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30 – Meteorology

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1 What clouds and weather may result from an humid and instable air mass, that is pushed against a chain of mountains by the predominant wind and forced to rise? (1,00 P.)

- ☑ Embedded CB with thunderstorms and showers of hail and/or rain.
- ☐ Smooth, unstructured NS cloud with light drizzle or snow (during winter).
- ☐ Thin Altostratus and Cirrostratus clouds with light and steady precipitation.
- ☐ Overcast low stratus (high fog) with no precipitation.

2 What type of fog emerges if humid and almost saturated air, is forced to rise upslope of hills or shallow mountains by the prevailling wind? (1,00 P.)

- ☐ Advection fog
- ☐ Steaming fog
- ☐ Radiation fog
- ☑ Orographic fog

3 What phenomenon is referred to as "blue thermals"? (1,00 P.)

- ☐ Thermals with less than 4/8 Cu coverage
- ☐ Descending air between Cumulus clouds
- ☐ Turbulence in the vicinity of Cumulonimbus clouds
- ☑ Thermals without formation of Cu clouds

4 The term "beginning of thermals" refers to the moment when thermal intensity... (1,00 P.)

- ☐ becomes usable for cross-country gliding by formation of Cu clouds.
- ☐ becomes usable for gliding and reaches up to 1200 m MSL.
- ☐ reaches up to 600 m AGL and forms Cumulus clouds.
- ☑ becomes usable for gliding and reaches up to 600 m AGL.

5 The term "trigger temperature" is defined as the temperature which... (1,00 P.)

- ☐ is reached by a thermal lift during ascend when formation of Cumulus clouds begins.
- ☐ is the maximum temperature at ground level that can be reached without formation of a thunderstorm from a Cumulus cloud.
- ☐ is the minimum temperature at ground level that has to be reached so formation of a thunderstorm from a Cumulus cloud can occur.
- ☑ must be obtained at ground level so Cumulus clouds can be formed by thermal lifts.

6 What situation is called "over-development" in a weather report? (1,00 P.)

- ☐ Change from blue thermals to cloudy thermals during the afternoon
- ☐ Development of a thermal low to a storm depression
- ☑ Vertical development of Cumulus clouds to rain showers
- ☐ Widespreading of Cumulus clouds below an inversion layer

7 The gliding weather report states environmental instability. At morning, dew covers gras and no thermals are presently active.

What development can be expected for thermal activity? (1,00 P.)

- ☐ Formation of dew prevents all thermal activity during the following day
- ☑ With ongoing insolation and ground warming, thermal lifting is likely to begin
- ☐ Environmental instability prevents air from being lifted and no thermals will be generated
- ☐ After sunset and formation of a ground-level inversion thermal activity is likely to begin

8 What change in thermal activity may be expected with cirrus clouds coming up from one direction and becoming more dense, blocking the sun? (1,00 P.)

- ☐ Cirrus clouds may intensify insolation and improve thermal activity
- ☐ Cirrus clouds indicate an high-level inversion with thermal activity ongoing up to that level
- ☑ Cirrus clouds prevent insolation and impair thermal activity.
- ☐ Cirrus clouds indicate instability and beginning of over-development

9 What situation is referred to as "shielding"? (1,00 P.)

- ☐ Ns clouds, covering the windward side of a mountain range
- ☑ High or mid-level cloud layers, impairing thermal activity
- ☐ Anvil-like structure at the upper levels of a thunderstorm cloud

- ☐ Coverage of Cumulus clouds, stated as part of eights of the sky

10 While planning a 500 km triangle flight, there is a squall line 100 km west of the departure airfield, extending from north to south, moving east.

Concerning the weather situation, what decision would be recommendable? (1,00 P.)

- ☐ To change plans and start the triangle heading east
- ☑ To postpone the flight to another day
- ☐ To plan the flight below cloud base of the thunderstorms

- ☐ During flight, to look for spacing between thunderstorms

11 What is the gas composition of "air"? (1,00 P.)

- ☐ Oxygen 78 %
  Water vapour 21 %
  Nitrogen 1 %
- ☑ Oxygen 21 %
  Nitrogen 78 %
  Noble gases / carbon dioxide 1 %
- ☐ Oxygen 21 %
  Water vapour 78 %
  Noble gases / carbon dioxide 1 %
- ☐ Nitrogen 21 %
  Oxygen 78 %
  Noble gases / carbon dioxide 1 %

12 Weather phenomena are most common to be found in which atmospheric layer? (1,00 P.)

- ☐ Tropopause
- ☐ Stratosphere
- ☐ Thermosphere
- ☑ Troposphere

13 What is the mass of a "cube of air" with the edges 1 m long, at MSL according ISA? (1,00 P.)

- ☐ 0,01225 kg
- ☐ 0,1225 kg
- ☐ 12,25 kg
- ☑ 1,225 kg

14 At what rate does the temperature change with increasing height according to ISA (ICAO Standard Atmosphere) within the troposphere? (1,00 P.)

