61. GENERAL NAVIGATION

61.01. BASICS OF NAVIGATION

61.01.01. The solar system

61.01.01.01. seasonal and apparent move of the sun

1 id 1138 — The angle between the plane of the ecliptic and the plane of equator is approximately :

a 27.5°

b 25.3°

c **23.5°**

d 66.5°

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2 id 1460 — Which is the highest latitude listed below at which the sun will rise above the horizon and set every day?

a 62°

b 68°

c 72°

d **66°**

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3 id 4257 — In which two months of the year is the difference between the transit of the Apparent Sun and Mean Sun across the Greenwich Meridian the greatest?

a March and September

b **February and November**

c June and December

d April and August

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4 id 4258 — What is the highest latitude listed below at which the sun will reach an altitude of 90° above the horizon at some time during the year?

a 0°

b 45°

c 66°

d **23°**

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5 id 4259 — Assuming mid-latitudes (40° to 50°N/S). At which time of year is the relationship between the length of day and night, as well as the rate of change of declination of the sun, changing at the greatest rate?

a Summer solstice and spring equinox

b **Spring equinox and autumn equinox**

c summer solstice and winter solstice

d Winter solstice and autumn equinox

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6 id 4260 — At what approximate date is the earth closest to the sun (perihelion)?

a End of June

b End of March

c Beginning of July

d **Beginning of January**

7 id 4261 At what approximate date is the earth furthest from the sun (aphelion)?

a Beginning of July

b End of December

c Beginning of January

d End of September

8 id 5579 Seasons are due to the:

a Earth's elliptical orbit around the Sun

b inclination of the polar axis with the ecliptic plane

c Earth's rotation on its polar axis

d variable distance between Earth and Sun

9 id 6947 The sun's declination is

a The sun's position relative to the plane of the Equator

b The distance between the sun and the horizon

c The angular distance between the sun and the celestial North Pole

d The sun's position relative to the ecliptic

10 id 6948 The planets move around the Sun

a In circular orbits

b In elliptical orbits

c At constant angular speed

d At constant velocity

11 id 6949 The direction of the Earth's rotation on its axis is such that

a Observed from the point above the North Pole, the rotation is counterclockwise.

b An observer on the surface of the earth always will face West when observing sunrise

c Any point on the surface of the Earth will move eastward

d Any point on the surface of the Earth will move westward

12 id 6950 In its path around the Sun, the axis of the Earth has an inclination

a Varying between zero and 23°27' with the plane of the path

b of 66º 33' with the plane of the path

c Varying with the season of the year

d Of 23º 27' with the plane of Equator

13 id 6951 The mean sun

a Is the middle position of the sun

b Has a declination equal to the apparent sun

c Moves with constant speed along the celestial equator

d Is only of interest to users of astronomical navigation

14 id 6998 Observed from a position on the surface of the Earth the heavenly bodies seems to

a Not change their relative positions on the sky

b Move from West to East on the southern hemisphere

c Move from East to West on the northern hemisphere

d **Move from East to West**

15 id 6999 By the term "transit" of a heavenly body it is understood that

a The body is moving

b **The body is passing the meridian of the observer or another specified meridian**

c The body is passing the anti meridian of the observer

d The body is at the same celestial meridian as another body

16 id 7001 The term "sidereal" is used

a To describe how two positions of heavenly bodies are located sideways on the sky

b To describe conditions with reference to the moon

c **To describe a situation or relationship concerning the stars**

d To describe the time interval between two successive transits of the real apparent sun at the same meridian

17 id 7002 When the length of the day is measured with reference to the passage of the apparent sun

a The length of the days, as indicated by our watches, will be exactly equal

b The length of the day will vary with the latitude of the observer

c The length of the day will be the same once every month

d **The length of the day will wary in the course of the year**

18 id 7003 The length of a apparent solar day is not constant because

a **The Earth's speed of revolution in its orbit varies continuosly, due to the orbit being elliptical**

b The Earth's speed of rotation is not the same at all latitudes

c The Sun's declination is not constant

d The plane of the Ecliptic and the plane of the Equator are inclined to each other

61.01.02. The earth

19 id 6952 The inclination of the earth's axis of rotation with the plane of the ecliptic.

