

# Exam simulation

Exam BPL Gas - Balloon Pilot License - Navigation



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STUDENT NAME:

DATE AND TIME:

## 01. Which are the properties of a Mercator chart?

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- a) The scale increases with latitude, great circles are depicted as curved lines, rhumb lines are depicted as straight lines
- b) The scale is constant, great circles are depicted as curved lines, rhumb lines are depicted as straight lines
- c) The scale increases with latitude, great circles are depicted as straight lines, rhumb lines are depicted as curved lines
- d) The scale is constant, great circles are depicted as straight lines, rhumb lines are depicted as curved lines

## 02. What has to be expected by the balloon pilot during descent in deeply cooled layers close to the ground?

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- a) Floating on top of the cold air layer
- b) Sudden change in airspeed
- c) Balloon starts to climb
- d) Increasing descent while entering to ground layers

## 03. The rotational axis of the Earth runs through the...

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- a) Geographic North Pole and on the geographic South Pole
- b) Magnetic north pole and on the magnetic south pole
- c) Geographic North Pole and on the magnetic south pole
- d) Magnetic north pole and on the geographic South Pole

## 04. With pressure and temperature given, any gas being heavier or lighter than air depends on what?

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- a) On the content of water vapour in the gas
- b) On the mean kinetic energy of the molecules
- c) On the number of gas molecules
- d) On the molecule mass of the gas

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**05. The saturated adiabatic lapse rate should be assumed with a mean value of:**

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- a) 2° C / 1000 ft
- b) 1.0° C / 100 m
- c) 0.6° C / 100 m
- d) 0° C / 100 m

**06. The ratio between air pressures at different heights is referred to as:**

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- a) Height value
- b) Pressure number
- c) Height ratio
- d) Height number

**07. An ATIS is valid for...**

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- a) 45 minutes
- b) 30 minutes
- c) 60 minutes
- d) 10 minutes

**08. What is the correct way of acknowledging the instruction "DZF after lift-off climb straight ahead until 2500 feet before turning right heading 220 degrees, wind 090 degrees, 5 knots, runway 12, cleared for take-off"?**

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- a) DZF after lift-off climb straight ahead 2500 feet, then turn right heading 220, runway 12, cleared for take-off
- b) DZF after lift-off climb straight ahead 2500 feet, then turn right heading 220, 090 degrees, 5 knots, cleared for take-off
- c) DZF after lift-off climb straight ahead 2500 feet, wilco, heading 220 degrees, 090 degrees, 5 knots, cleared for take-off
- d) DZF after lift-off climb straight ahead 2500 feet, then turn right heading 220, 090 degrees, 5 knots

**09. Which information from a ground station does not require readback?**

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- a) Traffic information
- b) Taxi instructions
- c) Heading
- d) Altimeter setting

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## 10. How do spread and relative humidity change with increasing temperature?

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- a) Spread increases, relative humidity increases
- b) Spread remains constant, relative humidity increases
- c) Spread remains constant, relative humidity decreases
- d) Spread increases, relative humidity decreases

## 11. What is the mass of a "cube of air" with the edges 1 m long, at MSL according ISA?

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- a) 0.1225 kg
- b) 12.25 kg
- c) 0.01225 kg
- d) 1.225 kg

## 12. An aerodrome beacon (ABN) is a...

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- a) Rotating beacon installed at an airport or aerodrome to indicate its location to aircraft pilots from the ground
- b) Rotating beacon installed at the beginning of the final approach to indicate its location to aircraft pilots from the air
- c) Fixed beacon installed at an airport or aerodrome to indicate its location to aircraft pilots from the air
- d) Rotating beacon installed at an airport or aerodrome to indicate its location to aircraft pilots from the air

## 13. What effect has air temperature on the carrying force and on maximum take-off mass of a balloon?

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- a) Maximum take-off mass is higher at low temperatures
- b) Maximum take-off mass is lower at low temperatures
- c) Carrying force is higher at low temperatures
- d) Carrying force is lower at low temperatures