- ☑ Decreases by 2° C / 1000 ft
- ☐ Increases by 2° C / 100 m
- ☐ Decreases by 2° C / 100 m
- ☐ Increases by 2° C / 1000 ft

15 What is the mean height of the tropopause according to ISA (ICAO Standard Atmosphere)? (1,00 P.)

- ☐ 11000 ft
- ☑ 11000 m
- ☐ 18000 ft
- ☐ 36000 m

16 The term "tropopause" is defined as... (1,00 P.)

- ☐ the layer above the troposphere showing an increasing temperature.
- ☐ the height above which the temperature starts to decrease.
- ☑ the boundary area between the troposphere and the stratosphere.
- ☐ the boundary area between the mesosphere and the stratosphere.

17 Temperatures will be given by meteorological aviation services in Europe in which unit? (1,00 P.)

- ☐ Gpdam
- ☐ Kelvin
- ☑ Degrees Centigrade (° C)
- ☐ Degrees Fahrenheit

18 What is meant by "inversion layer"? (1,00 P.)

- ☑ An atmospheric layer where temperature increases with increasing height
- ☐ An atmospheric layer where temperature decreases with increasing height
- ☐ An atmospheric layer with constant temperature with increasing height
- ☐ A boundary area between two other layers within the atmosphere

19 What is meant by "isothermal layer"? (1,00 P.)

- ☐ An atmospheric layer where temperature decreases with increasing height
- ☑ An atmospheric layer with constant temperature with increasing height
- ☐ A boundary area between two other layers within the atmosphere
- ☐ An atmospheric layer where temperature increases with increasing height

20 The temperature lapse rate with increasing height within the troposphere according ISA is... (1,00 P.)

- ☐ 1° C / 100 m.
- ☐ 0,6° C / 100 m.
- ☑ 0,65° C / 100 m.
- ☐ 3° C / 100 m.

21 Which process may result in an inversion layer at about 5000 ft (1500 m) height? (1,00 P.)

- ☐ Ground cooling by radiation during the night
- ☐ Intensive sunlight insolation during a warm summer day
- ☐ Advection of cool air in the upper troposphere
- ☑ Widespread descending air within a high pressure area

22 An inversion layer close to the ground can be caused by... (1,00 P.)

- ☐ thickening of clouds in medium layers.
- ☐ large-scale lifting of air.
- ☐ intensifying and gusting winds.
- ☑ ground cooling during the night.

23 What is the ISA standard pressure at FL 180 (5500 m)? (1,00 P.)

- ☐ 300 hPa
- ☐ 250 hPa
- ☐ 1013.25 hPa
- ☑ 500 hPa

24 Which processes result in decreasing air density? (1,00 P.)

- ☐ Decreasing temperature, increasing pressure
- ☐ Increasing temperature, increasing pressure
- ☑ Increasing temperature, decreasing pressure
- ☐ Decreasing temperature, decreasing pressure

25 The pressure at MSL in ISA conditions is... (1,00 P.)

- ☑ 1013.25 hPa.
- ☐ 113.25 hPa.
- ☐ 15 hPa.
- ☐ 1123 hPa.

26 The height of the tropopause of the International Standard Atmosphere (ISA) is at... (1,00 P.)

- ☑ 36000 ft.
- ☐ 5500 ft.
- ☐ 48000 ft.
- ☐ 11000 ft.

27 The barometric altimeter indicates height above... (1,00 P.)

- ☐ mean sea level.
- ☑ a selected reference pressure level.
- ☐ ground.
- ☐ standard pressure 1013.25 hPa.

28 The altimeter can be checked on the ground by setting... (1,00 P.)

- ☐ QFF and comparing the indication with the airfield elevation.
- ☐ QFE and comparing the indication with the airfield elevation.
- ☑ QNH and comparing the indication with the airfield elevation.
- ☐ QNE and checking that the indication shows zero on the ground.

29 The barometric altimeter with QFE setting indicates... (1,00 P.)

- ☐ true altitude above MSL.
- ☑ height above the pressure level at airfield elevation.
- ☐ height above MSL.
- ☐ height above standard pressure 1013.25 hPa.

30 The barometric altimeter with QNH setting indicates... (1,00 P.)

- ☐ true altitude above MSL.
- ☑ height above MSL.
- ☐ height above the pressure level at airfield elevation.
- ☐ height above standard pressure 1013.25 hPa.

31 How can wind speed and wind direction be derived from surface weather charts? (1,00 P.)

- ☑ By alignment and distance of isobaric lines
- ☐ By annotations from the text part of the chart
- ☐ By alignment and distance of hypsometric lines
- ☐ By alignment of lines of warm- and cold fronts.

