches 98%.
- d) temperature and dew point are nearly equal.

**50.3.2.1 (3558)**

**In which of the following changes of state is latent heat released ?**

**a) Gas to liquid**

- b) Solid to liquid
- c) Solid to gas
- d) Liquid to gas

**50.3.2.1 (3559)**

**How are high level condensation trails formed that are to be found occasionally behind jet aircraft ?**

**a) Through water vapour released during fuel combustion**

- b) Through a decrease in pressure, and the associated adiabatic drop in temperature at the wing tips while flying through relatively warm but humid air
- c) Only through unburnt fuel in the exhaust gases
- d) In conditions of low humidity, through the particles of soot contained in the exhaust gases

**50.3.2.1 (3560)**

**Supercooled droplets can occur in**

- a) clouds, fog and precipitation**
- b) clouds but not in precipitation
- c) precipitation but not in clouds
- d) clouds but not in fog

**50.3.2.1 (3561)**

**Supercooled droplets are always**

- a) at a temperature below freezing**
- b) small and at a temperature below freezing
- c) large and at a temperature below freezing
- d) at a temperature below -60°C

**50.3.2.1 (3562)**

**Supercooled droplets can be encountered**

- a) at any time of the year**
- b) in winter only in high clouds
- c) only in winter above 10000 FT
- d) only in winter at high altitude

**50.3.2.1 (3563)**

**A super-cooled droplet is**

- a) a droplet still in liquid state at a temperature below freezing**
- b) a water droplet that is mainly frozen
- c) a small particle of water at a temperature below -50°C
- d) a water droplet that has been frozen during its descent

**50.3.2.1 (3564)**

**The process by which water vapour is transformed directly into ice is known as**

- a) sublimation**
- b) supercooling
- c) supersaturation
- d) radiation cooling

**50.3.2.1 (3565)**

**When water evaporates into unsaturated air**

- a) heat is absorbed**
- b) heat is released
- c) relative humidity is not changed
- d) relative humidity is decreased

**50.3.2.1 (3566)**

**A super-cooled droplet is one that**

- a) remains liquid at a below freezing temperature**
- b) has frozen to become an ice pellet
- c) has a shell of ice with water inside it
- d) is at an above freezing temperature in below freezing air

**50.3.3.1 (3567)**

**What is the dry adiabatic lapse rate per 1000 FT ?**

- a) 3.0°C.**
- b) 2.0°C
- c) 1.5°C
- d) 3.5°C

**50.3.3.1 (3568)**

**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) Lower than the starting temperature.
- d) It depends upon the QFE.

**50.3.3.1 (3569)**

**A parcel of moist but not saturated air rises due to adiabatic effects. Which of the following changes ?**

- a) Relative humidity**
- b) Absolute humidity
- c) Mixing ratio
- d) Specific humidity

**50.3.3.1 (3570)**

**If a saturated air mass descends down a slope its temperature increases at**

- a) a lower rate than in dry air, as evaporation absorbs heat.**
- b) the same rate as if the air mass were dry.
- c) a lower rate than in dry air, as condensation gives out heat.
- d) a higher rate than in dry air, as it gives up latent evaporation heat.

**50.3.3.1 (3571)**

**During an adiabatic process heat is**

- a) neither added nor lost**
- b) added
- c) lost
- d) added but the result is an overall loss

**50.3.3.1 (3572)**

**The decrease in temperature, per 100 metres, in an unsaturated rising parcel of air is**

- a) 1°C**
- b) 2°C
- c) 0.65°C
- d) 0.5°C

**50.3.3.1 (3573)**

**The decrease in temperature, per 100 metres, in a saturated rising parcel of air at lower level of the atmosphere is approximately**

- a) 0.6°C**
- b) 1°C



- c) 1.5°C
- d) 0.35°C

**50.3.3.1 (3574)**

**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

**50.3.3.1 (3575)**

**A layer is absolutely unstable if the temperature decrease with height is**

- a) more than 1°C per 100m**
- b) between 1°C per 100m and 0.65°C per 100m
- c) 0.65°C per 100m
- d) less than 0.65°C per 100m

**50.3.3.1 (3576)**

**A layer in which the temperature remains constant with height is**

- a) absolutely stable**
- b) unstable
- c) neutral
- d) conditionally unstable

**50.3.3.1 (3577)**

**A layer in which the temperature increases with height is**

- a) absolutely stable**
- b) absolutely unstable
- c) conditionally unstable
- d) neutral

**50.3.3.1 (3578)**

**A layer in which the temperature decreases with 1°C per 100m is**

- a) neutral for dry air**
- b) absolutely stable
- c) absolutely unstable
- d) conditionally unstable

**50.3.3.1 (3579)**

**If in a 100 m thick layer the temperature at the bottom of the layer is 10°C and at the top of the layer is 8°C then this layer is**

- a) absolutely unstable**
- b) absolutely stable
- c) conditionally unstable
- d) neutral

**50.3.3.1 (3580)**

**An inversion is**

- a) an absolutely stable layer**

- b) a conditionally unstable layer
- c) an unstable layer
- d) a layer that can be either stable or unstable

**50.3.3.1 (3581)**

**In a layer of air the decrease in temperature per 100 metres increase in height is more than 1°C. This layer can be described as being**

- a) absolutely unstable**
- b) absolutely stable
- c) conditionally unstable
- d) conditionally stable

**50.3.3.1 (3582)**

**Which statement is true for a conditionally unstable layer?**

- a) The environmental lapse rate is less than 1°C/100m**
- b) The environmental lapse rate is less than 0.65°C/100m
- c) The layer is unstable for unsaturated air
- d) The wet adiabatic lapse rate is 0.65°C/100m

**50.3.3.1 (3583)**

**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) warm and moist air is advected in the lower part
- d) cold and dry air is advected in the upper part

**50.3.3.1 (3584)**

**Which of the following statements concerning the lifting of a parcel of air is correct ?**

- a) Unsaturated parcels cool more rapidly than saturated parcels**
- b) Unsaturated parcels cool less rapidly than saturated parcels
- c) Unsaturated parcels cool at a rate of 0.65°C per 100m
- d) Saturated parcels always cool at a rate of 0.65°C per 100m

**50.3.3.1 (3585)**

**The height of the lifting condensation level is determined by**

- a) temperature and dewpoint at the surface**
- b) temperature at surface and air pressure
- c) wind and dewpoint at the surface
- d) wet adiabatic lapse rate and dewpoint at the surface

**50.3.3.1 (3586)**

**A moist but unsaturated parcel of air becomes saturated by**

- a) lifting the parcel to a higher level**
- b) lowering the parcel to a lower level
- c) moving the parcel to an area with lower pressure and equal temperature
- d) moving the parcel to an area with higher pressure and equal temperature

**50.3.3.1 (3587)**

**A sample of moist but unsaturated air may become saturated by**

**a) expanding it adiabatically**

- b) raising the temperature
- c) lowering the pressure, keeping temperature constant
- d) compressing it adiabatically

**50.3.3.1 (3588)**

**If the surface temperature is 15°C , then the temperature at 10000 FT in a current of ascending unsaturated air is:**

**a) -15°C**

- b) 0°C
- c) 5°C
- d) -5°C

**50.4.1.1 (3589)**

**Which of the following is a cause of stratus forming over flat land?**

**a) Radiation during the night from the earth surface in moderate wind.**

- b) Unstable air.
- c) Convection during the day.
- d) The release of latent heat.

**50.4.1.1 (3590)**

**Which of the following processes within a layer of air may lead to the building of CU and CB clouds?**

**a) Convection.**

- b) Radiation.
- c) Subsidence.
- d) Frontal lifting within stable layers.

**50.4.1.1 (3591)**

**What process in an air mass leads to the creation of wide spread NS, AS and ST cloud coverage?**

**a) Lifting**

- b) Sinking
- c) Convection process
- d) Radiation

**50.4.1.1 (3592)**

**Rising air cools because**

**a) it expands**

- b) surrounding air is cooler at higher levels
- c) it becomes more moist
- d) it contracts

**50.4.1.1 (3593)**

**Convective clouds are formed**

**a) in unstable atmosphere**

- b) in stable atmosphere
- c) in summer during the day only
- d) in mid-latitudes only

**50.4.1.1 (3594)**

**In an unstable layer there are cumuliform clouds. The vertical extent of these clouds depends on the**

**a) thickness of the unstable layer**

- b) wind direction
- c) air pressure at the surface
- d) pressure at different levels

**50.4.1.2 (3595)**

**Which of the following clouds may extend into more than one layer?**

**a) Nimbostratus.**

- b) Stratus.
- c) Altocumulus.
- d) Cirrus.

**50.4.1.2 (3596)**

**Which of the following types of clouds are evidence of unstable air conditions?**

**a) CU, CB.**

- b) ST, CS.
- c) SC, NS.
- d) CI, SC.

**50.4.1.2 (3597)**

**Which of the following clouds are classified as medium level clouds in temperate regions ?**

**a) AS, AC.**

- b) SC, NS
- c) CI, CC.
- d) CS, ST.

**50.4.1.2 (3598)**

**(For this question use annex 050-1914A) Which one of the displayed cloud forms is representative of altocumulus castellanus?**

**a) 3.**

- b) 1.
- c) 2.
- d) 4.

**50.4.1.2 (3599)**

**What is the main composition of clouds classified as ""high level clouds""?**

**a) Ice crystals.**

- b) Supercooled water droplets.
- c) Water droplets.
- d) Water vapour.

**50.4.1.2 (3600)**

**A plain in Western Europe with an average elevation of 500 m (1600 FT) above sea level is covered with a uniform AC layer of cloud during the summer months. At what height above the ground is the base of this cloud to be expected?**

**a) 7000 - 15000 FT above the terrain.**

- b) 100 - 1500 FT above the terrain.

- c) 1500 - 7000 FT above the terrain.
- d) 15000 - 25000 FT above the terrain.

**50.4.1.2 (3601)**

**Which of the following cloud is classified as low level cloud ?**

- a) ST**
- b) CS
- c) AS
- d) CC

**50.4.1.2 (3602)**

**Which types of clouds are typical evidence of stable air conditions?**

- a) ST, AS**
- b) CU, CB
- c) NS, CU
- d) CB, CC

**50.4.1.2 (3603)**

**(For this question use annex 050-4273A) Which one of the displayed cloud forms is representative of altocumulus lenticularis?**

- a) 2**
- b) 3
- c) 4
- d) 1

**50.4.1.2 (3604)**

**(For this question use annex 050-4274A) Which one of the displayed cloud forms is representative of a cumulonimbus capillatus?**

- a) 4**
- b) 3
- c) 2
- d) 1

**50.4.1.2 (3605)**

**Which of the following types of cloud can extend over the low, medium and high cloud levels ?**

- a) CB**
- b) AC
- c) ST
- d) CI

**50.4.1.2 (3606)**

**A plain in Western Europe with an average height of 500 m (1600 FT) above sea level is covered with a uniform SC layer of cloud during the summer months. At what height above the ground is the base of this cloud to be expected?**

- a) 1500 - 7000 FT above ground**
- b) 100 - 1500 FT above ground
- c) 7000 - 15000 FT above ground
- d) 15000 - 25000 FT above ground

**50.4.1.2 (3607)**

**A plain in Western Europe with an average height of 500 m (1600 FT) above sea level is covered with a uniform CC layer of cloud during the summer months. At what height above the ground is the base of this cloud to be expected?**

- a) 15000 - 35000 FT above the terrain**
- b) 7000 - 15000 FT above the terrain
- c) 1500 - 7000 FT above the terrain
- d) 100 - 1500 FT above the terrain

**50.4.1.2 (3608)**

**Which of the following cloud types is found at high levels?**

- a) CI**
- b) SC
- c) AS
- d) CU

**50.4.1.2 (3609)**

**Which of the following cloud types is a medium level cloud ?**

- a) AS**
- b) CS
- c) ST
- d) SC

**50.4.1.2 (3610)**

**Fallstreaks or virga are**

- a) water or ice particles falling out of a cloud that evaporate before reaching the ground**
- b) strong downdraughts in the polar jet stream, associated with jet streaks
- c) gusts associated with a well developed Bora
- d) strong katabatic winds in mountainous areas and accompanied by heavy precipitation

**50.4.1.2 (3611)**

**Altostratus clouds are classified as**

- a) medium level clouds**
- b) low level clouds
- c) high level clouds
- d) convective clouds

**50.4.1.2 (3612)**

**A cumulonimbus cloud at moderate latitudes in summer contains**

- a) a combination of ice crystals, water droplets and supercooled water droplets**
- b) only water droplets
- c) only ice crystals
- d) a combination of ice crystals and water droplets

**50.4.1.2 (3613)**

**Strongly developed cumulus clouds are an indication of**

- a) instability in the atmosphere**
- b) the presence of a low level inversion
- c) the presence of warm air aloft
- d) poor surface visibility

**50.4.1.2 (3614)**

**Clouds, classified as being low level are considered to have bases from**  
**a) the surface to 6500 FT**

- b) 1000 to 2000 FT
- c) 500 to 1000 FT
- d) 100 to 200 FT

**50.4.1.2 (3615)**

**Which of the following are medium level clouds ?**

**a) Altostratus and altocumulus**

- b) Cirrocumulus and cirrostratus
- c) Cumulonimbus
- d) All convective clouds

**50.4.1.2 (3616)**

**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) Stratus**

- b) Altostratus
- c) Nimbostratus
- d) Cirrostratus

**50.4.1.2 (3617)**

**The presence of altocumulus castellanus indicates**

**a) instability in the middle troposphere**

- b) strong convection at low height
- c) stability in the higher troposphere
- d) subsidence in a large part of the troposphere

**50.4.1.2 (3618)**

**The presence of altocumulus lenticularis is an indication of the**

**a) presence of mountain waves**

- b) risk of orographic thunderstorms
- c) development of thermal lows
- d) presence of valley winds

**50.4.1.4 (3619)**

**What are the characteristics of cumuliform clouds?**

**a) Large water droplets, instability, turbulence, showers and mainly clear ice.**

- b) Small water droplets, stability, no turbulence and extensive areas of rain.
- c) Large water droplets, stability, no turbulence, showers and mainly rime ice.
- d) Small water droplets, instability, turbulence, extensive areas of rain and rime ice.

**50.4.1.4 (3620)**

**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) In clear air above the freezing level
- d) Within cloud of any type

**50.4.1.4 (3621)**

**What flying conditions may be encountered when flying in cirrus clouds?**

**a) Average horizontal visibility more than 1000 m, nil icing.**

- b) Average horizontal visibility less than 500 m, nil icing.
- c) Average horizontal visibility less than 500 m, light to moderate icing.
- d) Average horizontal visibility more than 1000 m, light to moderate rime ice.

**50.4.1.4 (3622)**

**Cumulus clouds are an indication for**

**a) up and downdrafts**

- b) stability
- c) the approach of a cold front
- d) the approach of a warm front

**50.4.2.1 (3623)**

**At what time of day, or night, is radiation fog most likely to occur?**

**a) Shortly after sunrise.**

- b) At sunset.
- c) Late evening.
- d) Shortly after midnight.

**50.4.2.1 (3624)**

**What is the average vertical extent of radiation fog?**

**a) 500 FT.**

- b) 2 000 FT.
- c) 5 000 FT.
- d) 10 000 FT.

**50.4.2.1 (3625)**

**What wind conditions, occurring just before dawn, favour the formation of fog at an airport where the temperature is 15°C and the dew point is 14°C?**

**a) Calm.**

- b) Northerly, 10 kt.
- c) Westerly, 10 kt variable.
- d) Easterly, 10 kt.

**50.4.2.1 (3626)**

**Which of the following weather conditions favour the formation of radiation fog?**

**a) Light wind, little or no cloud, moist air.**

- b) Light wind, extensive cloud, dry air.
- c) Light wind, extensive cloud, moist air.
- d) Strong wind, little or no cloud, moist air.

**50.4.2.1 (3627)**

**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) A marked decrease in wind velocity close to the ground

- c) Ground cooling caused by radiation during the night
- d) A build up of a high pressure area resulting in adiabatic warming associated with a sinking air mass

**50.4.2.1 (3628)**

**The most likely reason for radiation fog to dissipate or become low stratus is :**

- a) increasing surface wind speed.**
- b) an increasingly stable atmosphere.
- c) surface cooling.
- d) a low level temperature inversion.

**50.4.2.1 (3629)**

**What are the differences between radiation fog and advection fog ?**

- a) Radiation fog forms due to surface cooling at night in a light wind. Advection fog forms when warm humid air flows over a cold surface.**
- b) Radiation fog forms only on the ground, advection fog only on the sea.
- c) Radiation fog forms due to night cooling and advection fog due to daytime cooling.
- d) Radiation fog is formed by surface cooling in a calm wind. Advection fog is formed by evaporation over the sea.

**50.4.2.1 (3630)**

**What type of fog is most likely to form over flat land during a clear night, with calm or light wind conditions ?**

- a) Radiation.**
- b) Advection.
- c) Steam.
- d) Orographic.