## 14. A risk factor for decompression sickness is...

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- a) Scuba diving prior to flight
- b) 100 % oxygen after decompression
- c) Sports
- d) Smoking

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**15. At time of take-off, ground wind speed is 2 m/s. Along take-off flight path, at a distance of 320 m obstacles erect up to 30 m. What is the minimum rate of climb to keep a clearance of 50 m above the obstacles? (Consider double the ground wind speed for the flight path)**

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- a) 1 m/s
- b) 1.5 m/s
- c) 2 m/s
- d) 0.5 m/s

**16. What ground features should preferably be used for orientation during visual flight?**

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- a) Power lines
- b) Rivers, railroads, highways
- c) Border lines
- d) Farm tracks and creeks

**17. A flight is called a "visual flight", if the...**

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- a) Flight is conducted in visual meteorological conditions
- b) Visibility in flight is more than 8 km
- c) Flight is conducted under visual flight rules
- d) Visibility in flight is more than 5 km

**18. During buildup of a gas balloon, sacks with sand are hooked up. The end of the hooks should be directed ...**

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- a) Parallel to net path
- b) Outside
- c) Inside
- d) Perpendicular to net path

**19. The towing rope of a gas balloon can be found on ...**

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- a) The rip panel side
- b) The sandpouner side
- c) The sliding side
- d) The entry side

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**20. When using a GPS for tracking to the next waypoint, a deviation indication is shown by a vertical bar and dots to the left and to the right of the bar. What statement describes the correct interpretation of the display?**

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- a) The deviation of the bar from the center indicates the track error as absolute distance in NM; the scale for full deflection is  $\pm 10$  NM
- b) The deviation of the bar from the center indicates the track error as angular distance in degrees; the scale for full deflection depends on the operating mode of the GPS
- c) The deviation of the bar from the center indicates the track error as angular distance in degrees; the scale for full deflection is  $\pm 10^\circ$
- d) The deviation of the bar from the center indicates the track error as absolute distance in NM; the scale for full deflection depends on the operating mode of the GPS

**21. The minimum length of the towing rope is:**

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- a) 20 m
- b) 50 m
- c) 100 m
- d) 30 m

**22. The dynamic lift created by airflow across the top of the envelope of a balloon on the ground is referred to as?**

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- a) Upper lift
- b) Anti-ballast
- c) Lower lift
- d) False lift

**23. What is the meaning of the abbreviation "TRA"?**

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- a) Temporary Radar Routing Area
- b) Temporary Reserved Airspace
- c) Terminal Area
- d) Transponder Area

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**24. What is the minimum flight visibility in airspace "C" below FL 100 for an aircraft operating under VFR?**

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- a) 5 km
- b) 1.5 km
- c) 10 km
- d) 8 km

**25. What statement is correct with regard to change in temperature?**

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- a) During climb, the carrying gas warms due to thermal exchange with environmental air
- b) During descent, the carrying gas warms adiabatically
- c) During descent, the carrying gas warms due to thermal exchange with environmental air
- d) During climb, the carrying gas warms adiabatically

**26. The aerostatic lift corresponds to which force?**

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- a) The dynamic force due to airstream across the top of the hull
- b) The weight of the displaced air
- c) The drag due to airstream around the balloon envelope
- d) The weight of the balloon less ballast

**27. What is meant by "isothermal layer"?**

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- a) A boundary area between two other layers within the atmosphere
- b) An atmospheric layer where temperature decreases with increasing height
- c) An atmospheric layer where temperature increases with increasing height
- d) An atmospheric layer with constant temperature with increasing height

**28. Where are the two polar circles?**

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- a) 23.5° north and south of the poles
- b) 23.5° north and south of the equator
- c) At a latitude of 20.5°S and 20.5°N
- d) 20.5° south of the poles

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## 29. What is the meaning of the abbreviation "VMC"?