32 Which force causes "wind"? (1,00 P.)

- ☐ Centrifugal force
- ☑ Pressure gradient force
- ☐ Coriolis force
- ☐ Thermal force

33 Above the friction layer, with a prevailing pressure gradient, the wind direction is... (1,00 P.)

- ☐ at an angle of 30° to the isobars towards low pressure.
- ☐ perpendicular to the isobars.
- ☑ parallel to the isobars.
- ☐ perpendicular to the isohypses.

34 Which of the stated surfaces will reduce the wind speed most due to ground friction? (1,00 P.)

- ☐ Flat land, lots of vegetation cover
- ☐ Flat land, deserted land, no vegetation
- ☐ Oceanic areas
- ☑ Mountainous areas, vegetation cover

35 The movement of air flowing together is called... (1,00 P.)

- ☑ convergence.
- ☐ subsidence.
- ☐ soncordence.
- ☐ divergence.

36 The movement of air flowing apart is called... (1,00 P.)

- ☐ convergence.
- ☐ concordence.
- ☐ subsidence.
- ☑ divergence.

37 What weather development will result from convergence at ground level? (1,00 P.)

- ☑ Ascending air and cloud formation
- ☐ Descending air and cloud dissipation
- ☐ Ascending air and cloud dissipation
- ☐ Descending air and cloud formation

38 When air masses meet each other head on, how is this referred to and what air movements will follow? (1,00 P.)

- ☑ Convergence resulting in air being lifted
- ☐ Divergence resulting in air being lifted
- ☐ Divergence resulting in sinking air
- ☐ Convergence resulting in sinking air

39 What are the air masses that Central Europe is mainly influenced by? (1,00 P.)

- ☐ Arctic and polar cold air
- ☐ Tropical and arctic cold air
- ☐ Equatorial and tropical warm air
- ☑ Polar cold air and tropical warm air

40 With regard to global circulation within the atmosphere, where does polar cold air meets subtropical warm air? (1,00 P.)

- ☐ At the equator
- ☐ At the subtropical high pressure belt
- ☑ At the polar front
- ☐ At the geographic poles

41 "Foehn" conditions usually develop with... (1,00 P.)

- ☐ instability, high pressure area with calm wind.
- ☐ stability, high pressure area with calm wind.
- ☑ stability, widespread air blown against a mountain ridge.
- ☐ instability, widespread air blown against a mountain ridge.

42 What type of turbulence is typically found close to the ground on the lee side during Foehn conditions? (1,00 P.)

- ☐ Clear-air turbulence (CAT)
- ☐ Inversion turbulence
- ☑ Turbulence in rotors
- ☐ Thermal turbulence

43 Light turbulence always has to be expected... (1,00 P.)

- ☐ above cumulus clouds due to thermal convection.
- ☐ below stratiform clouds in medium layers.
- ☐ when entering inversions.
- ☑ below cumulus clouds due to thermal convection.

44 Moderate to severe turbulence has to be expected... (1,00 P.)

- ☐ below thick cloud layers on the windward side of a mountain range.
- ☐ overhead unbroken cloud layers.
- ☑ on the lee side of a mountain range when rotor clouds are present.
- ☐ with the appearance of extended low stratus clouds (high fog).

45 Which answer contains every state of water found in the atmosphere? (1,00 P.)

- ☑ Liquid, solid, and gaseous
- ☐ Liquid
- ☐ Gaseous and liquid
- ☐ Liquid and solid

46 How do dew point and relative humidity change with decreasing temperature? (1,00 P.)

- ☐ Dew point decreases, relative humidity increases
- ☑ Dew point remains constant, relative humidity increases
- ☐ Dew point increases, relative humidity decreases
- ☐ Dew point remains constant, relative humidity decreases

47 How do spread and relative humidity change with increasing temperature? (1,00 P.)

- ☐ Spread remains constant, relative humidity increases
- ☐ Spread remains constant, relative humidity decreases
- ☑ Spread increases, relative humidity decreases
- ☐ Spread increases, relative humidity increases

48 The "spread" is defined as... (1,00 P.)

- ☑ difference between actual temperature and dew point.
- ☐ difference between dew point and condensation point.
- ☐ relation of actual to maximum possible humidity of air.
- ☐ maximum amount of water vapour that can be contained in air.

49 With other factors remaining constant, decreasing temperature results in... (1,00 P.)

- ☑ decreasing spread and increasing relative humidity.
- ☐ increasing spread and increasing relative humidity.
- ☐ decreasing spread and decreasing relative humidity.
- ☐ increasing spread and decreasing relative humidity.