**50.4.2.1 (3631)**

**Under which of these conditions is radiation fog most likely to form?**

- a) Little or no cloud**
- b) Very dry air
- c) Strong surface winds
- d) Very low temperatures

**50.4.2.1 (3632)**

**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) Dry, warm air passing over warm ground
- c) The passage of fronts
- d) Cold air passing over warm ground

**50.4.2.1 (3633)**

**When the temperature and dew point are less than one degree apart the weather conditions are most likely to be**

- a) fog or low cloud**
- b) clear and cool
- c) high scattered clouds
- d) unlimited visibility

**50.4.2.1 (3634)**

**The morning following a clear, calm night when the temperature has dropped to the dewpoint, is likely to produce**

- a) radiation fog**
- b) a cold front
- c) advection fog
- d) good clear weather

**50.4.2.1 (3635)**

**Which of the following circumstances most favour the development of radiation fog?**

- a) Moist air over land during clear night with little wind**
- b) Warm moist air at the windward side of a mountain
- c) Maritime tropical air flowing over cold sea
- d) Advection of very cold air over much warmer sea

**50.4.2.1 (3636)**

**Freezing fog consists of**

- a) supercooled water droplets**
- b) frozen water droplets
- c) frozen minute snow flakes
- d) ice crystals

**50.4.2.1 (3637)**

**The range of wind speed in which radiation fog is most likely to form is :**

- a) below 5 kt**
- b) between 10 and 15 kt
- c) between 5 and 10 kt
- d) above 15 kt

**50.4.2.2 (3638)**

**Which of the following conditions is most likely to lead to the formation of advection fog ?**

- a) Moist warm air moving over a cold surface**
- b) Moist cold air moving over a warm surface
- c) Dry warm air moving over a cold surface
- d) Dry cold air moving over a warm surface

**50.4.2.2 (3639)**

**Which type of fog is likely to form when air having temperature of 15°C and dew point of 12°C blows at 10 knots over a sea surface having temperatures of 5°C ?**

- a) Advection fog**
- b) Radiation fog
- c) Steam fog
- d) Frontal fog

**50.4.2.2 (3640)**

**Advection fog can be formed when**

- a) warm moist air flows over a colder surface**
- b) cold moist air flows over a warmer surface

- c) warm moist air flows over a warmer surface
- d) cold moist air flows over warmer water

#### 50.4.2.2 (3641)

**Which of the following statements is true concerning advection fog?**

**a) It can be formed suddenly by day or night**

- b) It forms at night or the early morning
- c) It forms when unstable air is cooled adiabatically
- d) It forms slowly and disappears rapidly

#### 50.4.2.3 (3642)

**Which of the following conditions is most likely to lead to the formation of steam fog (arctic smoke)?**

**a) Cold air moving over warm water**

- b) Warm air moving over cold water
- c) The sea is warmed by strong radiation from the sun
- d) The coastal region of the sea cools at night

#### 50.4.2.3 (3643)

**Steaming fog (arctic sea smoke) occurs in air**

**a) with cold mass properties**

- b) with warm mass properties
- c) that is absolutely stable
- d) that is stable

#### 50.4.2.4 (3644)

**When does frontal fog, also known as mixing fog, occur?**

**a) When very humid warm air meets with very humid cold air.**

- b) When very humid warm air meets with dry cold air.
- c) When very humid cold air meets with dry warm air.
- d) When very dry cold air meets with very dry warm air.

#### 50.4.2.4 (3645)

**Frontal fog is most likely to occur**

**a) in advance of a warm front**

- b) in rear of a warm front
- c) in summer in the early morning
- d) in winter in the early morning

#### 50.4.2.5 (3646)

**What conditions are most likely to lead to the formation of hill fog?**

**a) Humid stable air mass, wind blowing towards the hills.**

- b) High relative humidity and an unstable air mass
- c) Clear skies, calm or light winds, with relatively low humidity
- d) Precipitation which is lifted by the action of moderate winds striking the range

#### 50.5.1.1 (3647)

**Which form of precipitation from clouds containing only water is most likely to fall in mid-latitudes?**

**a) Drizzle.**

- b) Moderate rain with large drops.
- c) Heavy rain with large drops.
- d) Hail.

#### 50.5.1.1 (3648)

**How does freezing rain develop?**

**a) Rain falls through a layer where temperatures are below 0°C**

- b) Rain falls on cold ground and then freezes
- c) Through melting of sleet grains
- d) Through melting of ice crystals

#### 50.5.2.1 (3649)

**With what type of clouds are showers most likely associated?**

**a) Cumulonimbus.**

- b) Stratocumulus.
- c) Nimbostratus.
- d) Stratus.

#### 50.5.2.1 (3650)

**Which one of the following types of cloud is most likely to produce heavy precipitation ?**

**a) NS.**

- b) CS.
- c) SC.
- d) ST.

#### 50.5.2.1 (3651)

**Which of the following are favourable conditions for the formation of freezing rain?**

**a) Warm air aloft from which rain is falling into air with a temperature below 0°C.**

- b) Water droplets falling from cold air aloft with a temperature below 0°C.
- c) Cold air aloft from which hail is falling into air that is warm.
- d) An isothermal layer aloft with a temperature just above 0°C through which rain is falling.

#### 50.5.2.1 (3652)

**What type of cloud can produce hail showers?**

**a) CB**

- b) NS
- c) CS
- d) AC

#### 50.5.2.1 (3653)

**The presence of ice pellets at the surface is evidence that**

**a) freezing rain occurs at a higher altitude**

- b) a cold front has passed
- c) there are thunderstorms in the area
- d) a warm front has passed

#### 50.5.2.1 (3654)

**With which of the following types of cloud is ""+RA"" precipitation most commonly associated?**

- a) **NS**
- b) AC
- c) SC
- d) ST

**50.5.2.1 (3655)**

**With what type of cloud is ""GR"" precipitation most commonly associated?**

- a) **CB**
- b) AS
- c) ST
- d) CC

**50.5.2.1 (3656)**

**With what type of cloud is ""DZ"" precipitation most commonly associated?**

- a) **ST**
- b) CB
- c) CC
- d) CU

**50.5.2.1 (3657)**

**Which of the following cloud types is least likely to produce precipitation ?**

- a) **CI**
- b) AS
- c) CB
- d) NS

**50.5.2.1 (3658)**

**With what type of cloud is heavy precipitation unlikely during the summer months ?**

- a) **SC, AS**
- b) CB, ST
- c) NS, CC
- d) AS, NS

**50.5.2.1 (3659)**

**With what type of cloud is ""+TSRA"" precipitation most commonly associated?**

- a) **CB**
- b) AS
- c) SC
- d) NS

**50.5.2.1 (3660)**

**Freezing precipitation occurs**

- a) **mainly in the form of freezing rain or freezing drizzle**
- b) only in the precipitation of a cold front
- c) only in the precipitation of a warm front
- d) mainly in the form of freezing hail or freezing snow

**50.5.2.1 (3661)**

**Freezing rain occurs when**

**a) rain falls into a layer of air with temperatures below 0°C**

- b) ice pellets melt
- c) water vapour first turns into water droplets
- d) snow falls into an above-freezing layer of air

**50.5.2.1 (3662)**

**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

**50.5.2.1 (3663)**

**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

**50.5.2.1 (3664)**

**Large hail stones**

- a) **are typically associated with severe thunderstorms**
- b) only occur in thunderstorms of mid-latitudes
- c) are entirely composed of clear ice
- d) only occur in frontal thunderstorms

**50.5.2.1 (3665)**

**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 is probable and may range between light and severe. Turbulence is rarely more than moderate.**
- b) Precipitation may be snow, sleet or rain. Icing and turbulence are frequently severe.
- 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.

**50.5.2.1 (3666)**

**From what type of cloud does drizzle fall ?**

- a) **Stratus.**
- b) Altostratus
- c) Cumulus
- d) Cirrostratus.

**50.5.2.1 (3667)**

**What type of clouds are associated with rain showers ?**

- a) **Towering cumulus and cumulonimbus.**
- b) Towering cumulus and altostratus.
- c) Altostratus and stratus.
- d) Nimbostratus.

**50.5.2.1 (3668)**

**What type of clouds are associated with snow showers ?**

**a) Cumulus and cumulonimbus**

- b) Cumulus and altostratus
- c) Altostratus and stratus
- d) Nimbostratus

**50.6.1.1 (3669)**

**An airmass is unstable when**

**a) an ascending parcel of air continues to rise to a considerable height.**

- b) temperature and humidity are not constant
- c) pressure shows a marked variation over a given horizontal area
- d) temperature increases with height

**50.6.1.1 (3670)**

**An airmass is stable when**

**a) the vertical motion of a rising parcel of air tends to become weaker and disappears.**

- b) temperature in a given area drops off very rapidly with height
- c) pressure is constant
- d) the lapse rate is 1°C per 100 m

**50.6.1.2 (3671)**

**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 air of the Azores is warmer and more humid than the North-Russian air.**

- b) The North-Russian air is colder and more humid than the air of the Azores.
- c) The air of the Azores is warmer and dryer than the North-Russian air.
- d) The North-Russian air is warmer and dryer than the air of the Azores.

**50.6.1.2 (3672)**

**Where is the source of tropical continental air that affects Europe in summer?**

**a) The southern Balkan region and the Near East.**

- b) Southern Italy.
- c) Southern France.
- d) The Azores region.

**50.6.1.2 (3673)**

**Where does polar continental air originate?**

**a) Siberian landmass.**

- b) Areas of arctic water.
- c) The region of the Baltic sea.
- d) The region of Greenland.

**50.6.1.2 (3674)**

**In which air mass are extremely low temperatures encountered?**

**a) Polar continental air.**

- b) Polar maritime air.
- c) Tropical continental air.
- d) Arctic maritime air.

**50.6.1.2 (3675)**

**(For this question use annex 050-2065A)What is the classification of the airmass affecting position ""Q"" at 0600 UTC?**

**a) Tropical maritime.**

- b) Polar maritime.
- c) Polar continental.
- d) Tropical continental.

**50.6.1.2 (3676)**

**In which of the following regions does polar maritime air originate ?**

**a) East of Greenland**

- b) Region of British Isles
- c) Baltic Sea
- d) Black Sea

**50.6.2.1 (3677)**

**What type of low pressure area 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.

**50.6.2.1 (3678)**

**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) Summer.
- c) Spring.
- d) Autumn.

**50.6.2.1 (3679)**

**The polar front is the boundary between:**

**a) polar air and tropical air.**

- b) arctic air and polar air.
- c) arctic air and tropical air.
- d) maritime polar air and continental polar air.

**50.6.2.1 (3680)**

**(For this question use annex 050-4297A)Examining the pictures, on which one of the tracks (dashed lines) is this cross-section to be expected?**

**a) Track B-D**

- b) Track B-C
- c) Track A-D
- d) Track A-E

**50.6.2.2 (3681)**

**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) Warm fronts, warm occlusions.**

- b) Cold occlusions.



- c) High level cold fronts.
- d) Cold fronts.

**50.6.2.2 (3682)**

**Which of the following conditions are you most likely to encounter when approaching an active warm front at medium to low level ?**

- a) Low cloud base and poor visibility.**
- b) Severe thunderstorms at low altitude.
- c) Extreme turbulence and severe lightning striking the ground.
- d) High cloud base, good surface visibility, and isolated thunderstorms.

**50.6.2.2 (3683)**

**During a cross-country flight at FL 50, you observe the following sequence of clouds: Nimbostratus, Altostratus, Cirrostratus, Cirrus. Which of the following are you most likely to encounter ?**

- a) Decreasing temperatures.**
- b) Strong, gusty winds.
- c) A strong downdraught.
- d) Increasing temperatures.

**50.6.2.2 (3684)**

**What cloud formation is most likely to occur at low levels when a warm air mass overrides a cold air mass?**

- a) Nimbostratus.**
- b) Cumulus.
- c) Altostratus.
- d) Cumulonimbus.

**50.6.2.2 (3685)**

**The approximate inclined plane of a warm front is:**

- a) 1/150**
- b) 1/50
- c) 1/300
- d) 1/500

**50.6.2.2 (3686)**

**In which of the following situations can freezing rain be encountered ?**

- a) Ahead of a warm front in the winter**
- b) Ahead of a cold front in the winter
- c) Behind a warm front in the summer
- d) Ahead of a cold front in the summer

**50.6.2.2 (3687)**

**How do air masses move at a warm front ?**

- a) Warm air overrides a cold air mass**
- b) Cold air overrides a warm air mass
- c) Cold air undercuts a warm air mass
- d) Warm air undercuts a cold air mass

**50.6.2.2 (3688)**

**What types of cloud will you meet flying towards a warm front ?**

- a) At some 800 km CS, later AS, and at some 300 km NS until the front**
- b) Extensive areas of fog. At some 100 km from the front NS begin
- c) At some 500 km AS, later CS and at some 80 km before the front CB
- d) At some 500 km from the front, groups of CB, later at some 250 km thickening AS

**50.6.2.2 (3689)**

**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) 5000 feet
- d) 3000 feet

**50.6.2.2 (3690)**

**Read this description: ""After such a fine day, the ring around the moon was a bad sign yesterday evening for the weather today. And, sure enough, it is pouring down outside. The clouds are making an oppressively 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 warm front**
- b) A blizzard
- c) Weather at the back of a cold front
- d) A cold front

**50.6.2.2 (3691)**

**Thunderstorms in exceptional circumstances can occur in a warm front if**

- a) the warm air is convectively unstable.**
- b) the cold air is convectively unstable.
- c) the cold air is convectively stable.
- d) the warm air is convectively stable.

**50.6.2.2 (3692)**

**On an aerodrome, when a warm front is approaching**

- a) QFE and QNH decrease.**
- b) QFE and QNH increase.
- c) QFE increases and QNH decreases.
- d) QFE decreases and QNH increases.

**50.6.2.2 (3693)**

**The main factor which contributes to the formation of very low clouds ahead of a warm front is the**

- a) saturation of the cold air by rain falling into it and evaporating**
- b) saturation of the warm air by rain falling into it and evaporating
- c) reduction of outgoing radiation due to clouds
- d) warm air moving over a cold surface

**50.6.2.3 (3694)**

**After passing at right angles through a very active cold front in the direction of the**

**cold air, what will you encounter, in the northern hemisphere immediately after a marked change in temperature?**

**a) A veering in the wind direction.**

- b) A backing in the wind direction.
- c) An increase in tailwind.
- d) A decrease in headwind.

**50.6.2.3 (3695)**

**(For this question use annex 050-2388A) What change in pressure, will occur at point A, during the next hour?**

**a) A rise in pressure**

- b) A drop in pressure
- c) Irregular fluctuations
- d) Approximately constant pressure

**50.6.2.3 (3696)**

**What type of precipitation would you expect at an active unstable cold front?**

**a) Showers associated with thunderstorms**

- b) Freezing rain
- c) Light to moderate continuous rain
- d) Drizzle

**50.6.2.3 (3697)**

**What is the relative movement of the two airmasses along a cold front ?**

**a) Cold air pushes under a warm air mass**

- b) Warm air pushes over a cold air mass
- c) Cold air slides over a warm air mass
- d) Warm air pushes under a cold air mass

**50.6.2.3 (3698)**

**Which of the following is typical for the passage of a cold front in the summer ?**

**a) Mainly towering clouds**

- b) Mainly layered clouds
- c) Rapid drop in pressure once the front has passed
- d) Rapid increase in temperature once the front has passed

**50.6.2.4 (3699)**

**Over Central Europe what type of cloud cover is typical of the warm sector of a depression during winter?**

**a) ST with drizzle.**

- b) CI, CS.
- c) Fair weather CU.
- d) CU, CB.

**50.6.2.4 (3700)**

**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 poor (less than 1 km).
- c) Good (greater than 10 km).
- d) Very good (greater than 50 km).

**50.6.2.4 (3701)**

**What cloud cover is typical for a wide warm sector of a polar front depression over Central Europe in the summer ?**

**a) Fair weather CU**

- b) BKN CU and CB
- c) Sky clear
- d) ST with drizzle

**50.6.2.4 (3702)**

**What will be the effect on the reading of an altimeter of an aircraft parked on the ground during the period following the passage of an active cold front ?**

**a) It will have decreased.**

- b) It will remain unchanged.
- c) It will have increased.
- d) It will show a small increase or decrease.

**50.6.2.4 (3703)**

**What will be the effect on the reading of an altimeter of an aircraft parked on the ground shortly before an active cold front passes?**

**a) It will be increasing.**

- b) It will remain unchanged.
- c) It will be decreasing.
- d) It will fluctuate up and down by about +/- 50 feet.

**50.6.2.4 (3704)**

**What will be the effect on the reading of an altimeter of an aircraft parked on the ground as an active cold front is passing?**

**a) It will first increase then decrease.**

- b) It will remain unchanged.
- c) It will first decrease then increase.
- d) It will fluctuate up and down by about +/- 50 feet.

**50.6.2.5 (3705)**

**What weather conditions are prevalent during the summer, over the North Sea, approximately 300 km behind a quickly moving cold front?**

**a) Cloud cover mostly scattered, isolated showers.**

- b) Showers and thunderstorms.
- c) Rain covering a large area, 8 octas NS.
- d) 8 octas CS, AS without precipitation.

**50.6.2.6 (3706)**

**Where is the coldest air to be found, in an occlusion with cold front characteristics?**

**a) Behind the front.**

- b) Ahead of the front.
- c) At the surface position of the front.
- d) At the junction of the occlusion.

**50.6.2.6 (3707)**

**Which of the following describes a warm occlusion?**

**a) The coldest air mass is ahead of the original warm front**

- b) The air mass behind the front is more unstable than the air mass ahead of the front

- c) The air mass ahead of the front is drier than the air mass behind the front
- d) The warmer air mass is ahead of the original warm front

**50.6.2.6 (3708)**

**When do cold occlusions occur most frequently in Europe?**

**a) Summer**

- b) Winter
- c) Autumn and winter
- d) Winter and spring

**50.6.2.6 (3709)**

**(For this question use annex 050-2060A) Which one of the tracks (dashed lines) is represented by the cross-section shown on the left ?**

**a) Track D-A**

- b) Track C-A
- c) Track B-A
- d) Track B-C

**50.6.2.6 (3710)**

**(For this question use annex 050-2061A) Which cross-section of air mass and cloud presentation is applicable to the straight line A-B?**

**a) 3**

- b) 1
- c) 2
- d) 4

**50.6.2.6 (3711)**

**How are the air masses distributed in a cold occlusion ?**

**a) The coldest air mass behind and the less cold air in front of the occlusion, the warm 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 behind and the warm air in front of the occlusion, the less cold air mass is above ground level.

