



# Headquarters Air Cadets Examination

GROUP 2

Staff Cadet

32/4 Pilot Navigation

Generated 17-Jul-01

Serial: 383

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

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

- a ☐ C
- b ☐ D
- c ☐ B
- d ☐ A



3 Only one long range Navigation System gives accuracies of about 100 metres. Which is it:

- a ☐ GEE
- b ☒ LORAN
- c ☐ DECCA
- d ☐ GPS

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 half of sea level pressure
- b ☐ One quarter 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 ☐ 230/15
- b ☐ 200/20
- c ☐ 175/25
- d ☐ 175/15

6 The 4 main reasons that air moves vertically are known as the trigger actions. What are these:

- a ☐ Conduction, precipitation, thunderstorms, convection
- b ☐ Turbulence, conduction, orographic, fiscal
- c ☐ Turbulence, convection, orographic and frontal uplift
- d ☐ Market forces, radiation, x-rays, frontal uplift

7 All long range nav aids work on a similar basis, what do the equipments use to calculate position:

- a ☐ Time interval between successive fixes
- b ☐ Time interval between synchronized signals
- c ☐ Old moore's almanac
- d ☐ Phase difference on various radials

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

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

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

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

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

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

11 As well as solving the triangle of velocities, what other information is logged on the Pilot Navigation log card:

- a ☐ Time for each leg and fuel required
- b ☐ Met forecast of icing and thunderstorms
- c ☐ Time for each leg and a/c registration
- d ☐ Amount of fuel received from tanker

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 fuel is affected by outside air temperatures
- b ☐ It is impossible to weigh the fuel in the air
- c ☐ The Americans don't like doing it that way
- d ☐ The mass of the fuel depends on its type

13 Which of the following is not one of the hazards to a/c that is found in thunderstorms:

- a ☐ ISOBARS
- b ☐ ICING
- c ☐ LIGHTNING
- d ☐ TURBULENCE

14 What is the main difference between map reading on the ground and in the air:

- a ☐ You don't have to wear an oxygen mask on the ground
- b ☐ You do not need waterproof maps in the air
- c ☐ The scale of maps is so different
- 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 gyro magnetic compass
- d ☐ A radio sonar bouy

16 The diagram shows a vector triangle for a flight along an easterly track. With the N.E. wind, which of the following is true:

- a ☐ The a/c experiences port drift
- b ☐ The TAS is less than the groundspeed
- c ☐ The heading is approximately 080 degrees
- d ☐ Without doppler radar, nothing is certain



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

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

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 elevations are in metres
- c ☐ The map is out of date
- d ☐ The grid is based on kilometre squares

19 What form of precipitation is commonest in thunderstorms:

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

20 What are clouds made of:

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

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

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

22 What is the major disadvantage of radar in combat a/c:

- a ☐ It gives away your location
- b ☐ It only works at low level
- c ☐ It only works at night
- d ☐ You need a weapon systems operator to use it

23 The civilian equivalent of TACAN is known as:

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

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

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

25 If the fuel tanker has its fuel delivery gauges calibrated in different units from the receiver aircraft fuel gauges, what method of conversion would the crew use:

- a ☐ A calculator
- b ☐ A fuel weight and volume conversion chart
- c ☐ Any of the other three answer methods
- d ☐ A DR computer