50 What process causes latent heat being released into the upper troposphere? (1,00 P.)

- ☑ Cloud forming due to condensation
- ☐ Descending air across widespread areas
- ☐ Evaporation over widespread water areas
- ☐ Stabilisation of inflowing air masses

51 The saturated adiabatic lapse rate is... (1,00 P.)

- ☐ equal to the dry adiabatic lapse rate.
- ☐ higher than the dry adiabatic lapse rate.
- ☐ proportional to the dry adiabatic lapse rate.
- ☑ lower than the dry adiabatic lapse rate.

52 The dry adiabatic lapse rate has a value of... (1,00 P.)

- ☐ 0,65° C / 100 m.
- ☑ 1,0° C / 100 m.
- ☐ 2° / 1000 ft.
- ☐ 0,6° C / 100 m.

53 The saturated adiabatic lapse rate should be assumed with a mean value of: (1,00 P.)

- ☐ 1,0° C / 100 m.
- ☑ 0,6° C / 100 m.
- ☐ 2° C / 1000 ft.
- ☐ 0° C / 100 m.

54 What weather conditions may be expected during conditionally unstable conditions? (1,00 P.)

- ☑ Towering cumulus, isolated showers of rain or thunderstorms
- ☐ Layered clouds up to high levels, prolonged rain or snow
- ☐ Sky clear of clouds, sunshine, low winds
- ☐ Shallow cumulus clouds with base at medium levels

55 Which conditions are likely for the formation of advection fog? (1,00 P.)

- ☐ Warm, humid air cools during a cloudy night
- ☐ Cold, humid air moves over a warm ocean
- ☐ Humidity evaporates from warm, humid ground into cold air
- ☑ Warm, humid air moves over a cold surface

56 Clouds are basically distinguished by what types? (1,00 P.)

- ☐ Thunderstorm and shower clouds
- ☑ Cumulus and stratiform clouds
- ☐ Stratiform and ice clouds
- ☐ Layered and lifted clouds

57 Clouds in high layers are referred to as... (1,00 P.)

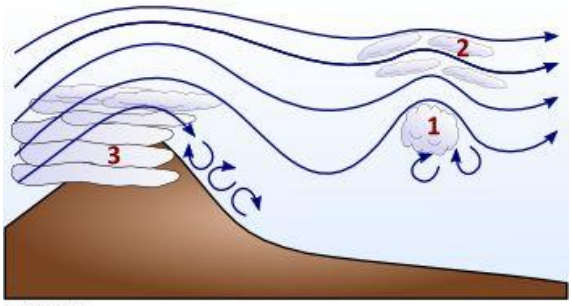
- ☑ Cirro-.
- ☐ Strato-.
- ☐ Nimbo-.
- ☐ Alto-.

58 What weather phenomenon designated by "2" has to be expected on the lee side during "Foehn" conditions?

See figure (MET-001). (1,00 P.)

Siehe Anlage 1

- ☐ Cumulonimbus
- ☐ Nimbostratus
- ☑ Altocumulus lenticularis
- ☐ Altocumulus Castellanus



MET-001

59 What cloud type does the picture show?

See figure (MET-002). (1,00 P.)

Siehe Anlage 2

- ☐ Stratus
- ☐ Cirrus
- ☐ Altus
- ☑ Cumulus

60 What cloud type does the picture show?

See figure (MET-004). (1,00 P.)

Siehe Anlage 3

- ☐ Altocumulus
- ☑ Cirrus
- ☐ Cumulus
- ☐ Stratus

61 What factor may affect the top of cumulus clouds? (1,00 P.)

- ☐ The spread
- ☐ Relative humidity
- ☐ The absolute humidity
- ☑ The presence of an inversion layer

62 What factors may indicate a tendency to fog formation? (1,00 P.)

- ☐ Strong winds, decreasing temperature
- ☑ Low spread, decreasing temperature
- ☐ Low pressure, increasing temperature
- ☐ Low spread, increasing temperature

63 What condition may prevent the formation of "radiation fog"? (1,00 P.)

- ☐ Calm wind
- ☐ Clear night, no clouds
- ☐ Low spread
- ☑ Overcast cloud cover

64 What process results in the formation of "advection fog"? (1,00 P.)

- ☐ Cold, moist air is being moved across warm ground areas
- ☐ Cold, moist air mixes with warm, moist air
- ☐ Prolonged radiation during nights clear of clouds
- ☑ Warm, moist air is moved across cold ground areas

65 What process results in the formation of "orographic fog" ("hill fog")? (1,00 P.)

- ☐ Prolonged radiation during nights clear of clouds
- ☑ Warm, moist air is moved across a hill or a mountain range
- ☐ Evaporation from warm, moist ground area into very cold air
- ☐ Cold, moist air mixes with warm, moist air

66 What factors are required for the formation of precipitation in clouds? (1,00 P.)

- ☐ The presence of an inversion layer
- ☑ Moderate to strong updrafts
- ☐ Calm winds and intensive sunlight insolation
- ☐ High humidity and high temperatures

67 The formation of medium to large precipitation particles requires... (1,00 P.)

- ☑ strong updrafts.
- ☐ an inversion layer.
- ☐ a high cloud base.
- ☐ strong wind.