a Is causing the variation of length of the daylight during a year

b Is stable throughout the year

c Is causing the seasons, summer and winter

d **All 3 answers are correct**

20 id 6953 When the sun's declination is northerly

a It is winter on the northern hemisphere

b The sunrise occurs earlier at southern latitudes than the northern latitudes

c **The daylight period is shorter in the southern hemisphere than the northern**

d Midnight sun may be observed at the south pole

21 id 6954 | The sun's declination is on a particular day 12.00 S. Midnight sun may this day be observed

a North of 7800S

b **South of 7800S**

c At 7800S only

d North of 7800N

22 id 6955 | The term "Aphelion" is used to describe

a **The situation when the distance between the sun and the earth is at its longest**

b The relative position between the earth and the moon

c The situation when apparent sun is passing the plane of the Equator

d The relationship between the length of the day and the length of the night

23 id 6956 | As seen from an observer on the surface of the earth

a The sun is in a fixed position relative to the stars

b The stars will seem to move from west to east during a year

c The sun's position relative to the stars is fixed throughout the year

d **The apparent sun is always in the plane of the ecliptic**

24 id 6957 | Consider the following statements on the shape of the earth

a The diameters of the earth is the same at all latitudes

b The longest diameter is between the poles

c **It is slightly flattened at the poles**

d The diameter at the equator is about 60 NM longer than the diameter between the poles.

25 id 6958 | The term "Ellipsoid" may be used to describe

a The shape of the ecliptic

b A great circle on the celestial sphere

c **The shape of the earth**

d The movement of the earth around the sun

26 id 6959 | The compression factor of the earth

a Is so small that it may be ignored when making ordinary maps and charts

b Is about 1:300

c Makes the difference between the polar diameter and the equatorial diameter about 22 NM

d **All 3 answers are correct**

27 id 6960 | The poles on the surface of the earth may be defined as

a **The points where the earth's axis of rotation cuts the surface of the earth**

b The points on the surface of the earth where all meridians intersect at right angles

c The points from where the distance to the equator is equal

d The points at which the vertical lines runs through the centre of the earth.

28 id 6961 The equator is located

a On the surface of the earth, being a circle whose plane is perpendicular to the axis of the earth and cutting through the centre of the earth.

b On the surface of the earth and at right angles to the axis of rotation

c on the surface as a small circle, horizontal to the axis of rotation

d On the surface parallel to the magnetic equator

29 id 6963 Consider the following statements on the properties of a great circle:

a The great circle will maintain their initial true direction

b The parallels of latitudes are all great circles

c The great circle running through two positions on the surface of the earth, is the shortest distance between these two positions

d All 3 answers are correct.

61.01.02.01. great circle, small circle, rhumbline

30 id 402 The rhumb-line distance between points A (60°00'N 002°30'E) and B (60°00'N 007°30'W) is:

a 150 NM

b 450 NM

c 600 NM

d 300 NM

31 id 767 In order to fly from position A (10°00'N, 030°00'W) to position B (30°00'N, 050°00'W), maintaining a constant true course, it is necessary to fly:

a the great-circle route

b the constant average drift route

c a rhumb line track

d a straight line plotted on a Lambert chart

32 id 768 The rhumb line track between position A (45°00'N, 010°00'W) and position B (48°30'N, 015°00'W) is approximately:

a 345

b 330

c 300

d 315

33 id 781 The great circle distance between position A (59°34.1'N 008°08.4'E) and B (30°25.9'N 171°51.6'W) is:

a 5 400 NM

b 10 800 km

c 2 700 NM

d 10 800 NM

34 id 806 An aircraft passes position A (60°00'N 120°00'W) on route to position B (60°00'N 140°30'W). What is the great circle track on departure from A?

a 261°

b 288°

c 279°

d 270°

35 id 807 A great circle track joins position A (59°S 141°W) and B (61°S 148°W). What is the difference between the great circle track at A and B?

a **It increases by 6°**

b It decreases by 6°

c It increases by 3°

d It decreases by 3°

36 id 2176 An aircraft flies a great circle track from 56° N 070° W to 62° N 110° E. The total distance travelled is?

a 1788 NM

b 5420 NM

c **3720 NM**

d 2040 NM

37 id 2205 A Rhumb line is :

a the shortest distance between two points on a Polyconic projection

b **a line on the surface of the earth cutting all meridians at the same angle**

c any straight line on a Lambert projection

d a line convex to the nearest pole on a Mercator projection

38 id 2907 An aircraft departing A(N40º 00´ E080º 00´) flies a constant true track of 270º at a ground speed of 120 kt. What are the coordinates of the position reached in 6 HR?