**50.6.2.6 (3712)**

**In a polar front depression, an occlusion is called a warm occlusion when the cold air**

**a) behind is less cold than the cold air in front, with the warm air at a high altitude.**

- b) in front of the surface position of front is only at a high altitude.
- c) behind is colder than the cold air in front.
- d) behind is colder than the cold air in front, with the warm air being at a high altitude.

**50.6.2.6 (3713)**

**In a warm front occlusion**

**a) the warm air is lifted**

- b) the warm front overtakes the cold front
- c) the warm front becomes a front aloft
- d) the cold air is lifted

**50.6.2.7 (3714)**

**What characterizes a stationary front ?**

**a) The surface wind usually has its direction parallel to the front**

- b) The surface wind usually has its direction perpendicular to the front
- c) The warm air moves at approximately half the speed of the cold air
- 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

**50.6.2.8 (3715)**

**In which approximate direction does the centre of a frontal depression move?**

**a) In the direction of the warm sector isobars.**

- b) In the direction of the isobars ahead of the warm front.
- c) In the direction of the sharpest pressure increase.
- d) In the direction of the isobars behind the cold front.

**50.6.2.8 (3716)**

**What type of front / occlusion usually moves the fastest?**

**a) Cold front.**

- b) Warm front.
- c) Cold occlusion.
- d) Warm occlusion.

**50.6.2.8 (3717)**

**In which main direction does a polar front depression move?**

**a) Along the front towards the east**

- b) Along the front towards the west
- c) Across the front towards the north
- d) Across the front towards the south

**50.6.2.8 (3718)**

**(For this question use annex 050-2064A) Refer to the diagram. Assuming the usual direction of movement, where will this polar frontal wave have moved ?**

**a) Position 3**

- b) Position 1
- c) Position 2
- d) Position 4

**50.6.2.8 (3719)**

**Frontal depressions can be assumed to move in the direction of the 2000 feet wind**

**a) in the warm sector**

- b) in front of the warm front
- c) behind the cold front
- d) at the apex of the wave

**50.6.2.8 (3720)**

**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) Continuous rain or snow while the frontal wave passes for a period of some 24 hours.

- c) 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.  
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.

**50.6.2.8 (3721)**

**(For this question use annex 050-4298A) Refer to the diagram. Assuming the usual direction of movement, to which position will the polar frontal wave have moved ?**

**a) Position C**

- b) Position D  
c) Position A  
d) Position B

**50.6.2.8 (3722)**

**(For this question use annex 050-4389A) This chart shows the weather conditions on the ground at 0600 UTC on May 4. Which of the following reports reflects weather development at Geneva Airport?**

**a) TAF LSGG 230716 23016KT 8000 -RA BKN030 OVC070 BECMG 0810 5000 RA BKN020 OVC050 TEMPO 3000 +RA BKN010 OVC030 BECMG 1215 25014KT 8000 SCT030 BKN090 =**

- b) TAF LSGG 230716 05014KT 5000 OVC015 BECMG 0810 8000 BKN018 BECMG 1013 05015G30KT 9999 SCT025 =  
c) TAF LSGG 230716 26012KT 9999 SCT030 BKN080 TEMPO 1013 25020G35KT 3000 TSRA or +SHRA BKN030CB BECMG 1316 VRB02KT 3000 BCFG SCT100 =  
d) TAF LSGG 230716 VRB03KT 6000 BR SCT020 BECMG 0811 23005KT 9999 SCT025TCU PROB 40 TEMPO 1216 34012G30KT 3000 TSRA BKN020CB =

**50.6.2.8 (3723)**

**In Zurich during a summer day the following weather observations were taken: 160450Z 23015KT 3000 +RA SCT008 SCT020 OVC030 13/12 Q1010 NOSIG = 160650Z 25008KT 6000 SCT040 BKN090 18/14 Q1010 RERA NOSIG = 160850Z 25006KT 8000 SCT040 SCT100 19/15 Q1009 NOSIG = 161050Z 24008KT 9999 SCT040 SCT100 21/15 Q1008 NOSIG = 161250Z 23012KT CAVOK 23/16 Q1005 NOSIG = 161450Z 23016KT 9999 SCT040 BKN090 24/17 Q1003 BECMG 25020G40KT TS = 161650Z 24018G35KT 3000 +TSRA SCT006 BKN015CB 18/16 Q1002 NOSIG = 161850Z 28012KT 9999 SCT030 SCT100 13/11 Q1005 NOSIG = What do you conclude based on these observations?**

**a) A warm front passed the station early in the morning and a cold front during late afternoon**

- b) A cold front passed the station early in the morning and a warm front during late afternoon  
c) A trough line passed the station early in the morning and a warm front during late afternoon  
d) Storm clouds due to warm air came close to and grazed the station

**50.6.2.8 (3724)**

**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) continuously backing**

- b) continuously veering  
c) initially backing, then veering  
d) initially veering, then backing

**50.7.1.1 (3725)**

**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) Azores, SE USA, SW Europe**

- b) Greenland, Azores, NE Canada  
c) Iceland, SW USA, Azores  
d) Greenland, SW Europe, NE Canada

**50.7.1.1 (3726)**

**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) Iceland / Greenland**

- b) USA  
c) Siberia  
d) Azores

**50.7.1.1 (3727)**

**Considering the North Atlantic region between 30°N and 65°N and the adjacent land areas during mid-summer, the predominant pressure systems are**

**a) Azores high and weak low over NE Canada**

- b) Scandinavian high and Azores high  
c) weak low over NE Canada and Scandinavian high  
d) Azores low and Icelandic high

**50.7.1.1 (3728)**

**Considering the North Atlantic region between 30°N and 65°N together with 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

**50.7.2.1 (3729)**

**What is the correct term for the descending air flow in a large high pressure area?**

**a) Subsidence.**

- b) Convergence.  
c) Advection.  
d) Convection.

**50.7.2.1 (3730)**

**What surface weather is associated with a stationary high pressure region over land in the winter?**

**a) A tendency for fog and low ST.**

- b) Thunderstorms.  
c) NS with continuous rain.  
d) The possibility of snow showers.

**50.7.2.1 (3731)**

**In temperate latitudes what weather conditions may be expected over land during the summer in the centre of a stationary high pressure zone ?**

**a) Calm winds, haze.**

- b) TS, SH.
- c) CB, TS.
- d) NS.

**50.7.2.1 (3732)**

**What is the most likely cause of a lack of clouds at higher levels in a stationary high?**

**a) Sinking air**

- b) Rising air
- c) Instability
- d) Divergence at higher levels

**50.7.2.1 (3733)**

**Subsidence is :**

**a) vertically downwards motion of air**

- b) horizontal motion of air
- c) vertically upwards motion of air
- d) the same as convection

**50.7.2.1 (3734)**

**If the pressure surfaces bulge upwards in all levels then the pressure system is a**

**a) warm high**

- b) cold low
- c) cold high
- d) warm low

**50.7.2.1 (3735)**

**The stable layer at some height in the low troposphere of an older high pressure area in the mid-latitudes is called**

**a) subsidence inversion**

- b) friction inversion
- c) radiation inversion
- d) trade wind inversion

**50.7.2.1 (3736)**

**A blocking anticyclone on the northern hemisphere is**

**a) a warm anticyclone/quasi stationary/situated between 50°N and 70°N**

- b) quasi stationary/situated between 50°N and 70°N/a cold anticyclone
- c) situated between 50° and 70°N/a cold anticyclone/steering depressions
- d) a cold anticyclone/steering depressions/situated over Scandinavia

**50.7.2.1 (3737)**

**The most effective way to dissipate cloud is by**

**a) subsidence**

- b) convection
- c) a decrease in temperature
- d) a decrease in pressure

**50.7.2.1 (3738)**

**Areas of sinking air are generally cloudless because as air sinks it**

**a) is heated by compression**

- b) reaches warmer layers
- c) is heated by expansion
- d) loses water vapour

**50.7.3.1 (3739)**

**What is encountered during the summer, over land, in the centre of a cold air pool?**

**a) Showers and thunderstorms.**

- b) Strong westerly winds.
- c) Fine weather CU.
- d) Nothing (CAVOK).

**50.7.3.1 (3740)**

**How do you recognize a cold air pool?**

**a) As a low pressure area aloft (e.g. on the 500 hPa chart).**

- b) As a high pressure area aloft (e.g. on the 500 hPa chart).
- c) A cold air pool may only be recognized on the surface chart as a low pressure area.
- d) A cold air pool may only be recognized on the surface chart as a high pressure area.

**50.7.3.1 (3741)**

**What type of air movement is associated with the centre line of a trough?**

**a) Convergence with lifting.**

- b) Divergence with descending air.
- c) Divergence with lifting.
- d) Convergence with descending air.

**50.7.3.1 (3742)**

**With an intense trough of low pressure over Iceland during wintertime the weather likely to be experienced is :**

**a) strong wind shear, convection and snow showers**

- b) light wind, good visibility and a high cloud ceiling
- c) strong wind with subsidence at low levels
- d) strong wind associated with an almost clear sky

**50.7.3.1 (3743)**

**Extensive cloud and precipitation is often associated with a non frontal thermal depression because of :**

**a) surface convergence and upper level divergence causing widespread ascent of air in the depression**

- b) surface convergence and upper level divergence causing widespread descent of air in the depression
- c) surface divergence and upper level convergence causing widespread descent of air in the depression
- d) surface divergence and upper level convergence causing widespread ascent of air in the depression

**50.7.3.1 (3744)**

**A trough of low pressure on a surface synoptic chart is an area of**

**a) convergence and widespread ascent**

- b) divergence and subsidence
- c) divergence and widespread ascent
- d) convergence and subsidence

**50.7.3.1 (3745)**

**Which is true of a typical non frontal thermal depression?**

**a) It forms over land in summer**

- b) It forms over the ocean in summer
- c) It forms over the ocean in winter
- d) It forms over land in winter

**50.7.3.1 (3746)**

**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 move round the primary in an anticyclonic sense
- c) It rapidly closes on, and merges with the primary
- d) It tends to maintain its position relative to the primary

**50.7.4.1 (3747)**

**What type of clouds, visible even at a long distance, could indicate the presence of a tropical revolving storm?**

**a) Dense CI**

- b) Frequent SC
- c) Excessive accumulation of CU
- d) NS spread over a large area

**50.7.4.1 (3748)**

**Where is the most dangerous zone in a tropical revolving storm?**

**a) In the wall of clouds around the eye.**

- b) Anywhere in the eye.
- c) In the centre of the eye.
- d) About 600 km away from the eye.

**50.7.4.1 (3749)**

**Tropical revolving storms do not occur in the southeast Pacific and the south Atlantic because**

**a) of the low water temperature.**

- b) there is no coriolis force present.
- c) of the strong southeast wind.
- d) the southeast trade winds cross over into the northern hemisphere.

**50.7.4.1 (3750)**

**What is the main energy source of a tropical revolving storm?**

**a) Latent heat released from condensing water vapour.**

- b) Temperature difference between equatorial low pressure trough and subtropical high pressure belt.
- c) Cold air advancing from temperate latitudes.
- d) The equatorial jet stream.

**50.7.4.1 (3751)**

**What is the track most likely to be taken by a hurricane in the Caribbean area?**

**a) West in the earlier stages and later north east**

- b) East
- c) West deep into the U.S.
- d) West in the earlier stages and later south east

**50.7.4.1 (3752)**

**Which statement is true for hurricanes in the North Atlantic?**

**a) From the earth's surface up to the tropopause the core is warmer than its surroundings**

- b) They intensify rapidly after landfall
- c) The diameter is 50-500 m
- d) Their greatest frequency of occurrence is in winter

**50.7.4.1 (3753)**

**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 there is a maximal temperature difference between land mass and sea
- d) Because the gulf formation of the coastlines triggers a strong rotary circulation

**50.7.4.2 (3754)**

**At what time of the year are typhoons most likely to occur over the southern islands of Japan?**

**a) July to November.**

- b) September to January.
- c) January to May.
- d) May to July.

**50.7.4.2 (3755)**

**On which coast of North America, is the danger of tropical revolving storms the greatest?**

**a) SE coast**

- b) W coast
- c) N coast
- d) NE coast

**50.7.4.2 (3756)**

**What is the likely track for a hurricane in the Caribbean area?**

**a) West in the earlier stages and later turning north east.**

- b) East then south.
- c) West deep into the USA.
- d) West in the earlier stages and later turning south east.

**50.7.4.2 (3757)**

**During which seasons are hurricanes most likely to appear in the northern hemisphere?**

**a) Summer and autumn.**

- b) Winter.
- c) Winter and spring.
- d) All seasons.

**50.7.4.2 (3758)**

**During which months is the Hurricane season in the Caribbean?**

**a) July until November.**

- b) October until January.
- c) January until April.
- d) April until July.

**50.7.4.2 (3759)**

**The region of the globe where the greatest number of tropical revolving storms occur is**

**a) the north-west Pacific, affecting Japan, Formosa, Korea and the Chinese coastline.**

- b) the Caribbean sea, affecting the West Indies, Mexico and the south-east coastline of the USA.
- c) the south-western Indian ocean, affecting Madagascar, Mauritius and the island of Réunion.
- d) the northern Indian ocean, affecting India, Sri Lanka and Bangladesh.

**50.7.4.2 (3760)**

**(For this question use annex 050-10788A) The arrows labelled "r" represent the mean tracks of tropical revolving storms which occur mainly from**

**a) December to April and are called cyclones**

- b) December to April and are called tornadoes
- c) June to October and are called typhoons
- d) June to October and are called hurricanes

**50.7.4.2 (3761)**

**(For this question use annex 050-10791A) The arrows labelled "s" represent the mean tracks of tropical revolving storms which occur mainly from**

**a) May to November and are called cyclones**

- b) December to April and are called cyclones
- c) May to November and are called hurricanes
- d) December to April and are called typhoons

**50.7.4.2 (3762)**

**(For this question use annex 050-10792A) The arrows labelled "t" represents the mean track of tropical revolving storms which occur mainly from**

**a) June to October and are called cyclones**

- b) December to April and are called hurricanes
- c) June to October and are called tornadoes
- d) June to October and are called hurricanes

**50.7.4.2 (3763)**

**(For this question use annex 050-10793A) The arrows labelled "u" represent the tracks of tropical revolving storms which occur mainly from**

**a) July to October and are called typhoons**

- b) January to March and are called willy-willies

c) May to July and are called cyclones

d) December to April and are called tornadoes

**50.7.4.2 (3764)**

**When, if at all, is a tropical revolving storm most likely to affect Darwin, on the central north coast of Australia?**

**a) December to April**

- b) May to July
- c) August to October
- d) Not experienced at Darwin

**50.8.1.1 (3765)**

**At about what geographical latitude as average is assumed for the zone of prevailing westerlies?**

**a) 50°N.**

- b) 10°N.
- c) 30°N.
- d) 80°N.

**50.8.1.1 (3766)**

**The reason for the fact, that the Icelandic low is normally deeper in winter than in summer is that**

**a) the temperature contrasts between arctic and equatorial areas are much greater in winter.**

- b) the low pressure activity of the sea east of Canada is higher in winter.
- c) the strong winds of the north Atlantic in winter are favourable for the development of lows.
- d) converging air currents are of greater intensity in winter.

**50.8.1.1 (3767)**

**(For this question use annex 050-10795A) Considering that portion of the route indicated from 30°E to 50°E, the upper winds in January above FL 300 are most likely to be**

**a) a subtropical westerly jet stream, maximum speed exceeding 90 kt**

- b) a westerly polar front jet stream, maximum speed exceeding 90 kt
- c) variable in direction and less than 30 kt
- d) light easterlies

**50.8.1.2 (3768)**

**What is the type, intensity and seasonal variation of precipitation in the equatorial region ?**

**a) Rainshowers, hail showers and thunderstorms occur the whole year, but frequency is highest during two periods: April-May and October-November.**

- b) Warm fronts are common with continuous rain. The frequency is the same throughout the year
- c) Precipitation is generally in the form of showers but continuous rain occurs also. The greatest intensity is in July.
- d) Showers of rain or hail occur throughout the year, the frequency is highest in January.

**50.8.2.2 (3769)**

**When are the rainy seasons in equatorial Africa?**

**a) March to May and October to November.**

- b) December to February and July to October.
- c) March to May and August to October.
- d) April to July and December to February.

**50.8.2.2 (3770)**

**During July flights from Bangkok (13°N - 100°E) to Karachi (25°N - 67°E) experience an average tailwind component of 22 kt. In January the same flights, also operating at FL 370, have an average headwind of 50 kt. What is the reason for this difference?**

**a) The wind components correspond to the seasonal change of the regional wind system.**

- b) The flights during the summer encountered, by chance, very unusual, favourable conditions.
- c) The flights in January encountered, by chance, very unusual, adverse conditions.
- d) The flights happen to be in the area of the polar front jet stream.

**50.8.2.2 (3771)**

**Which of the following statements concerning trade winds is correct?**

**a) They occur only in the lower part of the troposphere and more pronounced over the oceans**

- b) They reach up to the tropopause and are more pronounced over the continents
- c) They reach up to the tropopause and are more pronounced over the oceans
- d) They occur only in the lower part of the troposphere and are more pronounced over the continents

**50.8.2.3 (3772)**

**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.

**50.8.2.3 (3773)**

**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) 3° - 8°S.
- c) 8° - 12°S.
- d) 7° - 12°N.

**50.8.2.3 (3774)**

**Where, during a flight from Marseille to Dakar, in July, may the ITCZ be encountered?**

**a) In the vicinity of Dakar**

- b) Near the Canary Islands
- c) At the latitudes of Gibraltar
- d) At the latitudes of Algeria

**50.8.2.3 (3775)**

**Which wind systems converge on the ITCZ, when it lies at the equator?**

**a) SE trade winds and NE trade winds**

- b) SW monsoon and NW monsoon
- c) SW monsoon and NW trade winds
- d) NW monsoon and SW trade winds

**50.8.2.3 (3776)**

**Which of the following best describes the intertropical convergence zone ?**

**a) The zone where the trade winds of the northern hemisphere meet those of the southern hemisphere.**

- b) The zone where the Harmattan meets the northeasterly trade winds over Africa.
- c) The zone where cold fronts form in the tropics.
- d) The zone where the west winds meet the subtropical high pressure belt.

