



Headquarters Air Cadets Examination

Senior Cadet
32/3 Air Navigation
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Serial: 763

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.

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☒ A selected answer.

☒ A cancelled answer.

Mark:

Name and Initials _____

Date of Exam _____

Date of Birth _____

Squadron/Unit _____

Wing _____

1 One degree of latitude is equal to:

- a ☐ 60nms
- b ☐ 360nms
- c ☐ 60km
- d ☐ 1/10,000 part of the distance from the North Pole to the Equator

2 Oslo Airport (Norway) is due north of Braunschweig airfield, near Hannover (Germany). If their latitudes are 59 53N and 52 20N respectively, how far are they apart:

- a ☐ 453nms
- b ☐ 445nms
- c ☐ 554nms
- d ☐ 454nms

3 Rectified Air Speed (RAS) is:

- a ☐ Always less than IAS
- b ☐ Pilot pressure minus static pressure
- c ☐ Always the same as IAS
- d ☐ IAS after correction for pressure error and instrument error

4 How fast must an aircraft fly to cover 1200nm in 3 hours:

- a ☐ 400kts
- b ☐ 3600kts
- c ☐ 800kts
- d ☐ 400mph

5 What time is used as standard in military and commercial aviation:

- a ☐ The time of the country over which the aircraft is flying
- b ☐ European daylight saving time
- c ☐ British summer time
- d ☐ Greenwich mean time (Universal time)

6 A single line, drawn on paper, representing speed and direction, is known as:

- a ☐ A vector
- b ☐ A vector triangle
- c ☐ A velocity
- d ☐ A vertical

7 The Air Triangle of velocities can be used to calculate flight data. There are 6 elements in total. How many elements are needed to calculate those missing:

- a ☐ 4
- b ☐ 5
- c ☐ 6
- d ☐ 2

8 You fly between 2 features on the ground, and note that it takes 3 minutes. If the features are 18nm apart, what is your groundspeed:

- a ☐ 280kts
- b ☐ 54kts
- c ☐ 180kts
- d ☐ 360kts

9 Aircrew are always aware of their Estimated Time of Arrival (ETA). Why is this:

- a ☐ ETA is important for fuel calculations and air traffic control purposes
- b ☐ It is the Easiest calculation to do
- c ☐ Fuel flow rate depends on ETA
- d ☐ A revised ETA tells them that the wind has changed

10 The track drawn on a map, between the departure airfield and the destination is known as:

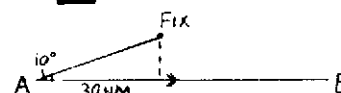
- a ☐ Track required
- b ☐ Track made good
- c ☐ Revised track
- d ☐ Heading required

11 An aircraft flies a track made good, 3 degrees in error from the required track. Using the 1 in 60 rule, how many miles will the aircraft be off track after 60 miles of flying:

- a ☐ 2nms
- b ☐ 3nms
- c ☐ 6nms
- d ☐ 1nm

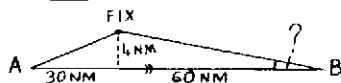
12 An aircraft flying from A to B. After flying 30nms, a fix shows the aircraft to have a track error of 10 degrees. How far is the aircraft off track at the time of the fix:

- a ☐ 3nms
- b ☐ 2nms
- c ☐ 6nms
- d ☐ 5nms



- 13 An aircraft flying from A to B finds that after 30nms, it is 4nms off track. It has a further 60nms to travel. What is the required closing angle:

a ☐ 2 degrees
b ☐ 3 degrees
c ☐ 4 degrees
d ☐ 6 degrees



- 14 An aircraft flying from A to B finds that after 40nms it is 4nms off track. If it has a further 60nms to travel by how much does the pilot need to turn to regain the intended track at B:

a ☐ 12 degrees
b ☐ 4 degrees
c ☐ 6 degrees
d ☐ 10degrees

- 15 An aircraft flying from A to B finds that after 20nms, it is 2nms right of track. If it has a further 40nms to travel, by how much does the pilot need to turn, to regain the intended track at B:

a ☐ 12 degrees left
b ☐ 6 degrees left
c ☐ 9 degrees left
d ☐ 6 degrees right

- 16 Which of the following statements is true, concerning the Direct Indicating Compass:

a ☐ The DIC needs only a small power supply
b ☐ The DIC is not affected by turns and accelerations
c ☐ The DIC only reads magnetic headings
d ☐ The DIC gives a reading of aircraft true heading

- 17 Which of the following, is not a component within a Gyro-magnetic system:

a ☐ A gyroscope
b ☐ A flux valve magnetic detector
c ☐ A suspended magnet
d ☐ A turn/acceleration cut out switch

- 18 A gyroscope cannot be perfect, and so over a period of time it becomes inaccurate, this is called:

a ☐ Gyro rigidity
b ☐ Gyro wander
c ☐ Turn/acceleration error
d ☐ Variation

- 19 As a compass nears the Magnetic North Pole, the compass detector will try to point at the magnetic material inside the Earth. This tilting is called:

a ☐ Variation
b ☐ Dip
c ☐ Drop
d ☐ Wander

- 20 Within an Inertial Navigation System, the movement of the aircraft is measured by sensors called:

a ☐ Axis
b ☐ Accelerometers
c ☐ Inertials
d ☐ Accelerators

- 21 In order to fly in a Visual Circuit, a trainee pilot requires:

a ☐ No wind
b ☐ Good visibility, and no cloud in the sky
c ☐ Good visibility and no wind
d ☐ Visibility and cloudbase conditions to meet the aerodrome controller's requirements

- 22 A wind is blowing at 90 degrees angle off the runway direction. If the wind speed is 20 kts. What is the crosswind component:

a ☐ 10kts
b ☐ 20 kts
c ☐ 12 kts
d ☐ 2 kts

- 23 During periods of poor visibility due to fog, Air Traffic Control will advise the pilot of the slant visibility along the runway. This visibility is measured carefully, and is called:

a ☐ Glide Slope Visibility
b ☐ Radar Visual Range
c ☐ Runway Visual Range
d ☐ Runway Range

- 24 What can be the effects of heavy icing, on an aircraft's performance:

a ☐ It will fly much slower
b ☐ There is no adverse effect on the aircraft's performance
c ☐ Loss of aerodynamics and reduced engine performance
d ☐ Loss of aerodynamics only

- 25 Which way does the Earth revolve on its axis:

a ☐ North to South
b ☐ West to East
c ☐ South to North
d ☐ East to West