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- a) Variable meteorological conditions
- b) Visual meteorological conditions
- c) Instrument flight conditions
- d) Visual flight rules

## 30. A true altitude is...

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- a) A height above ground level corrected for non-standard pressure
- b) An altitude above mean sea level corrected for non-standard temperature
- c) A height above ground level corrected for non-standard temperature
- d) A pressure altitude corrected for non-standard temperature

## 31. The term "static pressure" is defined as pressure...

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- a) Resulting from orderly flow of air particles
- b) Inside the airplane cabin
- c) Sensed by the pitot tube
- d) Of undisturbed airflow

## 32. Which are the official basic units for horizontal distances used in aeronautical navigation and their abbreviations?

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- a) Feet (ft), inches (in)
- b) Yards (yd), meters (m)
- c) Nautical miles (NM), kilometers (km)
- d) Land miles (SM), sea miles (NM)

## 33. After take-off with a balloon, obstacles at a distance of 600 m erect in expected flight path up to 40 m height. Rate of climb is expected with 1.5 m/s. What maximum actual wind speed can be accepted to maintain a clearance of 50 m above obstacles, assuming double the actual wind speed for calculation?

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- a) 1 m/s
- b) 3 m/s
- c) 5 m/s
- d) 10 m/s

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**34. The altimeter has to be set to what value in order to show zero on ground?**

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

**35. How does the norm height of a gas balloon with maximum differential pressure change, when its mass is reduced by 1%?**

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- a) Norm height increases by 800 m
- b) Norm height decreases by 800 m
- c) Norm height decreases by 80 m
- d) Norm height increases by 80 m

**36. What is the percentage of nitrogen in the atmosphere?**

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- a) 0.1 %
- b) 21 %
- c) 78 %
- d) 1 %

**37. What is the function of the red blood cells (erythrocytes)?**

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- a) Oxygen transport
- b) Immune defense
- c) Blood sugar regulation
- d) Blood coagulation

**38. Air consists of oxygen, nitrogen and other gases. What is the approximate percentage of other gases?**

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- a) 1 %
- b) 21 %
- c) 0.1 %
- d) 78 %

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**39. Which of the following options states the working principle of a vertical speed indicator?**

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- a) Measuring the present static air pressure and comparing it to the static air pressure inside a reservoir
- b) Static air pressure is measured and compared against a vacuum
- c) Measuring the vertical acceleration through the displacement of a gimbal-mounted mass
- d) Total air pressure is measured and compared to static pressure

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**40. What wind conditions should be expected in the vicinity of showers or thunderstorms?**

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- a) Calm winds during passage of a shower
- b) Steady wind from direction of shower
- c) Strong gust from variable directions
- d) Steady wind into direction of shower

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**41. What weather conditions in Central Europe are typically found in high pressure areas during summer?**

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- a) Small isobar spacing with strong prevailing northerly winds
- b) Large isobar spacing with calm winds, formation of local wind systems
- c) Large isobar spacing with strong prevailing westerly winds
- d) Small isobar spacing with calm winds, formation of local wind systems