**50.8.2.3 (3777)**

**The intertropical convergence zone (ITCZ) particularly affects**

**a) western Africa between 10° and 20°N and the northern coasts of the Arabian sea in July.**

- b) western Africa, at a latitude of 25°N in July.
- c) the Atlantic ocean, between latitudes 10°N and 30°N, depending on the time of year.
- d) western Africa, where it is situated between the 10°N and 30°N parallels, depending on the time of the year.

**50.8.2.3 (3778)**

**Which one of the following statements is correct concerning the movement of the ITCZ in the region of West Africa?**

**a) It reaches its maximum northerly position of 15° - 20° N in July**

- b) It reaches its maximum southerly position of 5° S in January
- c) It oscillates during the year between 10 degrees North and 10 degrees South.
- d) It oscillates during the year between the Equator and 10 degrees North.

**50.8.2.3 (3779)**

**Which of the following statements concerning the intertropical convergence zone is true?**

**a) There are frequent occurrences of CB**

- b) It lies totally in the northern hemisphere in July and totally in the southern hemisphere in January
- c) It does not change its position over the oceans during the year
- d) It is an area of low pressure and low relative humidity

**50.8.2.3 (3780)**

**(For this question use annex 050-10797A)The dotted line designated ""Z"" represents the**

**a) mean position of the intertropical front (ITCZ) during July**

- b) mean position of the intertropical front (ITCZ) during January
- c) northerly limit of the sub tropical jet stream during July
- d) northerly limit of the SE trade winds during January

**50.8.2.3 (3781)**

**(For this question use annex 050-10798A)The dotted line labelled ""Y"" represents**



the

**a) mean position of the intertropical convergence zone (ITCZ) during January**

- 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 temperate/tropical front during July

**50.8.2.3 (3782)**

**(For this question use annex 050-10799A) What weather conditions are most likely to affect an approach to Dakar during July?**

**a) Wet and thundery due to the proximity of intertropical convergence zone (ITCZ)**

- b) Dry and clear due to the influence of the Azores high pressure system
- c) Generally clear skies - NW trade winds
- d) Reduced visibility due to the rising sand of the Harmattan

**50.8.2.4 (3783)**

**What winds are mainly associated with the winter monsoon in the monsoon regions of the Indian sub-continent ?**

**a) Northeasterly winds bringing dry and hazy air.**

- b) Southwesterly winds carrying warm and humid air.
- c) Northwesterly winds bringing dry and hazy air.
- d) Southeasterly winds carrying warm and humid air.

**50.8.2.4 (3784)**

**What weather conditions are indications of the summer monsoon in India?**

**a) Thunderstorms, showers of heavy rain.**

- b) Stratus clouds and drizzle.
- c) Sandstorms.
- d) Fog.

**50.8.2.4 (3785)**

**From which direction do the trade winds blow, in the southern hemisphere?**

**a) SE**

- b) NE
- c) SW
- d) N

**50.8.2.4 (3786)**

**What name is given to the low level wind system between the subtropical high pressure belt and the equatorial trough of low pressure (ITCZ) ?**

**a) Trade winds.**

- b) Doldrums.
- c) Westerly winds.
- d) Monsoon.

**50.8.2.4 (3787)**

**In which month does the humid monsoon in India start?**

**a) In June.**

- b) In October.
- c) In December.
- d) In March.

**50.8.2.4 (3788)**

**What is the name of the wind or airmass which gives to the main part of India its greatest proportion of precipitation?**

**a) South-west monsoon.**

- b) South-east trade wind.
- c) Indian, maritime tropical air mass.
- d) Winter monsoon.

**50.8.2.4 (3789)**

**(For this question use annex 050-10800A) Weather conditions at Bombay during early July are mainly influenced by the**

**a) SW monsoon**

- b) NE monsoon and the proximity of the ITCZ
- c) passage of frontal system generated in the south indian ocean
- d) high incidence of tropical revolving storms originating in the persian gulf

**50.8.2.4 (3790)**

**(For this question use annex 050-10801A) Weather conditions at Bombay during January are mainly influenced by the**

**a) NE monsoon**

- b) SW monsoon
- c) NW monsoon
- d) SE monsoon

**50.8.2.4 (3791)**

**The transition from SW to NE monsoon in India occurs in**

**a) September, October, November**

- b) July, August, September
- c) December, January, February
- d) February, March, April

**50.8.2.4 (3792)**

**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) SW monsoon in winter and NE monsoon in summer
- c) NE tradewind in summer and SE tradewind in winter
- d) NE monsoon in winter and SE tradewind in summer

**50.8.2.4 (3793)**

**Along the West coast of India the prevailing winds are the**

**a) SW monsoon in July and a NE monsoon in January**

- b) SW monsoon in July and a SE monsoon in January
- c) NE monsoon in July and a SW monsoon in January
- d) SE monsoon in July and a SW monsoon in January

**50.8.2.5 (3794)**

**What weather is prevalent in the zone of easterly waves?**

**a) Thunderstorms and rain.**

- b) Continuous rain.

- c) Clear skies.
- d) Frontal weather.

#### 50.8.2.5 (3795)

**An easterly wave is a**

**a) wave in a trade wind belt, moving from east to west, with severe convective activity in rear of its trough**

- b) wave-like disturbance in the monsoon regime of India, moving from east to west, with severe convective activity ahead of its trough
- c) small scale wave disturbance in the tropics, moving from east to west, with severe convective activity ahead 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

#### 50.8.3.1 (3796)

**(For this question use annex 050-4391A) Which typical weather condition is shown by the design for the area of Central Europe ?**

**a) Westerly waves**

- b) Uniform pressure pattern
- c) Cutting wind
- d) Easterly waves

#### 50.8.3.2 (3797)

**(For this question use annex 050-4392A) Which typical weather condition is shown by the design for northern Italy?**

**a) High pressure**

- b) Warm southerly wind
- c) Westerly wind
- d) Easterly wind

#### 50.8.3.2 (3798)

**(For this question use annex 050-4393A) The attached chart shows the weather conditions on the ground at 1200 UTC on October 10. Which of the following reports reflects weather development at Zurich Airport?**

**a) TAF LSZH 101601 VRB02KT 8000 SCT280 BECMG 1618 00000KT 3500 MIFG BECMG 1820 1500 BCFG BECMG 2022 0100 FG VV001 =**

- b) TAF LSZH 101601 05020G35KT 8000 BKN015 TEMPO 1720 05018KT 0300 +SHSN VV002 =
- c) TAF LSZH 101601 23012KT 6000 RA BKN012 OVC030 TEMPO 2023 22025G40KT 1600 +SNRA BKN003 OVC015 =
- d) TAF LSZH 101601 32008KT 9999 SCT030TCU TEMPO 2201 32020G32KT 3000 TSRA BKN020CB =

#### 50.8.3.2 (3799)

**(For this question use annex 050-10802A) The weather most likely to be experienced at position ""R"" is**

**a) fine and warm with little or no cloud**

- b) early morning fog lifting to low stratus
- c) increasing high and medium cloud cover and generally good visibility
- d) mainly overcast with anticyclonic gloom

#### 50.8.3.3 (3800)

**(For this question use annex 050-2059A) Which typical weather situation is shown on the weather chart ? (Spacing of the isobars: 5 hPa)**

**a) Uniform pressure pattern.**

- b) Cutting wind.
- c) West wind condition.
- d) Warm south wind condition (Foehn).

#### 50.8.3.3 (3801)

**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) Apparently nothing, because any changes would be small.**

- b) Increase rapidly.
- c) Show strong fluctuations.
- d) Decrease rapidly.

#### 50.8.3.3 (3802)

**(For this question use annex 050-10803A) The weather most likely to be experienced at position ""R"" is**

**a) fine and warm at first - AC Castellanus and CB in late afternoon with thunderstorms**

- b) early morning fog lifting to low stratus
- c) increasing amounts of AS and NS - heavy rain
- d) overcast with drizzle and hill fog

#### 50.8.3.4 (3803)

**A cold pool**

**a) 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**

- b) 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
- c) normally disappears at night and occurs almost exclusively in summer
- d) occurs frequently in winter to the south of the Alps when this region is under the influence of cold north-westerly airstream

#### 50.8.4.1 (3804)

**Which weather phenomena are typical for the northern side of the Alps with stormy winds from the south (Foehn)?**

**a) Good visibility, turbulence.**

- b) Continuous precipitation, severe turbulence.
- c) Decrease in temperature, moderate to severe icing.
- d) Icing, huge mass of clouds.

#### 50.8.4.1 (3805)

**For an aircraft what are the meteorological dangers associated with a Harmattan wind?**

**a) Dust and poor visibility.**

- b) Thunderstorms.

- c) Sand up to FL 150.
- d) Hail.

**50.8.4.1 (3806)**

**What is the strong relatively cold katabatic wind, blowing down the northern Adriatic coast, mainly during the winter and spring called?**

- a) Bora.**
- b) Ghibli.
- c) Mistral.
- d) Scirocco.

**50.8.4.1 (3807)**

**What is characteristic of the pamperos?**

- a) A marked advance of cold air in South America**
- b) Katabatic winds in the Atlas Mountains
- c) A marked advance of cold arctic air in North America
- d) Foehn conditions in the Spanish Pyrenees

**50.8.4.1 (3808)**

**What weather conditions in the region of the Alps would you expect with Foehn from south?**

- a) Clouds, on the southern sides of passes in the Alps**
- b) Heavy clear air turbulence on the southern side of the Alps
- c) Strong north winds on the southern side of the Alps
- d) Heavy airframe icing conditions on the northern side of the Alps

**50.8.4.1 (3809)**

**Which of the following zones is most likely to encounter little or no precipitation?**

- a) The north side of the alps with a prevailing Foehn from the south.**
- b) The north side of the alps with a prevailing Foehn from the north.
- c) Frontal zones.
- d) Occlusions.

**50.8.4.1 (3810)**

**(For this question use annex 050-4305A) Under the weather conditions depicted, which of the following statements is likely to apply?**

- a) Thunderstorms may occur in the summer months over Central Europe.**
- b) Severe gradient wind likely over Central Europe.
- c) Moderate to strong Foehn in the Alps.
- d) Radiation fog is unlikely in Central Europe in the winter.

**50.8.4.1 (3811)**

**(For this question use annex 050-4725A) Considering the route indicates from Lisbon to Freetown, the Harmattan is a**

**a) NE wind affecting north-west Africa during November to April reducing visibility in rising dust.**

- b) SW monsoonal wind causing extensive areas of advection fog along the West African coast south of 15°N.
- c) warm southerly dust-bearing wind affecting the coast of North Africa.
- d) localised depression giving squally winds.

**50.8.4.1 (3812)**

**The Bora is a**

**a) cold catabatic wind with the possibility of violent gusts**

- b) squally warm catabatic wind which occurs mainly in summer
- c) cold catabatic wind with gusts associated with a maritime air mass
- d) cold catabatic wind always associated with clouds and heavy showers

**50.8.4.1 (3813)**

**The Foehn wind is a**

**a) warm fall wind**

- b) cold fall wind
- c) warm anabatic wind
- d) cold anabatic wind

**50.8.4.1 (3814)**

**Which one of the following local winds is a Foehn wind?**

**a) Chinook**

- b) Scirocco
- c) Harmattan
- d) Bora

**50.8.4.1 (3815)**

**A Foehn wind occurs on the**

**a) leeward side of a mountain range and is caused by significant moisture loss by precipitation from cloud**

- b) windward side of a mountain range and is caused by surface heating
- c) windward side of a mountain range and is caused by surface cooling and reverse 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

**50.8.4.1 (3816)**

**The Chinook is a**

**a) warm and dry wind that forms as air descends on the leeward side of the Rocky Mountains**

- b) very cold wind with blowing snow
- c) downslope wind that occurs particularly at night as air cools along mountain slopes
- d) warm anabatic wind up the slopes of snowfields or glaciers

**50.8.4.1 (3817)**

**A strong, dry and warm katabatic wind, produced by prior enforced ascent of air over hills or mountains is known as a**

**a) Foehn**

- b) Harmattan
- c) Mistral
- d) Bora

**50.8.4.1 (3818)**

**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) Harmattan**

- b) Scirocco

- c) Pampero
- d) Khamsin

**50.8.4.1 (3819)**

**What is the name of the northerly, cold and strong wind, that sometimes blows over a certain part of Europe?**

**a) Mistral.**

- b) Foehn.
- c) Bora.
- d) Typhoon.

**50.8.4.1 (3820)**

**What are the characteristics of the Bora ?**

**a) It is a cold and very strong wind that blows mainly in winter from a tableland downwards to the Adriatic**

- b) It is a very cold wind that blows mainly in winter from a northwesterly direction in the Mediterranean
- c) It is a warm and moist, southwesterly wind experienced in the eastern Mediterranean, that usually carries precipitation.
- d) It is a dry and hot southerly wind experienced in the Sahara desert, that often carries dust.

**50.8.4.1 (3821)**

**What is the name of the hot, local wind, that blows downwards from mountain chains? In the Alps, for instance, it may exist both as a southerly or northerly wind depending on the weather situation.**

**a) Foehn.**

- b) Mistral.
- c) Bora.
- d) Scirocco.

**50.9.1.1 (3822)**

**In which of these cloud types can icing be virtually ruled out?**

**a) CI**

- b) SC
- c) NS
- d) CU

**50.9.1.1 (3823)**

**In which of these cloud types can icing be virtually ruled out?**

**a) CS**

- b) AS
- c) SC
- d) NS

**50.9.1.1 (3824)**

**Which of the following conditions is most likely to cause airframe icing ?**

**a) #NAME?**

- b) GR
- c) SHSN
- d) PE

**50.9.1.1 (3825)**

**(For this question use annex 050-4314A) Continuous freezing rain is observed at an airfield. Which of the four diagrams is most likely to reflect temperatures above the airfield concerned?**

**a) Diagram d)**

- b) Diagram c)
- c) Diagram b)
- d) Diagram a)

**50.9.1.1 (3826)**

**Atmospheric soundings give the following temperature profile :3000 FT +15°C6000 FT +8°C10000 FT +1°C14000 FT -6°C18000 FT -14°C24000 FT -26°CAt which of the following flight levels is the risk for aircraft icing, in cloud, greatest?**

**a) FL 150**

- b) FL 80
- c) FL 180
- d) FL 220

**50.9.1.1 (3827)**

**On the approach, the surface temperature is given as -5°C. The freezing level is at 3000 FT/AGL. At 4000 FT/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, between ground level and 3000 FT/AGL.**

- b) Yes, but only between 3000 and 4000 FT/AGL.
- c) No, flights clear of cloud experience no icing.
- d) No, absolutely no icing will occur.

**50.9.1.1 (3828)**

**In which environment is aircraft structural ice most likely to have the highest rate of accretion ?**

**a) Freezing rain.**

- b) Cirrus clouds.
- c) Stratus clouds.
- d) Snow.

**50.9.1.1 (3829)**

**In which of these temperature bands is ice most likely to form on the aircraft's surface?**

**a) 0°C to -10°C**

- b) +10°C to 0°C
- c) -20°C to -35°C
- d) -35°C to -50°C

**50.9.1.1 (3830)**

**Which of the following statements is true regarding moderate-to-severe airframe icing?**

**a) It is likely to occur in nimbostratus cloud**

- b) It will occur in clear-sky conditions
- c) It may occur in the uppermost levels of a cumulonimbus capillatus formation
- d) It always occurs in altostratus cloud

**50.9.1.1 (3831)**

**Which of the following statements is true regarding moderate-to-severe airframe icing?**

**a) It will not occur in clear-sky conditions**

- b) It always occurs in altostratus cloud
- c) It is unlikely to occur in nimbostratus cloud
- d) It may occur in the uppermost levels of a cumulonimbus capillatus formation

**50.9.1.1 (3832)**

**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) Severe airframe icing is unlikely under these conditions**

- b) Severe airframe icing is quite likely under these conditions
- c) If you do not have weather radar on board there is no need to worry, as CB is unlikely to form in such cloud
- d) In a dense layered cloud icing is unlikely also at an outside air temperature of -5°C

**50.9.1.1 (3833)**

**Freezing fog exists if fog droplets**

**a) are supercooled**

- b) are frozen
- c) are freezing very rapidly
- d) freeze when temperature falls below zero

**50.9.1.1 (3834)**

**A vertical temperature profile indicates the possibility of severe icing when the temperature profile**

**a) intersects the 0°C isotherm twice**

- b) coincides with a dry adiabatic lapse rate
- c) indicates temperatures below -40°C
- d) indicates temperatures above 3°C

**50.9.1.1 (3835)**

**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 dense cirrus clouds.
- c) Level flight in snowfall below a nimbostratus layer.
- d) Flying in heavy drizzle.

**50.9.1.1 (3836)**

**Which of the following cloud types are most likely to produce light to moderate icing when they are not subject to orographic lifting and consist of supercooled cloud droplets?**

**a) Altocumulus and altostratus.**

- b) Stratocumulus and cirrostratus
- c) Stratus and cumulonimbus
- d) Altostratus and cirrocumulus

**50.9.1.1 (3837)**

**A winter day in northern Europe with a thick layer of stratocumulus clouds and temperature close to zero degrees C at ground level, you can expect:**

**a) A high probability for icing in clouds. Severe icing in the upper part due to accumulation of large droplets.**

- b) Decreasing visibility due to snowfall below cloud base, but only light icing in clouds.
- c) Reduced visibility and light icing in clouds
- d) Turbulence due to a strong inversion, but no icing because clouds consist of ice crystals

**50.9.1.1 (3838)**

**Which one of the following statements concerning the formation of aircraft icing is most correct ?**

**a) A cloud consisting of both supercooled cloud droplets and ice crystals produces aircraft icing**

- b) Greatest risk of icing conditions is experienced in cirrus clouds.
- c) Risk for icing increases when cloud temperature decreases well below minus 12 degrees C.
- d) Probability of icing increases when dry snow starts to fall from a cloud.