68 Which type of cloud is associated with prolonged rain? (1,00 P.)

- ☐ Altocumulus
- ☐ Cumulonimbus
- ☑ Nimbostratus
- ☐ Cirrostratus

69 Regarding the type of cloud, precipitation is classified as... (1,00 P.)

- ☐ showers of snow and rain.
- ☐ prolonged rain and continuous rain.
- ☑ rain and showers of rain.
- ☐ light and heavy precipitation.

70 How is an air mass described when moving to Central Europe via the Russian continent during winter? (1,00 P.)

- ☐ Maritime tropical air
- ☑ Continental polar air
- ☐ Maritime polar air
- ☐ Continental tropical air

71 The character of an air mass is given by what properties? (1,00 P.)

- ☐ Wind speed and tropopause height
- ☐ Environmental lapse rate at origin
- ☑ Region of origin and track during movement
- ☐ Temperatures at origin and present region

72 The symbol labeled (1) as shown in the picture is a / an...

See figure (MET-005)
(1,00 P.)

Siehe Anlage 4

- ☐ front aloft.
- ☑ cold front.
- ☐ occlusion.
- ☐ warm front.

73 The symbol labeled (2) as shown in the picture is a / an...

See figure (MET-005) (1,00 P.)

Siehe Anlage 4

- ☐ front aloft.
- ☐ cold front.
- ☐ occlusion.
- ☑ warm front.

74 The symbol labeled (3) as shown in the picture is a / an...

See figure (MET-005) (1,00 P.)

Siehe Anlage 4

- ☐ cold front.
- ☐ warm front.
- ☐ front aloft.
- ☑ occlusion.

75 What cloud sequence can typically be observed during the passage of a warm front? (1,00 P.)

- ☐ Wind becoming calm, dissipation of clouds and warming during summer; formation of extended high fog layers during winter
- ☐ Squall line with showers of rain and thunderstorms (Cb), gusting wind followed by cumulus clouds with isolated showers of rain
- ☑ Cirrus, thickening altostratus and altocumulus clouds, lowering cloud base with rain, nimbostratus
- ☐ In coastal areas during daytime wind from the coast and forming of cumulus clouds, dissipation of clouds during evening and night

76 What clouds and weather can typically be observed during the passage of a cold front? (1,00 P.)

- ☐ Wind becoming calm, dissipation of clouds and warming during summer; formation of extended high fog layers during winter
- ☐ Cirrus, thickening altostratus and altocumulus clouds, lowering cloud base with rain, nimbostratus
- ☐ In coastal areas during daytime wind from the coast and forming of cumulus clouds, dissipation of clouds during evening and night
- ☑ Strongly developed cumulus clouds (Cb) with showers of rain and thunderstorms, gusting wind followed by cumulus clouds with isolated showers of rain

77 What visual flight conditions can be expected within the warm sector of a polar front low during summer time? (1,00 P.)

- ☐ Good visibility, some isolated high clouds
- ☑ Moderate to good visibility, scattered clouds
- ☐ Visibilty less than 1000 m, cloud-covered ground
- ☐ Moderate visibility, heavy showers and thunderstorms

78 What visual flight conditions can be expected after the passage of a cold front? (1,00 P.)

- ☑ Good visiblity, formation of cumulus clouds with showers of rain or snow
- ☐ Poor visibility, formation of overcast or ground-covering stratus clouds, snow
- ☐ Scattered cloud layers, visbility more than 5 km, formation of shallow cumulus clouds
- ☐ Medium visibility with lowering cloud bases, onset of prolonged precipitation

79 A boundary between a cold polar air mass and a warm subtropical air mass showing no horizontal displacement is called... (1,00 P.)

- ☐ cold front.
- ☐ warm front.
- ☑ stationary front.
- ☐ occluded front.