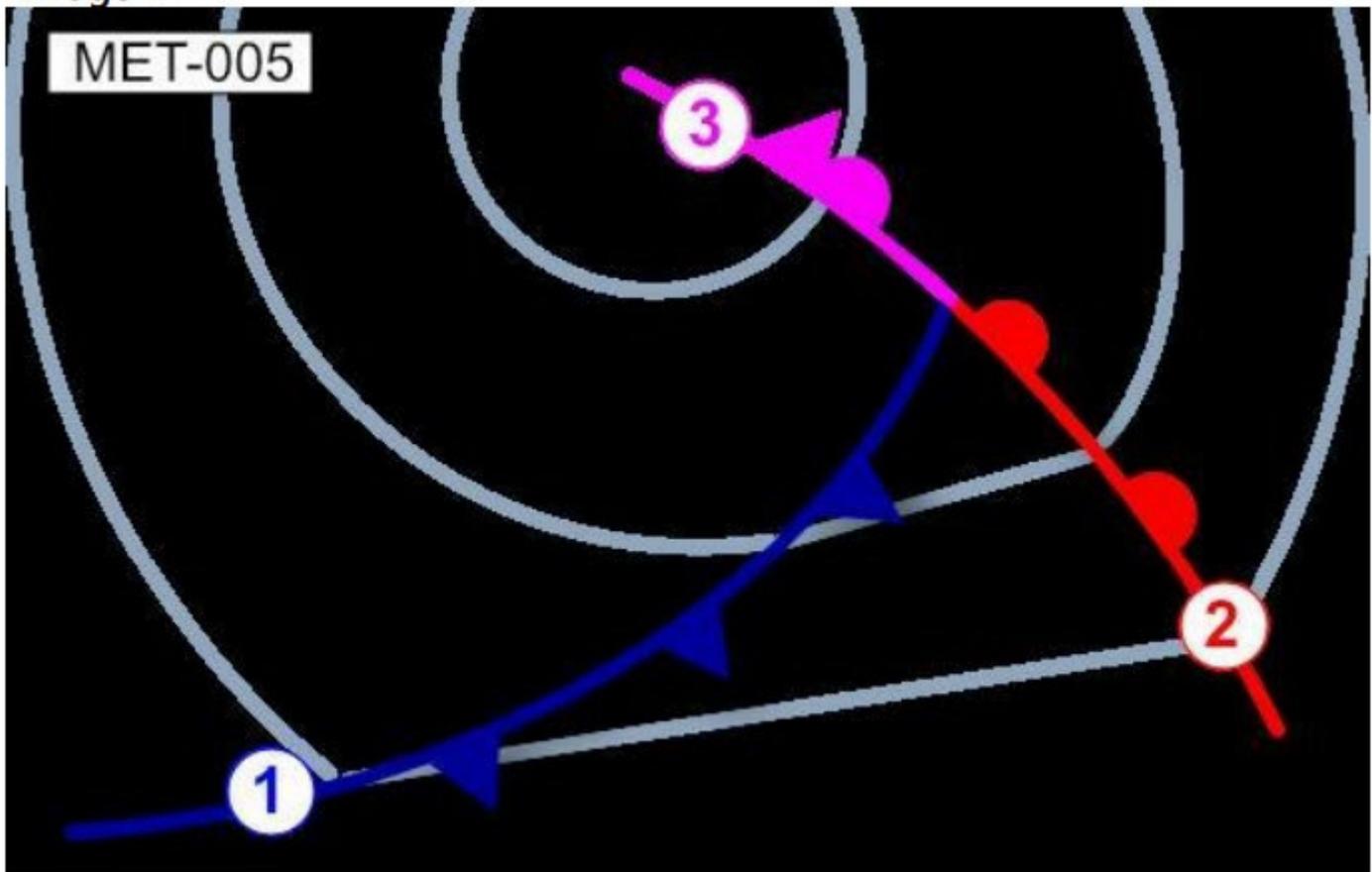
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42. The symbol labeled (3) as shown in the picture is a / an... See figure (MET-005)



- a) Occlusion
- b) Cold front
- c) Warm front
- d) Front aloft

43. What is the purpose of "interception lines" in visual navigation?

- a) They are used as easily recognizable guidance upon a possible loss of orientation
- b) To visualize the range limitation from the departure aerodrome
- c) They help to continue the flight when flight visibility drops below VFR minima
- d) To mark the next available en-route airport during the flight

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**44. What is a direct consequence of increase of the carrying gas temperature at a gas balloon with maximum differential pressure?**

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- a) Climb force decreases
- b) Weight force increases
- c) Lift force decreases
- d) Load-bearing capability increases