**50.9.1.1 (3839)**

**Which of the following factors have the greatest effect on the formation of the various types of ice on an aircraft ?**

**a) Cloud temperature and droplet size**

- b) Aircraft speed and size of cloud droplets
- c) Aircraft speed and curvature of the airfoil
- d) Relative humidity inside the cloud

**50.9.1.2 (3840)**

**Rime ice forms through the freezing onto aircraft surfaces of**

**a) small supercooled water drops.**

- b) large supercooled water drops.
- c) water vapour.
- d) snow.

**50.9.1.2 (3841)**

**Under which conditions would you expect the heaviest clear ice accretion to occur in a CB?**

**a) Between -2°C and -15°C**

- b) Between -20°C and -30°C
- c) Close to the freezing level
- d) Between -30°C and -40°C

**50.9.1.2 (3842)**

**Clear ice forms on an aircraft by the freezing of :**

**a) large supercooled water drops**

- b) water vapour
- c) small supercooled water drops
- d) snow

**50.9.1.2 (3843)**

**During the formation of rime ice in flight, water droplets freeze**

**a) rapidly and do not spread out**

- b) slowly and do not spread out
- c) slowly and spread out
- d) rapidly and spread out

**50.9.1.2 (3844)**

**Glaze or clear ice is formed when supercooled droplets are**

**a) large and at a temperature just below freezing**

- b) small and at a temperature just below freezing
- c) small and freeze rapidly
- d) of any size at temperatures below -35°C.

**50.9.1.2 (3845)**

**Clear ice forms as a result of**

**a) supercooled water droplets spreading during the freezing process**

- b) water vapour freezing to the aircraft
- c) ice pellets splattering on the aircraft
- d) supercooled droplets freezing on impact

**50.9.1.2 (3846)**

**Large supercooled water drops, which freeze on impact on an aircraft, form**

**a) clear ice**

- b) rime ice
- c) hoar frost
- d) cloudy ice

**50.9.1.2 (3847)**

**The type of icing that occurs in dense clouds with large supercooled drops that have a temperature of -5°C is most likely to be**

**a) clear ice**

- b) hoar frost
- c) rime ice
- d) cloudy ice

**50.9.1.2 (3848)**

**Clear ice is dangerous because it**

**a) is heavy and is difficult to remove from the aircraft surfaces**

- b) is translucent and only forms at the leading edges
- c) is not translucent and forms at the leading edges
- d) spreads out and contains many air particles

**50.9.1.2 (3849)**

**Hoar frost forms on an aircraft as a result of**

**a) water vapour turning directly into ice crystals on the aircraft surface**

- b) freezing rain striking the aircraft
- c) droplets forming on the aircraft and then freezing
- d) small super-cooled droplets striking the aircraft

**50.9.1.2 (3850)**

**Hoar frost is most likely to form when**

**a) taking off from an airfield with a significant ground inversion.**

- b) flying inside convective clouds.
- c) flying inside stratiform clouds.
- d) flying in supercooled drizzle.

**50.9.1.2 (3851)**

**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) Rime ice.**

- b) Clear ice.
- c) Mixed ice.
- d) Frost.

**50.9.1.2 (3852)**

**A small supercooled cloud droplet that collides with an airfoil will most likely**

**a) freeze immediately and create rime ice.**

- b) freeze immediately and create clear ice.
- c) travel back over the wing, creating rime ice.
- d) travel back over the wing, creating clear ice.

**50.9.1.3 (3853)**

**How does a pilot react to heavy freezing rain at 2000 FT/AGL, when he is unable to deice, nor land?**

**a) He turns back before the aircraft loses manoeuvrability.**

- b) He descends to the warm air layer below.
- c) He ascends to the cold air layer above.
- d) He continues to fly at the same altitude.

**50.9.1.3 (3854)**

**At what degree of icing should ICAO's ""Change of course and/or altitude desirable"" recommendation be followed?**

**a) Moderate**

- b) Light
- c) Severe
- d) Extreme

**50.9.1.3 (3855)**

**At what degree of icing should ICAO's ""Change course and/or altitude immediately"" instruction be followed?**

**a) Severe**

- b) Light
- c) Moderate
- d) Extreme

**50.9.1.3 (3856)**

**At what degree of icing can ICAO's ""No change of course and altitude necessary"" recommendation be followed?**

**a) Light**

- b) Moderate
- c) Severe
- d) Extreme

**50.9.1.3 (3857)**

**The most dangerous form of airframe icing is**

**a) clear ice.**

- b) hoar frost.
- c) dry ice.
- d) rime ice.

**50.9.1.3 (3858)**

**Two aircraft, one with a sharp wing profile (S), and the other with a thick profile (T), are flying through the same cloud with same true airspeed. The cloud consists of small supercooled droplets. Which of the following statements is most correct concerning ice accretion ?**

**a) Aircraft S experiences more icing than T.**

- b) Aircraft T experiences more icing than S.
- c) Aircraft S and T experience the same amount of icing
- d) Neither of the aircraft accumulate ice due to the small size of droplets.

**50.9.2.1 (3859)**

**How does moderate turbulence affect an aircraft?**

**a) Changes in altitude or attitude occur but the aircraft remains in positive control at all times.**

- b) Rapid and somewhat rhythmic bumpiness is experienced without appreciable changes in altitude or attitude.
- c) Large, abrupt changes in altitude or attitude occur but the aircraft may only be out of control momentarily.
- d) Continued flight in this environment will result in structural damage.

**50.9.2.1 (3860)**

**A zone of strong convection currents is encountered during a flight. In spite of moderate gust you decide to continue the flight. What are your precautionary measures?**

**a) Decrease the speed / try to climb above the zone of convective currents if aircraft performance parameters allow.**

- b) Increase the speed / try to climb above the zone of convective currents if aircraft performance parameters allow.
- c) Decrease the speed / try to descend below the zone of convective currents.
- d) Increase the speed / try to descend below the zone of convective currents.

**50.9.2.1 (3861)**

**What is normally the most effective measure to reduce or avoid CAT effects?**

**a) Change of flight level.**

- b) Change of course.
- c) Increase of speed.
- d) Decrease of speed.

**50.9.2.1 (3862)**

**An aircraft is approaching a cold front from the warm air mass side at FL 270 and experiencing moderate to severe turbulence. A jet stream is forecast to be at FL 310. The shortest way to get out of this turbulence is by :**

**a) Descending**

- b) Climbing
- c) Turn right
- d) Maintain FL 270

**50.9.2.1 (3863)**

**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) Depart runway 27 with maximum throttle during the passage through the inversion.
- c) Depart runway 27 with as steep an ascent as possible.
- d) Take-off is not possible under these conditions.

**50.9.2.2 (3864)**

**The degree of clear air turbulence experienced by an aircraft is proportional to the a) intensity of vertical and horizontal windshear**

- b) height of the aircraft
- c) stability of the air
- d) intensity of the solar radiation

**50.9.2.2 (3865)**

**The turbulence which occurs at high flight levels (above FL 250) 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 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 unpleasant.**

- b) The turbulence is a large scale one (waving) so that the aircraft will be difficult to manoeuvre. The passengers will feel some discomfort.
- c) 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.
- d) The turbulence is wave like which makes the flight unpleasant for the passengers but the manoeuvring will not be affected essentially.

**50.9.3.1 (3866)**

**What is the effect of a strong low level inversion ?**

**a) It promotes vertical windshear.**

- b) It promotes extensive vertical movement of air.
- c) It prevents vertical windshear.
- d) It results in good visual conditions.

**50.9.3.1 (3867)**

**Low level wind shear is likely to be greatest**

**a) at the top of a marked surface-based inversion.**

- b) at the condensation level when there is no night radiation.
- c) at the condensation level when there is strong surface friction.
- d) at the top of the friction layer.

**50.9.3.1 (3868)**

**Vertical wind shear is**

**a) vertical variation in the horizontal wind**

- b) vertical variation in the vertical wind
- c) horizontal variation in the horizontal wind
- d) horizontal variation in the vertical wind

**50.9.3.2 (3869)**

**Low level vertical wind shear can be expected during the night**

**a) in association with radiation inversions**

- b) in unstable atmospheres
- c) and early morning only in winter
- d) and early morning only in summer

**50.9.3.2 (3870)**

**The most dangerous low level wind shears are encountered**

**a) when strong ground inversions are present and near thunderstorms**

- b) in areas with layered clouds and wind speeds higher than 35 kt
- c) during any period when wind speed is greater than 35 kt and near valleys
- d) near valleys and at the windward side of mountains.

**50.9.3.2 (3871)**

**Above and below a low level inversion the wind is likely to**

**a) change significantly in speed and direction**

- b) change in speed but not in direction
- c) change in direction but not in speed
- d) experience little or no change in speed and direction

**50.9.4.1 (3872)**

**Where is a squall line to be expected?**

**a) In front of an active cold front.**

- b) Behind a cold front.
- c) In front of a cold front occlusion at higher levels.
- d) At the surface position of a warm front.

**50.9.4.1 (3873)**

**What are squall lines?**

**a) Bands of intensive thunderstorms.**

- b) Unusual intensive cold fronts.
- c) The surface weather associated with upper air troughs.
- d) The paths of tropical revolving storms.

**50.9.4.1 (3874)**

**What weather condition would you expect at a squall line?**

**a) Thunderstorms**

- b) Strong steady rain
- c) Fog
- d) Strong whirlwinds reaching up to higher levels

**50.9.4.1 (3875)**

**At which altitude, at temperate latitudes, may hail be expected in connection with a CB?**

**a) From the ground up to a maximum of FL 450.**

- b) From the ground up to about FL 200.
- c) From the ground up to about FL 100.
- d) From the base of the clouds up to FL 200.

**50.9.4.1 (3876)**

**A squall line usually is most likely to be encountered**

**a) ahead of a cold front**

- b) at an occluded front
- c) in an airmass with cold mass properties
- d) behind of a stationary front

**50.9.4.1 (3877)**

**In which stage of the life cycle of a single thunderstorm cell occur both up- and downdrafts simultaneously?**

**a) Mature stage**

- b) Cumulus stage
- c) Dissipating stage
- d) In all stages

**50.9.4.1 (3878)**

**During the life cycle of a thunderstorm, which stage is characterized predominantly by downdrafts?**

**a) Dissipating stage**

- b) Cumulus stage
- c) Mature stage
- d) Anvil stage

**50.9.4.1 (3879)**

**What feature is normally associated with the cumulus stage of a thunderstorm?**

**a) Continuous updraft**

- b) Roll cloud
- c) Frequent lightning
- d) Rain or hail at the surface

**50.9.4.1 (3880)**

**A gustfront is**

**a) formed by the cold air outflow from a thunderstorm**

- b) normally encountered directly below a thunderstorm
- c) characterized by heavy lightning
- d) another name for a cold front

**50.9.4.2 (3881)**

**In Central Europe when is the greatest likelihood for thunderstorms due to warm updrafts?**

**a) Mid - afternoon.**

- b) Around midnight.
- c) Early morning.
- d) Late morning.

**50.9.4.2 (3882)**

**During which stage of thunderstorm development are rotor winds characterized by roll clouds most likely to occur ?**

**a) Mature stage.**

- b) Cumulus stage.



- c) Dissipating stage.
- d) Cumulus stage and mature stage.

**50.9.4.2 (3883)**

**What are the meteorological prerequisites, at low level, for thunderstorms formed by lifting processes, over land?**

**a) High temperatures, high humidity.**

- b) High air pressure (> 1013 hPa), high temperatures.
- c) Low temperatures, low humidity.
- d) Subsidence, inversion.

**50.9.4.2 (3884)**

**Which of the following meteorological phenomenon indicates upper level instability which may lead to thunderstorm development ?**

**a) AC castellanus.**

- b) AC lenticularis.
- c) Halo.
- d) Red cirrus.

**50.9.4.2 (3885)**

**Isolated thunderstorms of a local nature are generally caused by**

**a) thermal triggering.**

- b) frontal lifting (warm front).
- c) frontal lifting (cold front).
- d) frontal occlusion.

**50.9.4.2 (3886)**

**Which thunderstorms move forward the fastest?**

**a) Frontal thunderstorms.**

- b) Thunderstorms formed by lifting processes.
- c) Thermal thunderstorms.
- d) Orographic thunderstorms.

**50.9.4.2 (3887)**

**The initial phase of a thunderstorm is characterized by**

**a) continuous updraughts**

- b) continuous downdraughts
- c) frequent lightning
- d) rain starting at surface

**50.9.4.2 (3888)**

**In addition to a lifting action, what are two other conditions necessary for thunderstorm formation ?**

**a) Unstable conditions and high moisture content**

- b) Stable conditions and high moisture content
- c) Stable conditions and low atmospheric pressure
- d) Unstable conditions and low atmospheric pressure

**50.9.4.2 (3889)**

**Continuous updraughts occur in a thunderstorm during the**

**a) cumulus stage.**

- b) mature stage.
- c) dissipating stage.
- d) period in which precipitation is falling.

**50.9.4.2 (3890)**

**Thunderstorms reach their greatest intensity during the**

**a) mature stage.**

- b) cumulus stage.
- c) dissipating stage.
- d) period in which precipitation is not falling.

**50.9.4.2 (3891)**

**What are the requirements for the formation of a thunderstorm?**

**a) An adequate supply of moisture, conditional instability and a lifting action**

- b) Water vapour and high pressure
- c) A stratocumulus cloud with sufficient moisture
- d) A cumulus cloud with sufficient moisture associated with an inversion

**50.9.4.2 (3892)**

**Which thunderstorms generally develop in the afternoon in summer over land in moderate latitudes?**

**a) Airmass thunderstorms**

- b) Warm front thunderstorms
- c) Cold mass thunderstorms
- d) Occlusion thunderstorms

**50.9.4.2 (3893)**

**In which of the following areas is the highest frequency of thunderstorms encountered ?**

**a) Tropical**

- b) Polar
- c) Subtropical
- d) Temperate

**50.9.4.2 (3894)**

**Thunderstorms can occur on a warm front if the**

**a) warm air is moist and the environmental lapse rate exceeds the saturated adiabatic lapse rate**

- b) cold air is moist and the environmental lapse rate is less than the dry adiabatic lapse rate
- c) warm air is moist and the environmental lapse rate is less than the saturated adiabatic lapse rate
- d) cold air is moist and the environmental lapse rate exceeds the saturated adiabatic lapse rate

**50.9.4.3 (3895)**

**The most hazardous type of cloud that may be encountered on a cross country flight is**

**a) cumulonimbus**

- b) stratocumulus

- c) cumulus
- d) cirrus

**50.9.4.4 (3896)**

**What is the approximate maximum diameter of a microburst ?**

**a) 4 km**

- b) 400 m
- c) 20 km
- d) 50 km

**50.9.4.4 (3897)**

**What is a microburst?**

**a) A concentrated downdraft with high speeds and a lower temperature than the surrounding air.**

- b) A concentrated downdraft with high speeds and a higher temperature than the surrounding air.
- c) An extremely strong wind gust in a tropical revolving storm.
- d) A small low pressure system where the wind circulates with very high speeds.

**50.9.4.4 (3898)**

**How long does a typical microburst last?**

**a) 1 to 5 minutes.**

- b) Less than 1 minute.
- c) 1 to 2 hours.
- d) About 30 minutes.

**50.9.4.4 (3899)**

**A microburst phenomenon can arise in the**

**a) downdraught of a cumulonimbus at the mature stage.**

- b) updraught of a cumulonimbus at the mature stage.
- c) downdraught of a cumulonimbus at the formation stage.
- d) updraught of a cumulonimbus at the growth stage.

**50.9.4.4 (3900)**

**Which of the following statements describes a microburst ?**

**a) A high speed downdraft of air with a generally lower temperature than its surroundings**

- b) A high speed downdraft of air with a higher temperature than its surroundings
- c) An extremely strong wind gust associated with a tropical revolving storm
- d) A small low pressure system where the wind circulates at high speed

**50.9.4.4 (3901)**

**The diameter and the life time of a typical microburst are in the order of**

**a) 4 km and 1-5 minutes**

- b) 4 km and 30-40 minutes
- c) 8 km and 5-15 minutes
- d) 12 km and 5-10 minutes

**50.9.4.4 (3902)**

**A microburst**

**a) has a diameter up to 4 km**

- b) has a life time of more than 30 minutes
- c) is always associated with thunderstorms
- d) occurs only in tropical areas

**50.9.4.5 (3903)**

**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) Aircraft made by composite material may get severe damage, the crew may be blinded and temporarily lose the hearing.**

- b) An aircraft made by metal has a certain capacity to attract a lightning, but the lightning will follow the surface and therefore no damage will be caused.
- c) An aircraft has in the atmosphere the same qualities as a "Faradays cage", which means that struck of lightning seldom occurs. But if it happens, the result will be an occasional engine failure. The crew may get a shock.
- d) Aircraft made by composite material can't conduct a lightning and will therefore very seldom be struck.

**50.9.5.1 (3904)**

**At what time of the year are tornadoes most likely to occur in North America?**

**a) Spring, summer.**

- b) Summer, autumn.
- c) Autumn, winter.
- d) Winter.