80 What is the usual direction of movement of a polar front low? (1,00 P.)

- ☑ Parallel to the the warm-sector isobars
- ☐ To the northeast during winter, to the southeast during summer
- ☐ Parallel to the warm front line to the south
- ☐ To the northwest during winter, to the southwest during summer

81 What pressure pattern can be observed during the passage of a polar front low? (1,00 P.)

- ☐ Rising pressure in front of the warm front, constant pressure within the warm sector, rising pressure behind the cold front
- ☐ Rising pressure in front of the warm front, rising pressure within the warm sector, falling pressure behind the cold front
- ☑ Falling pressure in front of the warm front, constant pressure within the warm sector, rising pressure behind the cold front
- ☐ Falling pressure in front of the warm front, constant pressure within the warm sector, falling pressure behind the cold front

82 What pressure pattern can be observed when a cold front is passing? (1,00 P.)

- ☐ Continually increasing pressure
- ☑ Shortly decreasing, thereafter increasing pressure
- ☐ Continually decreasing pressure
- ☐ Constant pressure pattern

83 What change of wind direction can be expected during the passage of a polar front low in Central Europe? (1,00 P.)

- ☐ Backing wind during passage of the warm front, veering wind during passage of the cold front
- ☑ Veering wind during passage of the warm front, veering wind during passage of the cold front
- ☐ Veering wind during passage of the warm front, backing wind during passage of the cold front
- ☐ Backing wind during passage of the warm front, backing wind during passage of the cold front

84 Extensive high pressure areas can be found throughout the year ... (1,00 P.)

- ☐ in tropical areas, close to the equator.
- ☐ in areeas showing extensive lifting processes.
- ☑ over oceanic areas at latitues around 30°N/S.
- ☐ in mid latitudes along the polar front

85 What cloud type can typically be observed across widespread high pressure areas during summer? (1,00 P.)

- ☐ Overcast low stratus
- ☑ Scattered Cu clouds
- ☐ Overcast Ns clouds
- ☐ Squall lines and thunderstorms

86 What pressure pattern may result from cold-air inflow in high tropospheric layers? (1,00 P.)

- ☐ Alternating pressure
- ☐ Formation of a large ground low
- ☐ Formation of a high in the upper troposphere
- ☑ Formation of a low in the upper troposphere

87 Cold air inflow in high tropospheric layers may result in... (1,00 P.)

- ☑ showers and thunderstorms.
- ☐ frontal weather.
- ☐ calm weather and cloud dissipation.
- ☐ stabilisation and calm weather.

88 How does inflowing cold air affect the shape and vertical distance between pressure layers? (1,00 P.)

- ☐ Increasing vertical distance, raise in height (high pressure)
- ☐ Decreasing vertical distance, raise in height (high pressure)
- ☑ Decrease in vertical distance, lowering in height (low pressure)
- ☐ Increase in vertical distance, lowering in height (low pressure)

89 What weather phenomena have to be expected around an upper-level trough? (1,00 P.)

- ☐ Calm weather, formation of lifted fog layers
- ☐ Calm wind, forming of shallow cumulus clouds
- ☑ Development of showers and thunderstorms (Cb)
- ☐ Formation of high stratus clouds, ground-covering cloud bases

90 What frontal line divides subtropical air from polar cold air, in particular across Central Europe? (1,00 P.)

- ☐ Warm front
- ☐ Cold front
- ☐ Occlusion
- ☑ Polar front

91 What weather conditions can be expected in high pressure areas during summer? (1,00 P.)

- ☑ Calm weather and cloud dissipation, few high Cu
- ☐ Changing weather with passing of frontal lines
- ☐ Squall lines and thunderstorms
- ☐ Calm winds and widespread areas with high fog

92 What weather conditions in Central Europe are typically found in high pressure areas during summer? (1,00 P.)

- ☑ Large isobar spacing with calm winds, formation of local wind systems
- ☐ Small isobar spacing with calm winds, formation of local wind systems
- ☐ Large isobar spacing with strong prevailing westerly winds
- ☐ Small isobar spacing with strong prevailing northerly winds

93 What weather conditions can be expected in high pressure areas during winter? (1,00 P.)

- ☑ Calm winds and widespread areas with high fog
- ☐ Changing weather with passing of frontal lines
- ☐ Squall lines and thunderstorms
- ☐ Calm weather and cloud dissipation, few high Cu

94 What wind conditions can be expected in areas showing large distances between isobars? (1,00 P.)

- ☐ Strong prevailing westerly winds with rapid veering
- ☐ Strong prevailing easterly winds with rapid backing
- ☐ Formation of local wind systems with strong prevailing westerly winds
- ☑ Variable winds, formation of local wind systems

95 What weather conditions can be expected during "Foehn" on the windward side of a mountain range? (1,00 P.)

- ☑ Layered clouds, mountains obscured, poor visibility, moderate or heavy rain
- ☐ Dissipating clouds with unusual warming, accompanied by strong, gusty winds
- ☐ Calm wind and forming of high stratus clouds (high fog)
- ☐ Scattered cumulus clouds with showers and thunderstorms

96 Which of the following conditions are most favourable for ice accretion? (1,00 P.)

- ☑ Temperatures between 0° C and -12° C, presence of supercooled water droplets (clouds)
- ☐ Temperaturs below 0° C, strong wind, sky clear of clouds
- ☐ Temperatures between -20° C and -40° C, presence of ice crystals (Ci clouds)
- ☐ Temperatures between +10° C and -30° C, presence of hail (clouds)

97 What temperatures are most dangerous with respect to airframe icing? (1,00 P.)

- ☐ +20° to -5° C
- ☐ -20° to -40° C
- ☐ +5° to -10° C
- ☑ 0° to -12° C

98 Which type of ice forms by very small water droplets and ice crystals hitting the front surfaces of an aircraft? (1,00 P.)

