



Headquarters Air Cadets Examination

GROUP 2

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 TELEVISION
- b ☐ By RADAR
- c ☐ By TEMPOs and BECMGs
- d ☐ By using TAFs and METARs

2 Where in this pressure diagram will the wind speed be greatest:

- a ☐ A
- b ☐ B
- c ☐ C
- d ☐ D



3 Why do you need to know the outside air temperature at operating altitude in order to complete your flight planning:

- a ☐ To ensure that the passengers meals stay frozen
- b ☐ To calculate TAS from RAS
- c ☐ To calculate IAS from mach No
- d ☐ To ensure that the engines will work

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 ☐ One quarter of sea level pressure
- b ☐ One half of sea level pressure
- c ☐ One tenth of sea level pressure
- d ☐ Three quarters of sea level pressure

5 If the wind indicated by the isobars on a weather chart is 200 degrees/20kts, what would you expect the surface wind to be:

- a ☐ 175/25
- b ☐ 230/15
- c ☐ 200/20
- d ☐ 175/15

6 What is the best thing for an aviator to do about thunderstorms:

- a ☐ Avoid them by a wide margin
- b ☐ Pass downwind of them
- c ☐ Use the radar to go through the centre
- d ☐ Stay on the ground

7 What is the best defence against enemy detection of active navigation systems in fast jet a/c:

- a ☐ Climb to service ceiling
- b ☐ Use only passive systems
- c ☐ Use only astro navigation
- d ☐ Scramble/unscramble the signals

8 Both VOR/DME and TACAN give the same information, is it:

- a ☐ Airway centreline and distance
- b ☐ Magnetic bearing and range to beacon
- c ☐ Magnetic track and groundspeed
- d ☐ True heading and range to the beacon

9 What is the name of the first worldwide fixing aid:

- a ☐ Omega
- b ☐ Sputnik
- c ☐ Loran
- d ☐ GPS

10 If the highest obstacle near your track is 1750ft, what is your safety altitude:

- a ☐ 1800ft
- b ☐ 2800ft
- c ☐ 3800ft
- d ☐ 2700ft

11 How many elements of the vector triangle are needed in order that the triangle may be solved:

- a ☐ 3
- b ☐ 6
- c ☐ 4
- d ☐ half

12 Most large a/c have cabin pressurization systems to maintain air pressure inside the a/c fairly close to sea level pressure. Why is this:

- a ☐ It keeps the cabin warm
- b ☐ It helps the stewardesses keep the passengers calm
- c ☐ It reduces the a/c fuel consumption
- d ☐ It maintains the oxygen level

13 The units used for vertical distance and speed in most countries are:

- a ☐ Metres and metres per minute
- b ☐ Metres and knots
- c ☐ Feet and knots
- d ☐ Feet and feet per minute

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 do not need waterproof maps in the air
- c ☐ There is no time in the air to discuss where we are
- d ☐ You don't have to wear an oxygen mask on the ground

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

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

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

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

17 In the triangle of velocities, which vector represents the wind velocity:

- a ☐ The vector with three arrowheads
- b ☐ The vector with one arrowhead
- c ☐ The angle between track and heading
- d ☐ The vector with two arrowheads

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

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

19 The main difference between a TAF and a METAR is:

- a ☐ One TAF is more reliable
- b ☐ One is for a longer time period than the other
- c ☐ One never includes the wind velocity
- d ☐ One is a report, the other is a forecast

20 What are clouds made of:

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

21 When choosing natural (rather than man-made) features for map reading, what characteristic is most important:

- a ☐ How they are shown on the map
- b ☐ Whether they are frozen or not
- c ☐ Their contrast and colour
- d ☐ Their size

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

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

23 In the early days of aviation what did pilots have to rely on for navigation:

- a ☐ The navigator
- b ☐ Map reading
- c ☐ The observer
- d ☐ The stars

24 What must a pilot do in order to complete the Pilot Navigation log card:

- a ☐ Measure the tracks with dividers and the distances with a protractor
- b ☐ Measure the tracks with a protractor and the distances with dividers
- c ☐ Ensure the a/c has the correct equipment fitted
- d ☐ Extract the tower frequencies from the navigation handbook

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