**45. A gas balloon has to be equipped with which tethers?**

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- a) 1 at 40 m or 4 at 10 m
- b) 1 at 30 m or 3 at 10 m
- c) 2 at 10 m or 1 at 20 m
- d) 2 at 20 m or 1 at 10 m

**46. Which weather phenomenon is typically associated with wind shear?**

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- a) Invernal warm front
- b) Thunderstorms
- c) Stable high pressure areas
- d) Fog

**47. Which statement is correct with regard to the short-term memory?**

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- a) It can store 5 ( $\pm 2$ ) items for 1 to 2 minutes
- b) It can store 3 ( $\pm 1$ ) items for 5 to 10 seconds
- c) It can store 7 ( $\pm 2$ ) items for 10 to 20 seconds
- d) It can store 10 ( $\pm 5$ ) items for 30 to 60 seconds

**48. What change results from an increase in temperature of the carrying gas and of the environmental air at a gas balloon at maximum differential pressure?**

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- a) The load capability decreases by 4% per K temperature change
- b) The load capability increases by 4% per K temperature change
- c) The load capability increases by 0.4% per K temperature change
- d) The load capability decreases by 0.4% per K temperature change

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## 49. With regard to gases, which statement is correct?

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- a) Temperature decreases with increasing pressure and constant volume
- b) Volume increases with increasing temperature and constant pressure
- c) Pressure decreases with increasing temperature and constant volume
- d) Temperature increases with increasing volume and decreasing pressure

## 50. How does the norm height of a gas balloon with maximum differential pressure change by dropping ballast?

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- a) It increases by 8 m when total mass is reduced by 10%
- b) It increases by 80 m when total mass is reduced by 1%
- c) It decreases by 8 m when total mass is reduced by 10%
- d) It decreases by 80 m when total mass is reduced by 1%

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51. Given the following masses: Empty mass 240 kg Instruments 20 kg per gas container (full): 30 kg per person: 80 kg Up to which pressure altitude can the balloon climb with 5 persons and 4 gas containers in the basket, assuming temperatures 10° below ISA? (use attachment ECQB-PPL\_BPL001)

## Auszug aus dem Flughandbuch



- a) 3000 ft
- b) 17000 ft
- c) 13000 ft
- d) 7000 ft

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**52. Below maximum differential pressure of a gas balloon, temperature increase of the carrying gas by 1K results in:**

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- a) Volume decrease by 0.4%
- b) Volume increase by 0.4%
- c) Volume increase by 4%
- d) Volume decrease by 4%

**53. At equilibrium the inner overpressure of a free balloon is highest at:**

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- a) At the equator
- b) The upper pole
- c) At the center of the hull
- d) At the lower opening

**54. A flight level is a...**

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- a) True altitude
- b) Density altitude
- c) Pressure altitude
- d) Altitude above ground

**55. What is the correct course of action when experiencing a radio failure in class D airspace?**

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- a) The flight has to be continued above 5000 feet complying with VFR flight rules or the airspace has to be left by the shortest route
- b) The flight has to be continued according to the last clearance complying with VFR flight rules or the airspace has to be left using a standard routing
- c) The flight has to be continued according to the last clearance complying with VFR rules or the airspace has to be left by the shortest route
- d) The flight has to be continued above 5000 feet complying with VFR flight rules or the airspace has to be left using a standard routing

**56. Which phrase is to be repeated three times before transmitting an urgency message?**

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- a) Pan Pan
- b) Help
- c) Urgent
- d) Mayday

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**57. If there is any doubt about ambiguity, a time of 1620 is to be transmitted as...**

---

- a) One six two zero
- b) Sixteen twenty
- c) One thousand six hundred two zero
- d) Two zero

**58. The Empty Mass of a gas balloon includes:**

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- a) Ballast packages, basket, hull, valve and towing rope
- b) Basket, burner, ballast packages, hull, net and towing rope
- c) Basket, basket ring, valve, net, hull and towing rope
- d) Burner, ballast packages, instruments, net and towing rope