- ☑ Rime ice
- ☐ Clear ice
- ☐ Mixed ice
- ☐ Hoar frost

99 Which type of ice forms by large, supercooled droplets hitting the front surfaces of an aircraft? (1,00 P.)

- ☐ Hoar frost
- ☑ Clear ice
- ☐ Rime ice
- ☐ Mixed ice

100 What situation may result in the occurrence of severe wind shear? (1,00 P.)

- ☐ Flying ahead of a warm front with visible Ci clouds
- ☐ Cross-country flying below Cu clouds with about 4 octas coverage
- ☐ During final approach, 30 min after a heavy shower has passed the airfield
- ☑ When a shower is visible close to the airfield

101 What conditions are favourable for the formation of thunderstorms? (1,00 P.)

- ☐ Calm winds and cold air, overcast cloud cover with St or As.
- ☐ Warm and dry air, strong inversion layer
- ☑ Warm humid air, conditionally unstable environmental lapse rate
- ☐ Clear night over land, cold air and patches of fog

102 What conditions are mandatory for the formation of thermal thunderstorms? (1,00 P.)

- ☐ Absolutely stable atmosphere, high temperature and high humidity
- ☐ Absolutely stable atmosphere, high temperature and low humidity
- ☑ Conditionally unstable atmosphere, high temperature and high humidity
- ☐ Conditionally unstable atmosphere, low temperature and low humidity

103 With regard to thunderstorms, strong up- and downdrafts appear during the... (1,00 P.)

- ☑ mature stage.
- ☐ dissipating stage.
- ☐ initial stage.
- ☐ thunderstorm stage.

104 Which stage of a thunderstorm is dominated by updrafts? (1,00 P.)

- ☐ Dissipating stage
- ☐ Mature stage
- ☑ Cumulus stage
- ☐ Upwind stage

105 What danger is most immenent when an aircraft is hit by lightning? (1,00 P.)

- ☐ Explosion of electrical equipment in the cockpit
- ☑ Surface overheat and damage to exposed aircraft parts
- ☐ Rapid cabin depressurization and smoke in the cabin
- ☐ Disturbed radio communication, static noise signals

106 Heavy downdrafts and strong wind shear close to the ground can be expected... (1,00 P.)

- ☑ near the rainfall areas of heavy showers or thunderstorms.
- ☐ during approach to an airfield at the coast with a strong sea breeze.
- ☐ during cold, clear nights with the formation of radiation fog.
- ☐ during warm summer days with high, flatted Cu clouds.

107 What phenomenon is caused by cold air downdrafts with precipitation from a fully developed thunderstorm cloud? (1,00 P.)

- ☐ Electrical discharge
- ☐ Anvil-head top of Cb cloud
- ☑ Gust front
- ☐ Freezing Rain

108 What danger is most imminent during an approach to an airfield situated in a valley, with strong wind aloft blowing perpendicular to the mountain ridge? (1,00 P.)

- ☐ Reduced visibilty, maybe loss of sight to the airfield during final approach
- ☑ Wind shear during descent, wind direction may change by 180°
- ☐ Formation of medium to heavy clear ice on all aircraft surfaces
- ☐ Heavy downdrafts within rainfall areas below thunderstorm clouds

109 What kind of reduction in visibility is not very sensitive to changes in temperature? (1,00 P.)

- ☐ Radiation fog (FG)
- ☐ Mist (BR)
- ☐ Patches of fog (BCFG)
- ☑ Haze (HZ)

110 Information about pressure patterns and frontal situation can be found in which chart? (1,00 P.)

- ☐ Significant Weather Chart (SWC).
- ☐ wind chart.
- ☐ hypsometric chart.
- ☑ surface weather chart.

111 Which weather chart shows the actual air pressure as in MSL along with pressure centers and fronts? (1,00 P.)

- ☐ Wind chart
- ☑ Surface weather chart
- ☐ Prognostic chart
- ☐ Hypsometric chart

112 What information can be obtained from satallite images? (1,00 P.)

- ☑ Overview of cloud covers and front lines
- ☐ Turbulence and icing
- ☐ Temperature and dew point of environmental air
- ☐ Flight visibility, ground visibility, and ground contact

113 What chart shows areas of precipitation? (1,00 P.)

- ☐ Satellite picture
- ☐ Wind chart
- ☑ Radar picture
- ☐ GAFOR

114 What information is NOT found on Low-Level Significant Weather Charts (LLSWC)? (1,00 P.)

- ☐ Information about icing conditions
- ☐ Front lines and frontal displacements
- ☑ Radar echos of precipitation
- ☐ Information about turbulence areas

115 Measured pressure distribution in MSL and corresponding frontal systems are displayed by the... (1,00 P.)

- ☐ hypsometric chart.
- ☐ prognostic chart.
- ☑ surface weather chart.
- ☐ Significant Weather Chart (SWC).