**50.9.5.1 (3905)**

**With which type of cloud are tornadoes normally associated ?**

**a) Cumulonimbus**

- b) Cumulus
- c) Stratus
- d) Nimbostratus

**50.9.5.1 (3906)**

**The diameter of a typical tornado is**

**a) 100 to 150 metres**

- b) only a few metres
- c) about 2 to 6 km
- d) in the order of 10 km

**50.9.6.1 (3907)**

**A wide body takes off on a clear night in Dhahran, Saudi Arabia. Shortly after take off the aircraft's rate of climb drops to zero. This can be due to**

**a) a very strong temperature inversion**

- b) sand/dust in the engines
- c) very pronounced downdrafts
- d) low relative humidity

**50.9.8.1 (3908)**

**Which of the following phenomena are formed when a moist, stable layer of air is forced to rise against a mountain range ?**

**a) Stratified clouds**

- b) Inversions
- c) Showers and thunderstorms
- d) Areas of severe turbulence

**50.9.8.2 (3909)**

**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) Morning.**

- b) Mid-day.
- c) Afternoon.
- d) Early evening.

**50.9.8.2 (3910)**

**You are flying with an outside air temperature of -12°C and a TAS of 250 kt at FL 150 through 8 oktas NS. What type and degree of icing is most probable?**

**a) In clouds pushed up against the mountains, moderate to severe mixed ice.**

- b) In clouds pushed up against the mountains, moderate to severe rime ice.
- c) Over flat terrain, away from fronts, moderate to severe mixed ice.
- d) Over flat terrain, moderate hoar frost.

**50.9.9.1 (3911)**

**In general, the meteorological visibility during rainfall compared to during drizzle is**

**a) greater**

- b) the same
- c) less
- d) in rain - below 1 km, in drizzle - more than 2 km

**50.9.9.1 (3912)**

**Flight visibility from the cockpit during approach in a tropical downpour can decrease to minimal**

**a) tens of metres**

- b) about 200 metres
- c) about 500 metres
- d) about 1000 metres

**50.9.9.1 (3913)**

**Visibility is reduced by haze when**

**a) dust particles are trapped below an inversion**

- b) a light drizzle falls
- c) a cold front just passed
- d) small water droplets are present

**50.9.9.1 (3914)**

**In unstable air, surface visibility is most likely to be restricted by**

**a) showers of rain or snow**

- b) haze
- c) drizzle
- d) low stratus

**50.9.9.1 (3915)**

**In the vicinity of industrial areas, smoke is most likely to affect surface visibility when**

**a) there is a low level inversion**

- b) the surface wind is strong and gusty
- c) cumulus clouds have developed in the afternoon
- d) a rapid moving cold front has just passed the area

**50.9.9.1 (3916)**

**Below a low level inversion visibility is often**

**a) moderate or poor because there is no vertical exchange**

- b) very good at night
- c) very good in the early morning
- d) moderate or poor due to heavy snow showers.

**50.10.1.1 (3917)**

**What is the relationship between meteorological visibility (met.vis.) and RVR in homogeneous fog?**

**a) The met. vis. is generally less than the RVR.**

- b) The met. vis. generally is greater than the RVR.
- c) The met. vis. generally is the same as the RVR.
- d) There is no specific relationship between the two.

**50.10.1.1 (3918)**

**The wind indicator for a weather observation receives the measured value from an anemometer. Where is this instrument placed?**

**a) On a mast 8-10 m above the ground.**

- b) 1 m above the runway.
- c) Close to the station about 2 m above the ground.
- d) On the roof of the weather station.

**50.10.1.1 (3919)**

**What is the meaning of the abbreviation ""BKN""?**

**a) 5 - 7 oktas.**

- b) 3 - 4 oktas.
- c) 6 - 8 oktas.
- d) 8 oktas.

**50.10.1.1 (3920)**

**When is the RVR reported at most airports?**

**a) When the meteorological visibility decreases below 1500 m.**

- b) When the meteorological visibility decreases below 800 m.
- c) When the RVR decreases below 800 m.
- d) When the RVR decreases below 2000 m.

**50.10.1.1 (3921)**

**When will the surface wind in a METAR record a gust factor ?**

**a) When gusts are at least 10 knots above the mean wind speed**

- b) When gusts are at least 15 knots above the mean wind speed
- c) With gusts of at least 25 knots
- d) With gusts of at least 35 knots

**50.10.1.1 (3922)**

**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) portion of runway which a pilot on the threshold of any of the runways would see, with runway 23 in service.
- d) minimum visibility at this aerodrome, with runway 23 being the one in service.

**50.10.1.1 (3923)**

**Runway Visual Range (RVR) is**

**a) usually better than meteorological visibility**

- b) reported when meteorological visibility is less than 2000m
- c) reported in TAF and METAR
- d) measured with ceilometers alongside the runway

**50.10.1.1 (3924)**

**The wind direction in a METAR is measured relative to**

**a) true north**

- b) magnetic north
- c) the 0-meridian
- d) grid north

**50.10.1.1 (3925)**

**The cloud base, reported in the METAR, is the height above**

**a) airfield level**

- b) mean sea level
- c) the pressure altitude of the observation station at the time of observation
- d) the highest terrain within a radius of 8 km from the observation station

**50.10.1.2 (3926)**

**(For this question use annex 050-2056A)Of the four radio soundings, select the one that indicates ground fog:**

**a) 2**

- b) 1
- c) 3
- d) 4

**50.10.1.2 (3927)**

**(For this question use annex 050-4319A)Of the four radio soundings, select the one that indicates low stratus:**

**a) 3**

- b) 1
- c) 2
- d) 4

**50.10.1.3 (3928)**

**What are the images of satellites provided daily by the Weather Service used for?**

**a) To locate fronts in areas with few observation stations**

- b) To measure wind currents on the ground

c) To help provide 14-day forecasts

d) To locate precipitation zones

**50.10.1.4 (3929)**

**Which of the following causes echoes on meteorological radar screens?**

**a) Hail**

- b) Water vapour
- c) Fog
- d) Any cloud

**50.10.1.4 (3930)**

**An airborne weather radar installation makes it possible to detect the location of**

**a) zones of precipitation, particularly liquid-state precipitation, and also their intensity**

- b) all clouds
- c) cumulonimbus, but provided that cloud of this type is accompanied by falls of hail
- d) stratocumulus and its vertical development

**50.10.2.1 (3931)**

**In which meteorological forecast chart is information about CAT regions found?**

**a) Significant Weather Chart.**

- b) 24 hour surface forecast.
- c) 500 hPa chart.
- d) 300 hPa chart.

**50.10.2.1 (3932)**

**On which of the following aviation weather charts can a pilot most easily find a jetstream?**

**a) Significant weather chart.**

- b) Wind / temperature chart.
- c) Surface chart.
- d) Upper air chart.

**50.10.2.1 (3933)**

**Which weather chart gives information about icing and the height of the freezing level ?**

**a) Significant weather chart**

- b) 500 hPa chart
- c) 700 hPa chart
- d) Surface chart

**50.10.2.1 (3934)**

**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 that is observed at the time given on the chart
- c) The significant weather in a period 3 hours before and 3 hours after the time given on the chart
- d) The significant weather forecast for a period 6 hours after the time given on the chart

**50.10.2.3 (3935)**

**How is the direction and speed of upper winds described in forecasts ?**

**a) The direction is relative to true north and the speed is in knots.**

- b) The direction is relative to magnetic north and the speed is in knots.
- c) The direction is relative to magnetic north and the speed is in miles per hour.
- d) The direction is relative to true north and the speed is in miles per hour.

**50.10.2.3 (3936)**

**What positions are connected with contour lines on the weather chart?**

**a) Positions with the same height in a chart of constant pressure.**

- b) Positions with the same thickness between two constant pressure levels.
- c) Positions with the same air density.
- d) Positions with the same wind velocity.

**50.10.2.3 (3937)**

**Which constant pressure altitude chart is standard for a 4781 FT pressure level (FL50)?**

**a) 850 hPa.**

- b) 700 hPa.
- c) 500 hPa.
- d) 300 hPa.

**50.10.2.3 (3938)**

**Which constant pressure altitude chart is standard for a 9882 FT pressure level (FL 100) ?**

**a) 700 hPa**

- b) 850 hPa
- c) 500 hPa
- d) 300 hPa

**50.10.2.3 (3939)**

**Which constant pressure altitude chart is standard for a 18289 FT pressure level (FL 180) ?**

**a) 500 hPa**

- b) 300 hPa
- c) 200 hPa
- d) 700 hPa

**50.10.2.3 (3940)**

**Which constant pressure altitude chart is standard for a 30065 FT pressure level (FL 300)?**

**a) 300 hPa**

- b) 200 hPa
- c) 700 hPa
- d) 500 hPa

**50.10.2.3 (3941)**

**Which constant pressure altitude chart is standard for a 38662 FT pressure level (FL 390) ?**

**a) 200 hPa**

- b) 300 hPa

c) 500 hPa

d) 700 hPa

**50.10.2.3 (3942)**

**If you are planning a flight at FL 170, which of these upper wind and temperature charts would be nearest your flight level ?**

**a) 500 hPa**

- b) 300 hPa
- c) 850 hPa
- d) 700 hPa

**50.10.2.3 (3943)**

**If you are planning a flight at FL 290, which of these upper wind and temperature charts would be nearest your flight level ?**

**a) 300 hPa**

- b) 500 hPa
- c) 700 hPa
- d) 850 hPa

**50.10.2.3 (3944)**

**When planning a flight at FL 60, which upper wind and temperature chart would be nearest your flight level ?**

**a) 850 hPa**

- b) 700 hPa
- c) 500 hPa
- d) 300 hPa

**50.10.2.3 (3945)**

**When planning a flight at FL 110, which upper wind and temperature chart would be nearest your flight level ?**

**a) 700 hPa**

- b) 850 hPa
- c) 300 hPa
- d) 500 hPa

**50.10.2.3 (3946)**

**The upper wind and temperature chart of 250 hPa corresponds, in a standard atmosphere, to about**

**a) 34 000 FT**

- b) 39 000 FT
- c) 30 000 FT
- d) 32 000 FT

**50.10.2.3 (3947)**

**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) pressure is 552 hPa
- c) topography is 552 meters above MSL
- d) pressure altimeter will overread by 552 FT

**50.10.2.4 (3948)**

**(For this question use annex 050-2422A) Which of the following symbols represents a tropical revolving storm?**

**a) Symbol a)**

- b) Symbol b)
- c) Symbol c)
- d) Symbol d)

**50.10.2.4 (3949)**

**(For this question use annex 050-2539A) The front labelled ""Z"" is a:**

**a) Warm front**

- b) Cold front
- c) Warm front occlusion
- d) Cold front occlusion

**50.10.2.4 (3950)**

**How are well separated CB clouds described on the Significant Weather Chart?**

**a) OCNL CB.**

- b) EMBD CB.
- c) FREQ CB.
- d) ISOL CB.

**50.10.2.4 (3951)**

**(For this question use annex 050-2421A) Which of the following symbols represents a squall line?**

**a) Symbol a)**

- b) Symbol b)
- c) Symbol c)
- d) Symbol d)

**50.10.2.4 (3952)**

**(For this question use annex 050-2055A) The cold front is indicated with a number at position:**

**a) 2**

- b) 1
- c) 3
- d) 4

**50.10.2.4 (3953)**

**(For this question use annex 050-2058A) What does the symbol indicate on a significant weather chart?**

**a) The center of a tropopause ""high"", where the tropopause is at FL 400.**

- b) The center of a high pressure area at 400 hPa.
- c) The upper limit of significant weather at FL 400.
- d) The lower limit of the tropopause.

**50.10.2.4 (3954)**

**(For this question use annex 050-4331A) A trough is indicated by letter:**

**a) A**

- b) B

c) C

d) D

**50.10.2.4 (3955)**

**(For this question use annex 050-4332A) The warm sector is indicated by letter:**

**a) C**

- b) B
- c) D
- d) A

**50.10.2.4 (3956)**

**(For this question use annex 050-4333A) Which of the following best describes Zone A?**

**a) Trough of low pressure**

- b) Col
- c) Ridge of high pressure
- d) Depression

**50.10.2.4 (3957)**

**(For this question use annex 050-4334A) Which of the following best describes Zone B?**

**a) Col**

- b) Ridge of high pressure
- c) Depression
- d) Trough of low pressure

**50.10.2.4 (3958)**

**(For this question use annex 050-4335A) Which of the following best describes Zone C?**

**a) Ridge of high pressure**

- b) Col
- c) Trough of low pressure
- d) Depression

**50.10.2.4 (3959)**

**(For this question use annex 050-4336A) Which of the following best describes Zone D?**

**a) Depression**

- b) Ridge of high pressure
- c) Anticyclone
- d) Trough of low pressure

**50.10.2.4 (3960)**

**(For this question use annex 050-4337A) According to ICAO, which symbol indicates severe icing ?**

**a) Symbol a)**

- b) Symbol b)
- c) Symbol c)
- d) Symbol d)

**50.10.2.4 (3961)**

(For this question use annex 050-4338A) According to ICAO, which symbol indicates a tropical revolving storm?

**a) Symbol d)**

- b) Symbol c)
- c) Symbol b)
- d) Symbol a)

**50.10.2.4 (3962)**

(For this question use annex 050-4339A) According to ICAO, which symbol indicates danger to an aircraft in flight?

**a) Symbol b)**

- b) Symbol d)
- c) Symbol a)
- d) Symbol c)

**50.10.2.4 (3963)**

(For this question use annex 050-4340A) According to ICAO, which symbol indicates danger to an aircraft in flight?

**a) Symbol c)**

- b) Symbol d)
- c) Symbol a)
- d) Symbol b)

**50.10.3.1 (3964)**

What is a trend forecast?

**a) A landing forecast appended to METAR/SPECI, valid for 2 hours**

- b) An aerodrome forecast valid for 9 hours
- c) A route forecast valid for 24 hours
- d) A routine report

**50.10.3.1 (3965)**

What does the expression ""Broken (BKN)"" mean?

**a) 5-7 Eights of the sky is cloud covered**

- b) 3-4 Eights of the sky is cloud covered
- c) 3-5 Eights of the sky is cloud covered
- d) Nil significant cloud cover

**50.10.3.1 (3966)**

What does the abbreviation ""nosig"" mean?

**a) No significant changes**

- b) No report received
- c) No weather related problems
- d) Not signed by the meteorologist

**50.10.3.1 (3967)**

In which weather report would you expect to find information about icing conditions on the runway?

**a) METAR**

- b) SIGMET

c) GAFOR

d) TAF

**50.10.3.1 (3968)**

In which of the following 1850 UTC METAR reports, is the probability of fog formation, in the coming night, the highest?

**a) VRB01KT 8000 SCT250 11/10 Q1028 BECMG 3000 =**

- b) 22004KT 6000 -RA SCT012 OVC030 17/14 Q1009 NOSIG =
- c) VRB02KT 2500 SCT120 14/M08 Q1035 NOSIG =
- d) 00000KT 9999 SCT300 21/01 Q1032 NOSIG =

**50.10.3.1 (3969)**

Which of the following weather reports could be, in accordance with the regulations, abbreviated to ""CAVOK""? (MSA above ground: LSZB 10000 FT, LSZH 8000 FT, LSGG 12000 FT, LFSB 6000 FT)

**a) LSGG 22003KT 9999 SCT120 BKN280 09/08 Q1026 BECMG 5000 =**

- b) LSZH 26024G52KT 9999 BKN060 17/14 Q1012 RETS TEMPO 5000 TSRA =
- c) LSZB 30004KT 9999 SCT090 10/09 Q1006 NOSIG =
- d) LFSB 00000KT 9000 SCT080 22/15 Q1022 NOSIG =

**50.10.3.1 (3970)**

Which of the following weather reports could be, in accordance with the regulations, abbreviated to ""CAVOK""? (MSA above ground : LSZB 10000 FT, LSZH 8000 FT, LSGG 12000 FT, LFSB 6000 FT)

**a) LSZB 28012KT 9999 OVC100 16/12 Q1012 BECMG 5000 =**

- b) LFSB 24008KT 9999 SCT050 18/11 Q1017 RERA NOSIG =
- c) LSZH VRB02KT 9000 BKN080 21/14 Q1022 NOSIG =
- d) LSGG 22006KT 9999 BKN090 17/15 Q1008 RERA NOSIG =

**50.10.3.1 (3971)**

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 competent aviation weather office will issue a SIGMET**

- b) The airspace in question, will be temporarily closed
- c) The competent aviation weather office will issue a SPECI
- d) The competent aviation weather office will issue a storm warning

**50.10.3.1 (3972)**

Refer to the TAF for Bordeaux airport.FCFR31 281400LFBF 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) Heavy rain showers**

- b) Continuous moderate rain
- c) Light drizzle and fog
- d) Moderate snow showers

**50.10.3.1 (3973)**

Refer to the TAF for Bordeaux airport.FCFR31 281400LFBF 1524 26015KT 9999 SHRA BKN020 TEMPO 1620 26020G30KT 8000 +SHRA BKN015CB PROB30 TSRA

**=Flight Lisbon to Bordeaux, ETA 1800 UTC. At ETA Bordeaux what is the lowest quoted visibility forecast ?**

- a) 8 km**
- b) 8 NM
- c) 10 NM
- d) 10 or more km

**50.10.3.1 (3974)**

Refer to the TAF for Amsterdam airport.FCNL31 281500EHAM 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 2100 UTC. At ETA Amsterdam what surface wind is forecast ?

- a) 120° / 15 kt gusts 25 kt**
- b) 140° / 10 kt
- c) 300° / 15 kt maximum wind 25 kt
- d) 250° / 20 kt

**50.10.3.1 (3975)**

Refer to the TAF for Amsterdam airport.FCNL31 281500EHAM 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 2100 UTC. What is the minimum visibility forecast for ETA Amsterdam ?

- a) 3 km**
- b) 5 km
- c) 5 NM
- d) 6 km

**50.10.3.1 (3976)**

In the TAF for Dehli, during the summer, for the time of your landing you note: TEMPO TS. What is the maximum time this deterioration in weather can last in anyone instance ?

