



Headquarters Air Cadets Examination

Staff Cadet

32/4 Pilot Navigation

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1. Use black or dark blue pen, NOT pencil.
2. Mark one answer per question with a cross.
3. If you wish to change an answer, cancel the original mark and mark another single answer.

☒ A selected answer.

☒ A cancelled answer.

Mark:

Name and Initials _____

Date of Exam _____

Date of Birth _____

Squadron/Unit _____

Wing _____

- 1 How does the met office pass information about airfield weather to aircrew:
 - a ☐ By RADAR
 - b ☐ By TEMPOs and BECMGs
 - c ☐ By TELEVISION
 - d ☐ By using TAFs and METARs
- 2 Why do we put timing (or distance) marks on a map to assist with map reading:
 - a ☐ To monitor the ground speed
 - b ☐ In case we lose our place
 - c ☐ To calculate ETA
 - d ☐ To check fuel consumption
- 3 Why do you need to know the outside air temperature at operating altitude in order to complete your flight planning:
 - a ☐ To calculate TAS from RAS
 - b ☐ To ensure that the engines will work
 - c ☐ To ensure that the passengers meals stay frozen
 - d ☐ To calculate IAS from mach No
- 4 Flying at a typical airliner cruising level of 34000 feet, what would you expect the atmospheric pressure outside the a/c to be:
 - a ☐ Three quarters of sea level pressure
 - b ☐ One tenth of sea level pressure
 - c ☐ One half of sea level pressure
 - d ☐ One quarter of sea level pressure
- 5 In a TAF what would -SHSN mean:
 - a ☐ Light snow showers
 - b ☐ Snow all day
 - c ☐ Sleet
 - d ☐ Heavy snow
- 6 The 4 main reasons that air moves vertically are known as the trigger actions. What are these:
 - a ☐ Market forces, radiation, x-rays, frontal uplift
 - b ☐ Turbulence, conduction, orographic, fiscal
 - c ☐ Turbulence, convection, orographic and frontal uplift
 - d ☐ Conduction, precipitation, thunderstorms, convection
- 7 All long range nav aids work on a similar basis, what do the equipments use to calculate position:
 - a ☐ Old moore's almanac
 - b ☐ Phase difference on various radials
 - c ☐ Time interval between synchronized signals
 - d ☐ Time interval between successive fixes
- 8 In a 3-position line fix what is the ideal angle between position lines:
 - a ☐ 90 degrees
 - b ☐ 60 degrees
 - c ☐ 30 degrees
 - d ☐ 45 degrees
- 9 What is the name of the first worldwide fixing aid:
 - a ☐ Loran
 - b ☐ GPS
 - c ☐ Sputnik
 - d ☐ Omega
- 10 If the highest obstacle near your track is 1750ft, what is your safety altitude:
 - a ☐ 1800ft
 - b ☐ 3800ft
 - c ☐ 2800ft
 - d ☐ 2700ft
- 11 As well as solving the triangle of velocities, what other information is logged on the Pilot Navigation log card:
 - a ☐ Met forecast of icing and thunderstorms
 - b ☐ Time for each leg and fuel required
 - c ☐ Amount of fuel received from tanker
 - d ☐ Time for each leg and a/c registration
- 12 Why do we use units of volume for a/c fuel, even though it would be more correct to measure its mass:
 - a ☐ The Americans don't like doing it that way
 - b ☐ The mass of the fuel depends on its type
 - c ☐ It is impossible to weigh the fuel in the air
 - d ☐ The fuel is affected by outside air temperatures
- 13 In the northern hemisphere, if you stand with your back to the wind, where is the higher pressure air:
 - a ☐ On your right
 - b ☐ In front of you
 - c ☐ On your left
 - d ☐ Above you
- 14 What is the main difference between map reading on the ground and in the air:
 - a ☐ The scale of maps is so different
 - b ☐ You don't have to wear an oxygen mask on the ground
 - c ☐ You do not need waterproof maps in the air
 - d ☐ There is no time in the air to discuss where we are

15 The radio compass works on the same principle as which of these equipments:

- a ☐ A radio 1 transmitter
- b ☐ A small portable radio
- c ☐ A radio sonar bouy
- d ☐ A gyro magnetic compass

16 Which of the following would you not expect to find on an air traffic control flight plan:

- a ☐ Callsign
- b ☐ Destination
- c ☐ Persons on board
- d ☐ Windforecast

17 What units would you expect to see on the fuel gauge of a Eurofighter

- a ☐ Imperial gallons
- b ☐ Kilogrammes
- c ☐ Pounds
- d ☐ US gallons

18 Why must you be very careful if using an OS map to work out safety altitudes:

- a ☐ The map does not cover a large enough area
- b ☐ The map is out of date
- c ☐ The grid is based on kilometre squares
- d ☐ The elevations are in metres

19 What form of precipitation is commonest in thunderstorms:

- a ☐ DRIZZLE
- b ☐ HAIL
- c ☐ SNOW
- d ☐ SHOWERS

20 What are clouds made of:

- a ☐ Steam
- b ☐ Scotch mist
- c ☐ Visible droplets of water
- d ☐ Water vapour

21 What is the most important characteristic of a map reading feature:

- a ☐ It should be unique
- b ☐ It must be small enough
- c ☐ It must be tall enough
- d ☐ It must be large enough

22 The first long range Navigation System to give world wide coverage was Omega. This is now being replaced by what system:

- a ☐ GPS
- b ☐ TCAS
- c ☐ LORAN
- d ☐ ILS

23 The civilian equivalent of TACAN is known as:

- a ☐ VOR/DME
- b ☐ OMEGA
- c ☐ LORAN
- d ☐ ADF

24 What is the quickest and most accurate way of solving the vector triangle:

- a ☐ Mentally
- b ☐ Using a word processor
- c ☐ Using the Dalton DR computer
- d ☐ Using a sheet of graph paper

25 An aircraft is flying at 2000ft above sea level, towards a hill whose peak is 1000 metres above sea level. If the pilot takes no further action, will the a/c:

- a ☐ Hit the hill more than half way up the slope
- b ☐ Miss the hill by 1000 metres
- c ☐ Miss the hill by 1000ft
- d ☐ Hit the hill near the peak