**59. What conditions are mandatory for the formation of thermal thunderstorms?**

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- a) Absolutely stable atmosphere, high temperature and high humidity
- b) Absolutely stable atmosphere, high temperature and low humidity
- c) Conditionally unstable atmosphere, high temperature and high humidity
- d) Conditionally unstable atmosphere, low temperature and low humidity

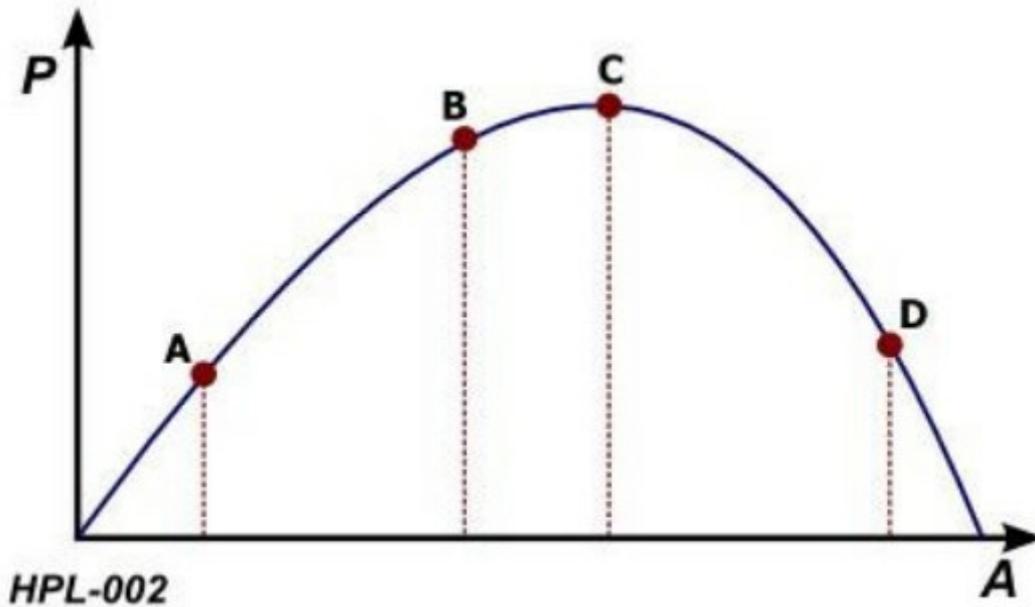
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60. The ideal level of arousal is at which point in the diagram? See figure (HPL-002) P = Performance A = Arousal / Stress



- a) Point A
- b) Point C
- c) Point D
- d) Point B

61. In what case is visibility transmitted in meters?

- a) Up to 10 km
- b) Greater than 10 km
- c) Greater than 5 km
- d) Up to 5 km

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**62. What pressure pattern can be observed during the passage of a polar front low?**

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- a) Falling pressure in front of the warm front, constant pressure within the warm sector, falling pressure behind the cold front
- b) Falling pressure in front of the warm front, constant pressure within the warm sector, rising pressure behind the cold front
- c) Rising pressure in front of the warm front, constant pressure within the warm sector, rising pressure behind the cold front
- d) Rising pressure in front of the warm front, rising pressure within the warm sector, falling pressure behind the cold front

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**63. The average decrease of blood alcohol level for an adult in one hour is approximately...**

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- a) 0.3 percent
- b) 0.03 percent
- c) 0.01 percent
- d) 0.1 percent

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**64. Where does the inclination reach its lowest value?**

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- a) At the geographic equator
- b) At the magnetic poles
- c) At the magnetic equator
- d) At the geographic poles