- a) 60 minutes.**
- b) 120 minutes.
- c) 10 minutes.
- d) 20 minutes.

**50.10.3.1 (3977)**

Does the following report make sense?LSZH VRB02KT 5000 MIFG 02/02 Q1015 NOSIG

- a) The report is possible, because shallow fog is defined as a thin layer of fog below eye level.**
- 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 nonsense, because it is impossible to observe a meteorological visibility of 5 km if shallow fog is reported.
- d) The report is not possible, because, with a temperature of 2°C and a dew point of 2°C there must be uniform fog.

**50.10.3.1 (3978)**

You receive the following METAR :LSGG 0750Z 00000KT 0300 R05/0700N FG VV001 M02/M02 Q1014 NOSIG =What will be the RVR at 0900 UTC?

- a) The RVR is unknown, because the ""NOSIG"" does not refer to RVR.**
- b) 300 m.
- c) 700 m.
- d) 900 m.

**50.10.3.1 (3979)**

Which of the four answers is a correct interpretation of data from the following METAR ?16003KT 0400 R14/P1500 R16/1000N FZFG VV003 M02/M02 Q1026 BECMG 2000 =

- a) Meteorological visibility 400 m, RVR for runway 16 1000 m, dew point -2°C, freezing fog.**
- b) RVR for runway 16 1000 m, meteorological visibility increasing in the next 2 hours to 2000 m, vertical visibility 300 m, temperature -2°C.
- c) RVR for runway 14 1500 m, meteorological visibility 400 m, QNH 1026 hPa, wind 160° at 3 kt.
- d) Meteorological visibility 1000 m, RVR 400 m, freezing level at 300 m, variable winds, temperature 2°C.

**50.10.3.1 (3980)**

Refer to the TAF for Amsterdam airport.FCNL31 281500EHAM 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 2100 UTC. What lowest cloud base is forecast for arrival at Amsterdam?

- a) 500 FT**
- b) 250 FT
- c) 500 m
- d) 800 FT

**50.10.3.1 (3981)**

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 fir 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 52n and 54n east of 002e sev ice sev turb ts also fcst mov e wkn =Which decision is correct?

- a) Because of the expected turbulence you select a flight level below FL 250.**
- b) You show no further interest in these reports, since they do not concern the route to be flown.
- c) Owing to these reports and taking into account the presence of heavy thunderstorms at planned FL 310 you select a higher flight level (FL 370).
- d) You cancel the flight since the expected dangerous weather conditions along the route would demand too much of the passengers.

**50.10.3.1 (3982)**

Refer to the following TAF extract:BECMG 1821 2000 BKN004 PROB30 BECMG 2124 0500 FG VV001What visibility is forecast for 2400 UTC?



- a) **500 m.**
- b) 2000 m.
- c) Between 500 m and 2000 m.
- d) Between 0 m and 1000 m.

**50.10.3.1 (3983)**

**Refer to the following TAF extract: BECMG 1821 2000 BKN004 PROB30 BECMG 2124 0500 FG VV001 What does the abbreviation ""VV001"" mean?**

- a) **Vertical visibility 100 FT.**
- b) RVR less than 100 m.
- c) RVR greater than 100 m.
- d) Vertical visibility 100 m.

**50.10.3.1 (3984)**

**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 warning of dangerous meteorological conditions within a FIR.
- c) A METAR is a flight forecast, issued by the meteorological station several times daily.
- d) A METAR is a landing forecast added to the actual weather report as a brief prognostic report.

**50.10.3.1 (3985)**

**How long from the time of observation is a TREND in a METAR valid?**

- a) **2 hours.**
- b) 9 hours.
- c) 1 hour.
- d) 30 minutes.

**50.10.3.1 (3986)**

**What is a SPECI?**

**a) A selected special aerodrome weather report, issued when a significant change of the weather conditions have been observed.**

- b) A routine aerodrome weather report issued every 3 hours.
- c) A warning of meteorological dangers at an aerodrome, issued only when required.
- d) An aerodrome forecast issued every 9 hours.

**50.10.3.1 (3987)**

**Appended to a METAR you get the following runway report: 01650428 What must you consider when making performance calculations?**

- a) **The friction coefficient is 0.28.**
- b) The braking action will be medium to good.
- c) The runway will be wet.
- d) Aquaplaning conditions.

**50.10.3.1 (3988)**

**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) **The new conditions are achieved between 1800 and 2100 UTC**
- b) A quick change to new conditions between 1800 UTC and 1900 UTC.

- c) Many short term changes in the original weather.
- d) Many long term changes in the original weather.

**50.10.3.1 (3989)**

**Refer to the following TAF extract: BECMG 1821 2000 BKN004 PROB30 BECMG 2124 0500 FG VV001 What does the abbreviation ""BKN004"" mean?**

- a) **5 - 7 oktas, ceiling 400 FT.**
- b) 1 - 4 oktas, ceiling 400 FT.
- c) 4 - 8 oktas, ceiling 400 m.
- d) 1 - 4 oktas, ceiling 400 m.

**50.10.3.1 (3990)**

**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) Conditions will last for at least 30 minutes.
- c) The cloud ceiling should lift to 3000 FT.
- d) Change expected in less than 30 minutes.

**50.10.3.1 (3991)**

**What is the wind speed given in a METAR report based on?**

- a) **The average speed of the previous 10 minutes**
- b) The average speed of the previous 30 minutes
- c) The strongest gust in the previous hour
- d) The actual speed at the time of recording

**50.10.3.1 (3992)**

**What does the term SIGMET signify?**

**a) A SIGMET is a warning of dangerous meteorological conditions**

- b) A SIGMET is a flight forecast, issued by the meteorological station several times daily
- c) A SIGMET is a brief landing forecast added to the actual weather report
- d) A SIGMET is an actual weather report at an aerodrome and is generally issued at half-hourly intervals

**50.10.3.1 (3993)**

**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

**50.10.3.1 (3994)**

**Which of the following phenomena should be described as precipitation at the time they are observed?**

- a) **SN**
- b) BCFG
- c) FZFG
- d) HZ

**50.10.3.1 (3995)**

Which of the following phenomena should be described as precipitation at the time they are observed?

a) #NAME?

- b) VA
- c) BR
- d) MIFG

**50.10.3.1 (3996)**

Which of the following phenomena should be described as precipitation at the time they are observed?

a) DZ

- b) SA
- c) TS
- d) SQ

**50.10.3.1 (3997)**

Which of the following statements is an interpretation of the SIGMET ?LSAW SWITZERLAND 0307 SIGMET 2 VALID 030700/031100 LSSW mod to sev cat fcst north of alps btn fl 260 and fl 380 / stnr / intsf =

a) Moderate to severe clear air turbulence to be expected north of the Alps.

Intensity increasing. Danger zone between FL 260 and FL 380

- b) Zone of moderate to severe turbulence moving towards the area north of the Alps. Intensity increasing. Pilots advised to cross this area above FL 260
- c) Severe turbulence observed below FL 260 north of the Alps. Pilots advised to cross this area above FL 380
- d) Moderate to strong clear air turbulence of constant intensity to be expected north of the Alps

**50.10.3.1 (3998)**

Which of the following statements is an interpretation of the SIGMET ?SIGMET VALID 121420/121820 embd ts obs and fcst in w part of athina fir / mov e / intst nc =

a) Thunderstorms must be expected in the western part of the Athens FIR. The thunderstorm zone is moving east. Intensity is constant

- b) Thunderstorms have formed in the eastern part of the Athens FIR and are slowly moving west
- c) Athens Airport is closed due to thunderstorms. The thunderstorm zone should be east of Athens by 1820 UTC
- d) The thunderstorms in the Athens FIR are increasing in intensity, but are stationary above the western part of the Athens FIR

**50.10.3.1 (3999)**

Refer to the following TAF for Zurich.LSZH 261019 20018G30KT 9999 -RA SCT050 BKN080 TEMPO 23012KT 6000 -DZ BKN015 BKN030 BECMG 1518 23020G35KT 4000 RA OVC010=The lowest visibility forecast at ETA Zurich 1430 UTC is:

a) 6 km.

- b) 6 NM.
- c) 4 km.
- d) 10 km.

**50.10.3.1 (4000)**

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 (1200 UTC) is:

a) 1500 FT.

- b) 1000 FT.
- c) 1500 m.
- d) 5000 FT.

**50.10.3.1 (4001)**

The following weather reportEDDM 241322 VRB03KT 1500 HZ OVC004 BECMG 1517 00000KT 0500 FG VV002 TEMPO 2022 0400 FG VV001is a :

a) 9 hour TAF.

- b) 24 hour TAF.
- c) SPECI.
- d) METAR.

**50.10.3.1 (4002)**

In METAR messages, the pressure group represents the

a) QNH rounded down to the nearest hPa.

- b) QFE rounded to the nearest hPa.
- c) QNH rounded up to the nearest hPa.
- d) QFE rounded down to the nearest hPa.

**50.10.3.1 (4003)**

What is the meaning of the abbreviation ""SCT"" ?

a) 3 - 4 oktas

- b) 1 - 2 oktas
- c) 5 - 7 oktas
- d) 1 - 4 oktas

**50.10.3.1 (4004)**

Refer to TAF below.EGBB 261812 28015G25KT 9999 SCT025 TEMPO 1822 29018G35KT 5000 SHRASN BKN010CB PROB30 TEMPO 1821 1500 TSGR BKN008CB BECMG 2124 26010KTFrom the TAF above you can assume that visibility at 2055Z in Birmingham (EGBB) will be :

a) not less than 1,5 km but could be in excess of 10 km.

- b) a maximum 5 km.
- c) a minimum of 1,5 km and a maximum of 5 km.
- d) more than 10 km

**50.10.3.1 (4005)**

Which of the following meteorological phenomena can rapidly change the braking action of a runway?

a) #NAME?

- b) MIFG
- c) FG
- d) HZ

**50.10.3.1 (4006)**

Which of the following phenomena can produce a risk of aquaplaning?

**a) #NAME?**

- b) FG
- c) BCFG
- d) SA

**50.10.3.1 (4007)**

**Which of these four METAR reports suggests that rain is most likely in the next few hours?**

**a) 23015KT 8000 BKN030 OVC070 17/14 Q1009 BECMG 4000 =**

- b) 34004KT 9999 SCT040 SCT100 m05/m08 Q1014 NOSIG =
- c) 16002KT 0100 FG SCT300 06/06 Q1022 BECMG 1000 =
- d) 05016G33KT 8000 OVC015 08/06 Q1028 NOSIG =

**50.10.3.1 (4008)**

**Which of these four METAR reports suggests that a thunderstorm is likely in the next few hours?**

**a) 1350Z 21005KT 9999 SCT040CB SCT100 26/18 Q1016 TEMPO 24018G30 TS =**

- b) 1350Z 16004KT 8000 SCT110 OVC220 02/m02 Q1008 NOSIG =
- c) 1350Z 34003KT 0800 SN VV002 m02/m04 Q1014 NOSIG =
- d) 1350Z 04012KT 3000 OVC012 04/03 Q1022 BECMG 5000 =

**50.10.3.1 (4009)**

**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 06018G30KT 5000 OVC010 04/01 Q1024 NOSIG =
- d) 1850Z 25010KT 4000 RA BKN012 OVC030 12/10 Q1006 TEMPO 1500 =

**50.10.3.1 (4010)**

**Look at this TAF for Zurich Airport TAF LSZH 211322 22018G35KT 9999 SCT012 BKN030 BECMG 1315 25025G45KT TEMPO 1720 4000 +SHRA BKN025TCU BECMG 2022 25015KT T1815Z T1618Z = Which of these statements best describes the weather most likely to be experienced at 1500 UTC?**

**a) Meteorological visibility 10 kilometres or more, main cloudbase 3000 feet, wind 250°, temperature 18°C.**

- b) Meteorological visibility 4000 metres, gusts up to 25 knots, temperature 18°C.
- c) Meteorological visibility 10 kilometres or more, main cloudbase 1200 feet, gusts up to 45 knots.
- d) Severe rainshowers, meteorological visibility 4000 metres, temperature 15°C, gusts up to 35 knots.

**50.10.3.1 (4011)**

**Refer to the TAF for Zurich Airport TAF LSZH 250716 00000KT 0100 FG VV001 BECMG 0810 0800 VV002 BECMG 1012 23005KT 2500 BKN005 TEMPO 1316 6000 SCT007 = Which of these statements best describes the weather that can be expected at 1200 UTC?**

**a) Meteorological visibility 2,5 kilometres, cloudbase 500 feet, windspeed 5 knots**

- b) Meteorological visibility 800 metres, wind from 230°, cloudbase 500 feet
- c) Meteorological visibility 800 metres, vertical visibility 200 feet, calm
- d) Meteorological visibility 6 kilometres, cloudbase 500 feet, windspeed 5 knots

**50.10.3.1 (4012)**

**Which of the following weather reports could be, in accordance with the regulations, abbreviated to ""CAVOK""?**

**a) 15003KT 9999 BKN100 17/11 Q1024 NOSIG =**

- b) 24009KT 6000 RA SCT010 OVC030 12/11 Q1007 TEMPO 4000 =
- c) 29010KT 9999 SCT045TCU 16/12 Q1015 RESHRA NOSIG =
- d) 04012G26KT 9999 BKN030 11/07 Q1024 NOSIG =

**50.10.3.1 (4013)**

**Which of the following weather reports could be, in accordance with the regulations, abbreviated to ""CAVOK""?**

**a) 27019G37KT 9999 BKN050 18/14 Q1016 NOSIG =**

- b) 34004KT 7000 MIFG SCT260 09/08 Q1029 BECMG 1600 =
- c) 00000KT 0100 FG VV001 11/11 Q1025 BECMG 0500 =
- d) 26012KT 8000 SHRA BKN025 16/12 Q1018 NOSIG =

**50.10.3.1 (4014)**

**Which of the following statements is an interpretation of the METAR ?25020G38KT 1200 +TSGR BKN006 BKN015CB 23/18 Q1016 BECMG NSW =**

**a) Gusts of 38 knots, thunderstorm with heavy hail, dew point 18°C**

- b) Mean wind speed 20-38 knots, meteorological visibility 1200 metres, temperature 23°C
- c) Broken, cloudbase 600 feet and 1500 feet, temperature 18°C
- d) Wind 250°, thunderstorm with moderate hail, QNH 1016 hPa

**50.10.3.1 (4015)**

**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) RVR for runway 14 800 metres, vertical visibility 100 feet, calm, meteorological visibility improving to 800 metres in the next 2 hours**

- b) Meteorological visibility 200 metres, RVR for runway 16 1500 metres, temperature -3°C, vertical visibility 100 metres
- c) Meteorological visibility 200 feet, RVR for runway 16 more than 1500 metres, vertical visibility 100 feet, fog with hoar frost
- d) Meteorological visibility for runway 14 800 metres, fog with hoar frost, RVR for runway 16 more than 1500 metres

**50.10.3.1 (4016)**

**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) There is a distinct change in RVR observed
- c) Runway 26R and runway 26L have the same RVR
- d) RVR on runway 26R is increasing

**50.10.3.1 (4017)**

**Which of the statements is true concerning squall lines ?**

**a) For severe squall lines a SIGMET is issued**

- b) Severe squall lines only occur in the tropics
- c) For severe squall lines a TAF is issued
- d) Severe squall lines always move from northwest to southeast

**50.10.3.1 (4018)**

**The validity of a TAF is**

**a) stated in the TAF**

- b) 2 hours
- c) between 6 and 9 hours
- d) 9 hours from the time of issue

**50.10.3.1 (4019)**

**If CAVOK is reported then**

**a) no low drifting snow is present**

- b) no clouds are present
- c) low level windshear has not been reported
- d) any CB's have a base above 5000 FT

**50.10.3.1 (4020)**

**Runway visual range can be reported in**

**a) a METAR**

- b) a TAF
- c) a SIGMET
- d) both a TAF and a METAR

**50.10.3.1 (4021)**

**SIGMET information is issued as a warning for significant weather to**

**a) all aircraft**

- b) light aircraft only
- c) VFR operations only
- d) heavy aircraft only

**50.10.3.1 (4022)**

**A SPECI is**

**a) an aviation selected special weather report**

- b) an aviation routine weather report
- c) a warning for special weather phenomena
- d) a forecast for special weather phenomena

**50.10.3.1 (4023)**

**On the European continent METARs of main airports are compiled and distributed with intervals of**

**a) 0.5 hour**

- b) 1 hour
- c) 2 hours
- d) 3 hours

**50.10.3.1 (4024)**

**The RVR, as reported in a METAR, is always the**

**a) value representative of the touchdown zone**

- b) average value of the A-, B- and C-position
- c) highest value of the A-, B- and C-position
- d) lowest value of the A-, B- and C-position

**50.10.3.1 (4025)**

**At a weather station, at 0600 UTC, 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) M00/M01**

- b) M01/M02
- c) 00/M01
- d) M01/M01

**50.10.3.2 (4026)**

**Compare the following TAF and VOLMET reports for Nice: TAF 240716 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 at Nice is clearly more volatile than the TAF could have predicted earlier in the morning**

- b) That the weather conditions at 0920 were actually predicted in the TAF
- c) That the weather in Nice after 0920 is also likely to be as predicted in the TAF
- d) 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

**50.10.3.2 (4027)**

**Marseille Information gives you the following meteorological information for Ajaccio and Calvi for 1600 UTC : Ajaccio: wind 360°/2 kt, visibility 2000 m, rain, BKN stratocumulus at 1000 FT, OVC altostratus at 8000 FT, QNH 1023 hPa. Calvi: wind 040°/2 kt, visibility 3000 m, mist, FEW stratus at 500 FT, SCT stratocumulus at 2000 FT, OVC altostratus at 9000 FT, QNH 1023 hPa. The ceilings (more than 4 oktas) are therefore:**

**a) 1000 FT at Ajaccio and 9000 FT at Calvi**

- b) 1000 FT at Ajaccio and 500 FT at Calvi
- c) 8000 FT at Ajaccio and 9000 FT at Calvi
- d) 1000 FT at Ajaccio and 2000 FT at Calvi

**50.10.3.2 (4028)**

**ATIS information contains**

**a) meteorological and operational information**

- b) only meteorological information
- c) operational information and if necessary meteorological information
- d) only operational information

**50.10.3.3 (4029)**

**(For this question use annex 050-2432A) 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 =**

**a) EDDL**

- b) LFPO
- c) LOWW
- d) LEMD

**50.10.3.3 (4030)**

**(For this question use annex 050-2545A) What wind is forecast at FL 390 over Paris**

?