116 In a METAR, "heavy rain" is designated by the identifier... (1,00 P.)

- ☐ RA.
- ☑ +RA.
- ☐ SHRA.
- ☐ +SHRA.

117 In a METAR, "(moderate) showers of rain" are designated by the identifier... (1,00 P.)

- ☐ +TSRA.
- ☑ SHRA.
- ☐ TS.
- ☐ +RA.

118 What information can be found in the ATIS, but not in a METAR? (1,00 P.)

- ☑ Operational information such as runway in use and transition level
- ☐ Information about current weather, for example types of precipitation
- ☐ Approach information, such as ground visibility and cloud base
- ☐ Information about mean wind speeds, maximum speeds in gusts if applicable

119 Weather and operational information about the destination aerodrome can be obtained during the flight by... (1,00 P.)

- ☐ PIREP.
- ☐ SIGMET.
- ☑ ATIS.
- ☐ VOLMET.

120 SIGMET warnings are issued for... (1,00 P.)

- ☐ specific routings.
- ☐ countries.
- ☑ FIRs / UIRs.
- ☐ airports.

121 An inversion is a layer ... (1,00 P.)

- ☐ with constant temperature with increasing height.
- ☐ with increasing pressure with increasing height.
- ☑ with increasing temperature with increasing height.
- ☐ with decreasing temperature with increasing height.

122 What type of cloud indicates thermal updrafts? (1,00 P.)

- ☐ Stratus
- ☐ Cirrus
- ☑ Cumulus
- ☐ Lenticularis

123 What can be expected for the prevailling wind with isobars on a surface weather chart showing large distances? (1,00 P.)

- ☑ Low pressure gradients resulting in low prevailling wind
- ☐ Strong pressure gradients resulting in low prevailling wind
- ☐ Strong pressure gradients resulting in strong prevailling wind
- ☐ Low pressure gradients resulting in strong prevailling wind

124 What is referred to as mountain wind? (1,00 P.)

- ☑ Wind blowing down the mountain side during the night
- ☐ Wind blowing uphill from the valley during the night.
- ☐ Wind blowing uphill from the valley during daytime.
- ☐ Wind blowing down the mountain side during daytime.

125 Under which conditions "back side weather" ("Rückseitenwetter") can be expected? (1,00 P.)

- ☑ After passing of a cold front
- ☐ before passing of an occlusion
- ☐ During Foehn at the lee side
- ☐ After passing of a warm front

126 What wind is reportet as 225/15 ? (1,00 P.)

- ☐ north-east wind with 15 kt
- ☑ south-west wind with 15 kt
- ☐ south-west wind with 15 km/h
- ☐ north-east wind with 15 km/h

127 How does air temperatur change in ISA from MSL to approx. 10.000 m height? (1,00 P.)

- ☐ from +30° to -40°C
- ☐ from +20° to -40°C
- ☐ from -15° to 50°C
- ☑ from +15° to -50°C

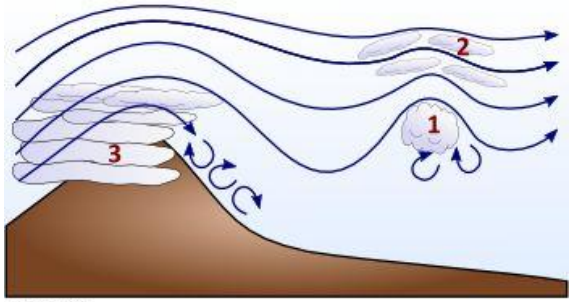
128 What weather is likely to be experienced during "Foehn" in the Bavarian area close to the alps? (1,00 P.)

- ☐ Cold, humid downhill wind on the lee side of the alps, flat pressure pattern
- ☑ Nimbostratus cloud in the southern alps, rotor clouds at the lee side, warm and dry wind
- ☐ High pressure area overhead Biskaya and low pressure area in Eastern Europe
- ☐ Nimbostratus cloud in the northern alps, rotor clouds at the windward side, warm and dry wind

129 Mountain side updrafts can be intensified by ... (1,00 P.)

- ☐ Solar irradiation on the lee side
- ☐ thermal radiation of the windward side during the night
- ☑ Solar irradiation on the windward side
- ☐ By warming of upper atmospheric layers

Anlage 1



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Anlage 2

Anlage 3

Anlage 4