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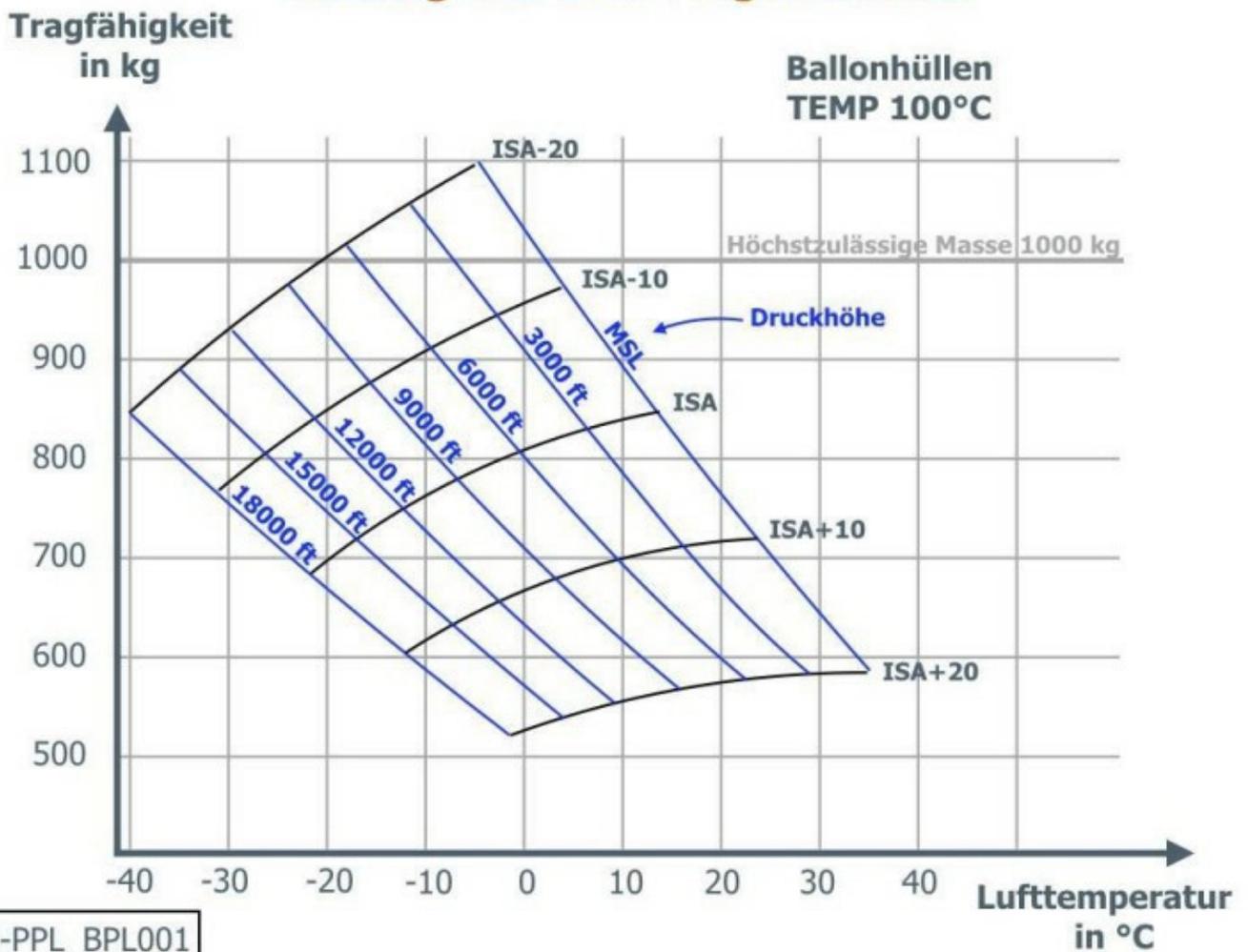
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65. Given the following masses: Empty mass 260 kg Instruments 20 kg per gas container (full): 30 kg per person: 80 kg Assuming temperature ISA+10, how many persons may be carried in the basket at maximum, if the balloon with 4 gas containers has to climb up to pressure altitude 12.000 ft ? (use attachment ECQB-PPL\_BPL001)

