Headquarters Air Cadets Examination

Senior Cadet
32/3 Air Navigation
Generated 29-Jun-00
Serial: 220

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 Initals _____ Date of Exam _____

Date of Birth _____ Squadron/Unit _____ Wing _____

1 Dundee is due north of Abergavenny. If their latitudes are 56 27N and 51 50N, how far apart are they:

a ☐ 277kms
b ☐ 323kms
c ☐ 277nms
d ☐ 323nms

2 Speed read directly from the ASI gauge is known as:

a ☐ Indicated Air Speed
b ☐ Rectified Air Speed
c ☐ Groundspeed
d ☐ Pilot speed

3 A Nimrod flies on patrol for 9 hours, at a speed of 300kts. How far does it travel in this time:

a ☐ 2700nms
b ☐ 2400nms
c ☐ 3000nms
d ☐ 3900nms

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

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

5 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 ☐ 6
b ☐ 4
c ☐ 2
d ☐ 5

6 You are flying at 120knots groundspeed. How long will it take to fly 20nms:

a ☐ 6 minutes
b ☐ 2 minutes
c ☐ 60 minutes
d ☐ 10 minutes

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

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

8 An aircraft is flying from Point A to Point B. A pinpoint fix shows it to be off track. A line from the pinpoint fix, to point B would be known as:

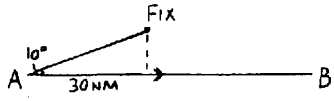
a ☐ Heading required
b ☐ Track made good
c ☐ Track required
d ☐ Revised track

9 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 ☐ 1nm
d ☐ 6nms

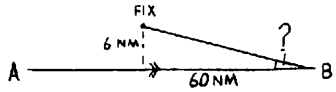
10 An aircraft flying from A to B. After flying 30nms, a fix shows the aircraft to have a track error of 10 degrees. How far is the aircraft off track at the time of the fix:

a ☐ 5nms
b ☐ 2nms
c ☐ 6nms
d ☐ 3nms



11 An aircraft flying from A to B finds itself 6nms off track. It has a further 60nms to travel. What is the required closing angle:

a ☐ 2 degrees
b ☐ 6 degrees
c ☐ 3 degrees
d ☐ 10 degrees



12 An aircraft is flying from A to B, a distance of 120nms. Halfway, a fix shows the aircraf to be 4nms right of track. What heading change does the pilot require to reach point B:

a ☐ 4 degrees to the right
b ☐ 4 degrees to the left
c ☐ 8 degrees to the right
d ☐ 8 degrees to the left

13 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

14 An aircraft flying from A to B finds that after 30nms it is 4nms left of track. If it has further 40nms to travel, by how much does the pilot need to turn, to regain the intended track at B:

a ☐ 14 degrees to the right
b ☐ 16 degrees to the right
c ☐ 12 degrees to the left
d ☐ 14 degrees to the left

15 All RAF aircraft are equipped with a Direct Indicating Compass (DIC). Why is this:

a ☐ The DIC is the most accurate compass system available
b ☐ The DIC gives a reading of true heading
c ☐ The DIC is reliable and needs no power supply
d ☐ The DIC is not affected by turns and accelerations

16 Which of the folowing, is not a component within a Gyro-magnetic system:

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

17 Why is a gyroscope used, in a gyro-magnetic compass system:

a ☐ A gyro is always accurate, without error
b ☐ A gyro requires no power supply
c ☐ A gyroscope is extremely accurate for short periods of time
d ☐ A gyro does not suffer from 'wander'

18 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 ☐ Wander
c ☐ Dip
d ☐ Drop

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

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

20 In order to fly in a Visual CIrcuit, a trainee pilot requires:

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

21 The wind is blowing directly down the length of a runway. What is the crosswind component:

a ☐ Zero crosswind component
b ☐ Equal to half the winds speed
c ☐ Equal to 3/4 of wind speed
d ☐ Equal to the winds speed

22 The airfield has a covering of shallow fog. A pilot circling directly overhead, sees the runway lights clearly. However, on the approach to land, he may have great difficulty in seeing some lights. Why is this:

a ☐ Fog will appear thicker when on the glide path, because the pilot is looking at a shallower angle
b ☐ Fog is more dense, closer to the ground
c ☐ The thickest fog always settles at the end of the runway
d ☐ Runway lights are designed to be seen from high level only

23 What problems can be caused by heavy rain:

a ☐ Runway Visual Range
b ☐ Thunderstorms
c ☐ Heavy snow
d ☐ Restricted visibility and flooded runway

24 What effect can icing have on the aerodynamics of an aircraft:

a ☐ Lift will decrease and weight will increase
b ☐ Ice forming on the leading edge of the wing, will increase lift
c ☐ There will be no adverse effect upon the aerodynamics
d ☐ The windscreen may freeze over

25 Which way does the Earth revolve on its axis:

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