**a) 210/40**

b) 240/20

c) 030/40

d) 190/40

**50.10.3.3 (4031)**

(For this question use annex 050-2547A) What is the average temperature at FL 160 between Oslo and Paris ?

**a) -19°C**

b) -23°C

c) -15°C

d) -25°C

**50.10.3.3 (4032)**

(For this question use annex 050-2548A) What is the temperature deviation in degrees Celsius, from the International Standard Atmosphere overhead Frankfurt ?

**a) ISA -4°C**

b) ISA -12°C

c) ISA +12°C

d) ISA +4°C

**50.10.3.3 (4033)**

(For this question use annex 050-2549A) What is the speed of the front located over France ?

**a) 15 kt**

b) 25 kt

c) 10 kt

d) 30 kt

**50.10.3.3 (4034)**

(For this question use annex 050-2550A) Flight Munich to London. What is the direction and maximum speed of the jet stream affecting the route between Munich and London ?

**a) 220° / 120 kt**

b) 050° / 120 km/h

c) 050° / 120 kt

d) 230° / 120 m/sec

**50.10.3.3 (4035)**

(For this question use annex 050-2554A) Flight Shannon to London. What amount and type of cloud is forecast for the eastern sector of the route between Shannon and London at FL 220 ?

**a) Well separated cumulonimbus**

b) Overcast nimbo layered cumulonimbus

c) Scattered towering cumulus

d) Scattered castellanus

**50.10.3.3 (4036)**

(For this question use annex 050-2510A) In what height range and at what intensity could you encounter turbulence in CAT area n°2?

**a) From FL 220 to FL 400, moderate**

b) From FL 240 to FL 370, light

c) From below FL 130 to FL 270, light

d) From FL 250 to FL 320, moderate

**50.10.3.3 (4037)**

(For this question use annex 050-2511A) At what flight level is the jet stream core that is situated over northern Scandinavia ?

**a) FL 280**

b) FL 330

c) FL 360

d) FL 300

**50.10.3.3 (4038)**

(For this question use annex 050-2512A) At which position could you encounter thunderstorms, and what is the maximum height of the CB clouds?

**a) Position B, FL 270.**

b) Position A, FL 200.

c) Position C, FL 200.

d) Position D, FL 290.

**50.10.3.3 (4039)**

(For this question use annex 050-2513A) At what approximate flight level is the tropopause over Frankfurt?

**a) FL 330**

b) FL 300

c) FL 350

d) FL 240

**50.10.3.3 (4040)**

(For this question use annex 050-2522A) Select from the map the wind for the route Zurich - London at FL 280.

**a) 220 / 60**

b) 250 / 80

c) 040 / 60

d) 160 / 90

**50.10.3.3 (4041)**

(For this question use annex 050-2523A) What is the average wind at FL 160 between Zurich and Rome ?

**a) 020/50**

b) 050/40

c) 200/45

d) 350/40

**50.10.3.3 (4042)**

(For this question use annex 050-2529A) The temperature at FL 330 overhead London will be

**a) -45°C**

b) -39°C

- c) -33°C
- d) -57°C

**50.10.3.3 (4043)**

How may the correct wind speed be found, for a level, which is between two upper air chart levels? (e.g. wind at FL 250, when the 500 hPa and the 300 hPa chart are available).

**a) By interpolation of the wind information available from the two charts, while also considering the maximum wind information found on the Significant Weather Chart.**

- b) By simple interpolation of wind information available from the two charts.
- c) By reading wind direction and speed from the next higher chart.
- d) By reading wind direction and speed from the 300 hPa chart.

**50.10.3.3 (4044)**

Why are indications about the height of the tropopause not essential for flight documentation in the tropics?

**a) The tropopause is generally well above the flight level actually flown.**

- b) The meteorological services are unable to provide such a chart.
- c) The temperatures of the tropical tropopause are always very cold and therefore not important.
- d) Tropopause informations are of no value.

**50.10.3.3 (4045)**

(For this question use annex 050-2493A) Over Madrid, what intensity of turbulence and icing is forecast at FL 200 ?

**a) Moderate turbulence, moderate icing**

- b) Moderate turbulence, light icing
- c) Severe turbulence, moderate icing
- d) Severe turbulence, severe icing

**50.10.3.3 (4046)**

(For this question use annex 050-2496A) Which airport, at 1200 UTC, has the lowest probability of precipitation?

**a) LSZH**

- b) ESSA
- c) ENFB
- d) EFHK

**50.10.3.3 (4047)**

(For this question use annex 050-2503A) Over Paris at what height would you expect to find the tropopause according to the map?

**a) 30000 FT**

- b) 33000 FT
- c) 15000 FT
- d) 28000 FT

**50.10.3.3 (4048)**

(For this question use annex 050-2504A) What is the optimum flight level between Rome and Paris according to the significant weather chart?

**a) FL 220**

- b) FL 340
- c) FL 160
- d) FL 360

**50.10.3.3 (4049)**

(For this question use annex 050-2505A) Flight Zurich to Rome, ETD 1600 UTC, ETA 1800 UTC. At what flight level would you first expect to encounter clear air turbulence on the climb out from Zurich?

**a) FL 220**

- b) FL 160
- c) FL 320
- d) FL 140

**50.10.3.3 (4050)**

(For this question use annex 050-2506A) What is the approximate height of the tropopause between Munich and Helsinki?

**a) FL 340**

- b) FL 280
- c) FL 300
- d) FL 390

**50.10.3.3 (4051)**

(For this question use annex 050-2509A) You are flying from Munich to Amsterdam. Which of the following flight levels would you choose in order to avoid turbulence and icing?

**a) FL 260**

- b) FL 320
- c) FL 180
- d) FL 140

**50.10.3.3 (4052)**

(For this question use annex 050-2053A) What is the wind direction and speed at 3 000 FT overhead position ""Q"" at 0600 UTC?

**a) 270° 30 kt.**

- b) 270° 15 kt.
- c) 240° 25 kt.
- d) 240° 20 kt.

**50.10.3.3 (4053)**

(For this question use annex 050-2433A) What weather conditions are expected at Paris airport (LFPO) around 0550 UTC?

**a) 23014KT 3000 +RA SCT008 OVC025 15/13 Q1004 NOSIG =**

- b) 26012KT 9999 SCT025 SCT040 14/09 Q1018 TEMPO 5000 SHRA =
- c) 22020G36KT 1500 TSGR SCT004 BKN007 BKN025CB 18/13 Q1009 BECMG NSW =
- d) 20004KT 8000 SCT110 SCT250 22/08 Q1016 NOSIG =

**50.10.3.3 (4054)**

(For this question use annex 050-2555A) Over Amsterdam, what amount and general type of cloud would you expect at FL 160 ?

**a) Mainly 5 to 8 oktas of stratiform cloud in layers**

- b) 4 oktas broken cumulus

- c) Isolated cumulonimbus only
- d) 5 to 7 oktas towering cumuliform cloud and with moderate turbulence

**50.10.3.3 (4055)**

**(For this question use annex 050-2556A) To what extent is Munich covered by clouds ?**

- a) 5 to 8 oktas**
- b) 1 to 4 oktas
- c) 5 to 7 oktas
- d) 3 to 5 oktas

**50.10.3.3 (4056)**

**(For this question use annex 050-2558A) What OAT would you expect at FL 200 over Geneva ?**

- a) -24°C**
- b) -20°C
- c) -16°C
- d) -28°C

**50.10.3.3 (4057)**

**(For this question use annex 050-3030A) To which aerodrome is the following TAF most applicable ? TAF 231019 24014KT 6000 SCT030 BKN100 TEMPO 1113 25020G38KT 2500 +TSRA SCT008 BKN025CB BECMG 1315 28012KT 9999 SCT025 TEMPO 5000 SHRA BKN020 BECMG 1719 27008KT 9999 SCT030**

- a) LOWW**
- b) LFPG
- c) LEMD
- d) EKCH

**50.10.3.3 (4058)**

**(For this question use annex 050-4362A) At which airport is the following weather development taking place? TAF 231322 24014G32KT 4000 +TSRA SCT005 BKN015 BKN020CB BECMG 1416 29012KT 9999 BKN030TCU SCT100 TEMPO 8000 SHRA BKN025TCU BECMG 1922 27012KT 9999 SCT030 OVC220 =**

- a) EINN**
- b) ESSA
- c) LSZH
- d) EKCH

**50.10.3.3 (4059)**

**(For this question use annex 050-4363A) Which of the following weather conditions would be expected at Athens Airport (LGAT) at around 1450 UTC?**

- a) 21002KT 6000 BR SCT040 29/16 Q1026 NOSIG =**
- b) 16002KT 0200 R33L/0600N FG VV001 12/12 Q1031 BECMG 0800 =
- c) 26014KT 8000 BKN090 17/12 Q1009 BECMG 4000 =
- d) 23018G35KT 9999 SCT035 10/04 Q0988 NOSIG =

**50.10.3.3 (4060)**

**(For this question use annex 050-4364A) Which airport is most likely to have fog in the coming night?**

- a) LSZH**

- b) ENFB
- c) EKCH
- d) ESSA

**50.10.3.3 (4061)**

**(For this question use annex 050-4365A) Select from the map the average wind for the route Zurich - Rome at FL110.**

- a) 230/10**
- b) 200/30
- c) 040/10
- d) 250/20

**50.10.3.3 (4062)**

**(For this question use annex 050-4366A) Select from the map the average temperature for the route Zurich - Rome at FL 110.**

- a) -9°C**
- b) -12°C
- c) -6°C
- d) +5°C

**50.10.3.3 (4063)**

**(For this question use annex 050-4367A) Look at the chart. Assuming a normal vertical temperature gradient, at what altitude will the freezing level above Shannon be found?**

- a) FL 60**
- b) FL 20
- c) FL 140
- d) FL 120

**50.10.3.3 (4064)**

**(For this question use annex 050-4368A) Select from the map the average wind for the route Frankfurt - Rome at FL 170.**

- a) 230/40**
- b) 200/50
- c) 050/40
- d) 030/35

**50.10.3.3 (4065)**

**(For this question use annex 050-4369A) Assuming a normal vertical temperature gradient, at what altitude will the freezing level above Tunis be found?**

- a) FL 100**
- b) FL 20
- c) FL 180
- d) FL 260

**50.10.3.3 (4066)**

**(For this question use annex 050-4370A) What is the mean temperature deviation from ISA for the Frankfurt - Rome route?**

- a) 4°C colder than ISA**
- b) 4°C warmer than ISA

- c) 10°C colder than ISA
- d) 10°C warmer than ISA

**50.10.3.3 (4067)**

**(For this question use annex 050-4371A) Select from the map the average wind for the route Athens - Geneva at FL 160.**

- a) 240/40**
- b) 210/25
- c) 260/40
- d) 050/35

**50.10.3.3 (4068)**

**(For this question use annex 050-4372A) Select from the map the average temperature for the route Athens - Geneva at FL 150.**

- a) -14°C**
- b) -21°C
- c) -11°C
- d) -27°C

**50.10.3.3 (4069)**

**(For this question use annex 050-4373A) What is the deviation of the temperature at FL 140 above Copenhagen compared to ISA?**

- a) 8°C colder than ISA**
- b) 4°C warmer than ISA
- c) 8°C warmer than ISA
- d) 12°C colder than ISA

**50.10.3.3 (4070)**

**(For this question use annex 050-4374A) Select from the map the average wind for the route Zurich - Hamburg at FL 240.**

- a) 230/20**
- b) 020/20
- c) 200/15
- d) 260/25

**50.10.3.3 (4071)**

**(For this question use annex 050-4375A) Select from the map the average temperature for the route Zurich - Lisboa at FL 200.**

- a) -33°C**
- b) -30°C
- c) -41°C
- d) -49°C

**50.10.3.3 (4072)**

**(For this question use annex 050-4376A) Select from the map the average wind for the route Shannon - Lisboa at FL 290.**

- a) 360/80**
- b) 030/70
- c) 190/75
- d) 340/90

**50.10.3.3 (4073)**

**(For this question use annex 050-4377A) Select from the map the average temperature for the route Geneva - Stockholm at FL 260.**

- a) -47°C**
- b) -51°C
- c) -55°C
- d) -63°C

**50.10.3.3 (4074)**

**(For this question use annex 050-4378A) On which of the following routes can you expect icing to occur, on the basis of the chart?**

- a) Rome - Frankfurt**
- b) Hamburg - Oslo
- c) Tunis - Rome
- d) Copenhagen - Helsinki

**50.10.3.3 (4075)**

**8/8 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: OVC base 500 FT/AGL, summer SCT base 3000 FT/AGL.**
- b) Winter: clear sky, summer BKN CB base 1500 FT/AGL.
- c) Winter: BKN base 2500 FT/AGL, summer BKN base 3500 FT/AGL.
- d) Winter: SCT base 3000 FT/AGL, summer OVC base 500 FT/AGL.

**50.10.3.3 (4076)**

**(For this question use annex 050-4379A) Looking at the chart, at what altitude above Frankfurt would you expect the tropopause to be located?**

- a) FL 310**
- b) FL 350
- c) FL 250
- d) FL 280

**50.10.3.3 (4077)**

**(For this question use annex 050-4380A) If you are flying from Zurich to London at FL 220, what conditions can you expect at cruising altitude?**

- a) Scattered thunderstorms**
- b) Flight largely in cloud, no turbulence
- c) Prolonged severe turbulence and icing throughout the flight
- d) CAT for the first half of the flight

**50.10.3.3 (4078)**

**(For this question use annex 050-4381A) Which of the following statements is true?**

- a) The front to the north of Frankfurt is moving north-east at about 5 kt**
- b) The jet stream above Italy has a maximum speed of 120 km/h
- c) Thunderclouds have formed over the Iberian peninsula extending to some 25000 meters
- d) There is no significant cloud above Rome

**50.10.3.3 (4079)**

**(For this question use annex 050-4382A) On which of these routes would you not**



**have to worry about turbulence at FL 340?**

**a) Shannon - Hamburg**

- b) Zurich - Rome
- c) Zurich - Athens
- d) Rome - Berlin

**50.10.3.3 (4080)**

**(For this question use annex 050-4383A) If you are flying from Zurich to Stockholm at FL 240, what conditions can you expect at cruising altitude?**

**a) Largely free of cloud, moderate icing half way along the route**

- b) Cloud most of the way, little chance of CAT
- c) Scattered thunderstorms
- d) Out of cloud throughout the flight

**50.10.3.3 (4081)**

**(For this question use annex 050-4384A) Judging by the chart, what windspeeds can you expect at FL 340 above Rome?**

**a) 145 kt**

- b) 340 kt
- c) 95 kt
- d) 140 km/h

**50.10.3.3 (4082)**

**(For this question use annex 050-4385A) Judging by the chart, on which of these routes can you expect to encounter moderate and locally severe CAT at FL 300?**

**a) Zurich - Rome**

- b) London - Zurich
- c) Zurich - Copenhagen
- d) Paris - Bordeaux

**50.10.3.3 (4083)**

**(For this question use annex 050-4386A) If you are flying from Zurich to Shannon at FL 340, where will your cruising altitude be?**

**a) Constantly in the stratosphere**

- b) Constantly in the troposphere
- c) First in the troposphere and later in the stratosphere
- d) In the stratosphere for part of time

**50.10.3.3 (4084)**

**(For this question use annex 050-4387A) Which of these statements is true?**

**a) Scattered thunderstorms can be expected over France**

- b) Freezing level above Madrid is higher than FL 120
- c) The front to the north of London is moving south
- d) Turbulence is likely to be encountered at FL 410 over Madrid

**50.10.3.3 (4085)**

**(For this question use annex 050-4388A) On which of these routes would you not need to worry about icing at FL 180?**

**a) Hamburg - Stockholm**

- b) Zurich - Madrid

c) Zurich - Hamburg

d) Zurich - Vienna

**50.10.3.3 (4086)**

**A pilot is warned of severe icing at certain flight levels by information supplied in**

**a) SWC and SIGMET**

- b) TAF and METAR
- c) METAR and SIGMET
- d) TAF and SIGMET

**50.10.3.5 (4087)**

**What units are used to report vertical wind shear?**

**a) kt/100 FT.**

- b) kt.
- c) m/100 FT.
- d) m/sec.

**50.10.3.6 (4088)**

**Which of the following weather reports is a warning of conditions that could be potentially hazardous to aircraft in flight ?**

**a) SIGMET.**

- b) ATIS.
- c) SPECI.
- d) TAF.

**50.10.3.6 (4089)**

**In which of the following circumstances is a SIGMET issued ?**

**a) Marked mountain waves.**

- b) Fog or a thunderstorm at an aerodrome.
- c) Clear ice on the runways of an aerodrome.
- d) A sudden change in the weather conditions contained in the METAR.

**61.1.1.0 (4090)**

**The angle between the plane of the ecliptic and the plane of equator is approximately :**

**a) 23.5°**

- b) 25.3°
- c) 27.5°
- d) 66.5°

**61.1.1.0 (4091)**

**Which is the highest latitude listed below at which the sun will rise above the horizon and set every day?**

**a) 66°**

- b) 68°
- c) 72°
- d) 62°

**61.1.1.0 (4092)**

**In which two months of the year is the difference between the transit of the**