a N40º 00´ E068º 10´

b N40º 00´ E070º 30´

c N40º 00´ E060º 00´

d **N40º 00´ E064º 20´**

39 id 3193 An aircraft flies the following rhumb line tracks and distances from position 04°00'N 030°00'W : 600 NM South, then 600 NM East, then 600 NM North, then 600 NM West. The final position of the aircraft is:

a **04°00'N 029°58'W**

b 04°00'N 030°02'W

c 04°00'N 030°00'W

d 03°58'N 030°02'W

40 id 4262 A flight is to be made from 'A' 49°S 180°E/W to 'B' 58°S, 180°E/W. The distance in kilometres from 'A' to 'B' is approximately:

a 1222

b **1000**

c 540

d 804

41 id 4265 An aircraft at latitude 02°20'N tracks 180°(T) for 685 km. On completion of the flight the latitude will be:

a **03°50'S**

b 04°10'S

c 04°30'S

d 09°05'S

42 id 4429 Parallels of latitude, except the equator, are:

a both Rhumb lines and Great circles

b Great circles

c **Rhumb lines**

d are neither Rhumb lines nor Great circles

43 id 4432 Given : A is N55° 000° B is N54° E010° The average true course of the great circle is 100°. The true course of the rhumbline at point A is:

a **100°**

b 096°

c 104°

d 107°

44 id 5580 Given : Position 'A' N60 W020, Position 'B' N60 W021, Position 'C' N59 W020. What are, respectively, the distances from A to B and from A to C?

a 60 NM and 30 NM

b 52 NM and 60 NM

c **30 NM and 60 NM**

d 60 NM and 52 NM

45 id 6962 A great circle is defined as

a A circle in any plane on the surface of a sphere

b **A circle on the surface of a sphere, whose plane is cutting through the centre of the sphere**

c A circle running on the outside of the sphere

d A circle on the surface of the sphere, with its plane running perpendicular to the axis of rotation

46 id 6964 A small circle

a Will always cross equator

b Has a plane parallel to the earth's axis of rotation

c Will also be a rhumb line

d **Has a plane that do not pass through the centre of the earth**

47 id 6978 If you want to follow a constant true track value

a You must fly east/west or North/south.

b **You must fly a rhumb line**

c You must fly a great circle

d You, in most cases, will also fly the shortest possible track.

48 id 6979 Consider the following statements on rhumb lines:

a **Most rhumb lines will run as spirals from the one pole to another**

b A rhumb line will never cross a great circle

c A rhumb line and a great circle will never have the same true direction for some distance

d The true direction of a rhumb line on northern hemisphere will increase in true direction, while on southern hemisphere it will decrease

49 id 6985 Consider the following statements on the great circle and the rhumb line running through the same two positions

a The rhumb line will in most cases be located closer to the equator than the great circle

b The great circle will in most cases be shorter of the two

c The great circle will in most cases run through an area of higher latitude than the rhumb line

d **All statements are correct**

50 id 6988 Given: Great circle from P to Q measured at P=095° Southern hemisphere Conversion angle P - Q =7° What is the rhumb line track P - Q?

a 081

b 102

c **088**

d 109

51 id 6989 The great circle track X - Y measured at x is 319°, and Y 325° Consider the following statements:

a **Southern hemisphere, Rhumb line track is 322°**

b Northern hemisphere, Rhumb line track is 313°

c Southern hemisphere, Rhumb line track is 331°

d Northern hemisphere, Rhumb line track is 322°

61.01.02.02. convergency, conversion angle

52 id 6980 The convergency of meridians

a Is the distance between the meridians in degrees, minutes, and seconds

b **Is the angular difference between the meridians**

c Is independent of latitude and longitude

d Is greater using rhumb line track than using great circle

53 id 6981 An approximate equation for calculating the convergency between two meridians is

a Convergency=60 x dlong x cos. lat.

b Convergency= dlat x sin mean long

c **Convergency= dlong x sin mean lat.**

d Convergency= dlong x cos. lat.

54 id 6982 The exact equation for calculating the convergency between two meridians running through two difference positions is

a Convergency= 1/2 x (dlong x sin lat.)

b Convergency= 1/2 x (GCTTin+GCTTfin)

c Convergency= GCTTin+GCTTfin

d **Convergency=GCTTin-GCTTfin**

55 id 6983 What is the convergency at 5000N between the meridians 10500W and 14500W on the earth?

a 32,1°

b 40,0°

c **30,6°**

d 50,0°

56 id 6986 | "conversion angle" is

a The angular difference between the rhumb line and the great circle between two positions, measured at any of the positions

b The difference between the rhumb line and the great circle directions

c The angle used to convert from True to compass directions

d The angle at which speech from another person enters the ear

57 id 6990 | An approximate equation for calculation conversion angle is

a CA=0,5 x dlong x sin [mean lat]

b CA=dlong x sin [mean lat] x sin [long]

c CA=(dlong-dlat) x 0,5

d CA=0,5 x dlat x sin [mean lat]