## Auszug aus dem Flughandbuch



ECQB-PPL\_BPL001

- a) 3
- b) 5
- c) 4
- d) 2

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**66. According ISA, what is the density of air at MSL?**

---

- a) 1.225 g/m<sup>3</sup>
- b) 1225 kg/m<sup>3</sup>
- c) 1.225 kg/m<sup>3</sup>
- d) 12.25 kg/m<sup>3</sup>

**67. For what approximate time period can the short-time memory store information?**

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- a) 10 to 20 seconds
- b) 3 to 7 seconds
- c) 30 to 40 seconds
- d) 35 to 50 seconds

**68. What must be considered for cross-border flights?**

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- a) Transmission of hazard reports
- b) Approved exceptions
- c) Regular location messages
- d) Requires flight plans

**69. What information is broadcasted on a VOLMET frequency?**

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- a) Meteorological information
- b) NOTAMS
- c) Navigational information
- d) Current information

**70. While overflying a waypoint, it is stated that a distance of 3 NM has been taken 10 min. What will be the expected time of endurance for the complete distance of 18 NM?**

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- a) 60 min
- b) 90 min
- c) 12 min
- d) 180 min

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## Response Scheme

Compare your answers with the following diagram and mark your score!

01: <b>A</b>	02: <b>A</b>	03: <b>A</b>	04: <b>D</b>
05: <b>C</b>	06: <b>D</b>	07: <b>B</b>	08: <b>A</b>
09: <b>A</b>	10: <b>D</b>	11: <b>D</b>	12: <b>D</b>
13: <b>C</b>	14: <b>A</b>	15: <b>A</b>	16: <b>B</b>
17: <b>C</b>	18: <b>B</b>	19: <b>A</b>	20: <b>D</b>
21: <b>D</b>	22: <b>D</b>	23: <b>B</b>	24: <b>A</b>
25: <b>B</b>	26: <b>B</b>	27: <b>D</b>	28: <b>A</b>
29: <b>B</b>	30: <b>B</b>	31: <b>D</b>	32: <b>C</b>
33: <b>C</b>	34: <b>C</b>	35: <b>D</b>	36: <b>C</b>
37: <b>A</b>	38: <b>A</b>	39: <b>A</b>	40: <b>C</b>
41: <b>B</b>	42: <b>A</b>	43: <b>A</b>	44: <b>D</b>
45: <b>C</b>	46: <b>B</b>	47: <b>C</b>	48: <b>D</b>
49: <b>B</b>	50: <b>B</b>	51: <b>B</b>	52: <b>B</b>
53: <b>B</b>	54: <b>C</b>	55: <b>C</b>	56: <b>A</b>
57: <b>A</b>	58: <b>C</b>	59: <b>C</b>	60: <b>D</b>
61: <b>D</b>	62: <b>B</b>	63: <b>C</b>	64: <b>C</b>
65: <b>A</b>	66: <b>C</b>	67: <b>A</b>	68: <b>D</b>
69: <b>A</b>	70: <b>A</b>		

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## Response form

Use this form to mark your answers

01: _____	02: _____	03: _____	04: _____
05: _____	06: _____	07: _____	08: _____
09: _____	10: _____	11: _____	12: _____
13: _____	14: _____	15: _____	16: _____
17: _____	18: _____	19: _____	20: _____
21: _____	22: _____	23: _____	24: _____
25: _____	26: _____	27: _____	28: _____
29: _____	30: _____	31: _____	32: _____
33: _____	34: _____	35: _____	36: _____
37: _____	38: _____	39: _____	40: _____
41: _____	42: _____	43: _____	44: _____
45: _____	46: _____	47: _____	48: _____
49: _____	50: _____	51: _____	52: _____
53: _____	54: _____	55: _____	56: _____
57: _____	58: _____	59: _____	60: _____
61: _____	62: _____	63: _____	64: _____
65: _____	66: _____	67: _____	68: _____
69: _____	70: _____		