61.01.02.03. latitude, difference of latitude

58 id 770 | The maximum difference between geocentric and geodetic latitude occurs at about:

a 90° North and South

b 60° North and South

c 45° North and South

d 0° North and South (equator)

59 id 3192 | At what approximate latitude is the length of one minute of arc along a meridian equal to one NM (1852 m) correct?

a 45°

b 0°

c 90°

d 30°

60 id 6965 | Latitude may be defined as

a The distance from equator to a place on the surface of the earth

b The angle between the plane of the equator and the plane of the parallel of latitude

c The angular distance measured along a meridian from the equator to a parallel of the latitude, measured in degrees, minutes, and seconds and named North or South

d The displacement of a place from equator

61 id 6967 | Position A is at latitude 33º45'N and position B is at latitude 14º25'N. What is the change in latitude between A and B?

a 48º10'

b 19º20'

c 23º45'

d 76º15'

62 id 6968 | An arc of 1 minute of a meridian equals

a 1 nautical mile

b 10 kilometres

c 1 statute mile

d 1 kilometre

63 id 6969 The distance between the parallels of latitude 17º23'S and 23º59'N is

a 4122 NM

b 636 NM

c 2473 NM

d **2482 NM**

61.01.02.04. longitude, difference of longitude

64 id 808 What is the longitude of a position 6 NM to the east of 58°42'N 094°00'W?

a 093°53.1'W

b 093°54.0'W

c **093°48.5'W**

d 094°12.0'W

65 id 6970 A correct definition of longitude is

a The East-West distance between Greenwich and the place

b **the arc at equator between the Greenwich meridian and the meridian of the place, measured in degrees, minutes and seconds, named East or West**

c The angle between the Greenwich meridian and the meridian of the place

d The difference between the Greenwich meridian and the meridian of the place, measured at the centre of the earth

66 id 6971 Consider the following statements on longitude

a Longitude is stated in degrees up to 360º

b The value of longitude will never exceed 90º

c **The largest value of longitude is 180º**

d The largest value of change of longitude is 90º

67 id 6972 The prime meridian is

a The meridian having the highest value of longitude

b The meridian 180(E/W

c The mid meridian on a chart

d **The meridian running through Greenwich, England**

68 id 6973 What is the change of longitude between A(45º00'N 163º14'E) and B(31º33'N and 157º 02'E)

a 6° 12' E

b **6º 12' W**

c 13° 27' W

d 320° 16' E

69 id 6975 The highest value of longitude is found

a Along equator

b Close to the poles

c Close to the prime meridian

d **At Greenwich anti meridian**

70 id 6976 Consider the following statements on meridians:

a Any two meridians will form a great circle

b The meridians are not of equal length

c **The meridians are parallel only at equator**

d Any two halves great circle will form a meridians

71 id 6977 Consider the following statements on meridians:

a **All meridians run in true direction from South to North**

b The relative direction between two selected meridians will be constant

c On the southern hemisphere the meridians run towards the south pole.

d The distance, in nautical miles, between two selected meridians will be constant

61.01.02.05. use of latitude and longitude

72 id 140 The angle between the true great-circle track and the true rhumb-line track joining the following points: A (60° S 165° W) B (60° S 177° E), at the place of departure A, is:

a **7.8°**

b 9°

c 15.6°

d 5.2°

73 id 141 Given: Waypoint 1. 60°S 030°W Waypoint 2. 60°S 020°W What will be the approximate latitude shown on the display unit of an inertial navigation system at longitude 025°W?

a 060°00'S

b 060°11'S

c 059°49'S

d **060°06'S**

74 id 142 What is the time required to travel along the parallel of latitude 60° N between meridians 010° E and 030° W at a groundspeed of 480 kt?

a 1 HR 45 MIN

b 1 HR 15 MIN

c **2 HR 30 MIN**

d 5 HR 00 MIN

75 id 765 Given: value for the ellipticity of the Earth is 1/297. Earth's semi-major axis, as measured at the equator, equals 6378.4 km. What is the semi-minor axis (km) of the earth at the axis of the Poles?

a **6 356.9**

b 6 378.4

c 6 367.0

d 6 399.9

76 id 769 The diameter of the Earth is approximately:

a 18 500 km

b 6 350 km

c **12 700 km**

d 40 000 km

77 id 800 If an aeroplane was to circle around the Earth following parallel 60°N at a ground speed of 480 kt. In order to circle around the Earth along the equator in the same amount of time, it should fly at a ground speed of:

a 550 kt

b 240 kt

c **960 kt**

d 480 kt

78 id 2211 The circumference of the earth is approximately:

a **21600 NM**

b 43200 NM

c 5400 NM

d 10800 NM

79 id 4424 Given: The coordinates of the heliport at Issy les Moulineaux are: N48°50' E002°16.5' The coordinates of the antipodes are :

a S41°10' W177°43.5'

b S48°50' E177°43.5'

c **S48°50' W177°43.5'**

d S41°10' E177°43.5'

80 id 4434 Given: Position 'A' is N00° E100°, Position 'B' is 240°(T), 200 NM from 'A'. What is the position of 'B'?

a S01°40' E101°40'

b N01°40' E097°07'

c **S01°40' E097°07'**

d N01°40' E101°40'

81 id 5577 The circumference of the parallel of latitude at 60°N is approximately:

a **10 800 NM**

b 18 706 NM

c 20 000 NM

d 34 641 NM

82 id 6991 The term "departure" used in navigation also have the following meaning

a **Distance in direction East/West, given in nautical miles**

b Distance North/South

c Angular distance along a meridian

d Angular distance along a parallel of latitude

83 id 6992 Consider the following statements on "departure":

a As the difference of longitude increases, the departure is constant it the latitude is constant

b **As the latitude increases, the departure between two meridians decreases**

c Departure may be calculated using the equation: departure=Sin Lat. x sin Long

d Departure is independent of difference of longitude

84 id 6993 A is at 5500N 15100W and B at 4500 N 16253W What is the departure?

a 584 NM

b **458 NM**

c 546 NM

d 409 NM

85 id 6994 You start from P (7000N 01500E) and fly westward along the parallel of latitude for 2 hours at ground speed 220 Kt. What is your position after two hours flight?

a 00644W

b 02126W

c 00740E

d **00626W**

86 id 6995 The suns moves from East to West at a speed of 15° longitude an hour. What ground speed will give you the opportunity to observe the sun due south at all times at 6000N

a 300 Kt.

b 520 Kt.

c **450 Kt.**

d 780 Kt.

87 id 6997 Using latitude and longitude for a place

a The distance from this place to another play may be easily calculated

b **The location on the earth's surface of this place is defined**

c The direction from the place to any other place may be easily calculated

d Relative directions to another place may easily be calculated

61.01.03. Time and time conversions

88 id 2214 5 HR 20 MIN 20 SEC corresponds to a longitude difference of:

a 78°45'

b 81°10'

c 75°00'

d **80°05'**

89 id 2905 The main reason that day and night, throughout the year, have different duration, is due to the:

a **inclination of the ecliptic to the equator**

b earth's rotation

c relative speed of the sun along the ecliptic

d gravitational effect of the sun and moon on the speed of rotation of the earth

90 id 7000 | A "day" is by definition

a The period from morning to evening

b The period from sunrise to sunset

c The period in which day flying is authorised

d **The period elapsed between two successive transits of a heavenly body**

91 id 7005 | The time it takes for the Earth to complete one orbit around the Sun is

a 360 days 45 hours, 5 minutes 48 seconds

b 360 days 5 hours 45 minutes 48 seconds

c 365 days 45 hours 48 minutes 5 seconds

d **365 days 5 hours 48 minutes 45 seconds**

92 id 7007 | The "Equation of time"

a **States the difference in time of transit of the Mean sun and the Apparent sun any particular day**

b States the difference between celestial time and apparent time

c Is used to calculate mean time when standard time is known

d Is used when calculating the difference between UTC and LMT

93 id 7010 | How much time does it take for the Mean Sun to move from meridian 14515E to meridian 02345W?

a 8 hours 06 minutes

b **11 hours 16 minutes**

c 9 hours 41 minutes

d 6 hours 15 minutes

94 id 7018 | Daylight Saving Time (Summer Time)

a Is used in some countries

b Is used to extend the sunlight period in the evening

c Is introduced by setting the standard time forward by one hour

d **All 3 answers are correct**

95 id 7019 | The countries having a standard time slow on UTC

a Will often have an earlier standard date than the UTC date

b **Will generally be located at western longitudes**

c Will often experience sunrise earlier than the sunrise occurs at the Greenwich meridian

d Will generally be located at eastern longitudes

96 id 7020 | In the Air Almanac the highest time difference listed for difference between UTC and Standard time is maximum

a **13 hours**

b 12 hours

c 6 hours

d 24 hours

61.01.03.01. apparent time

97 "Apparent Time" is
id 7004

a The correct time, as it appears on our watches and clocks

b **Based on the time of transit of the apparent Sun**

c The time that is apparent to everybody; in other words the official time

d The average time, calculated from the movements of the Sun and the stars

61.01.03.02. UTC

98 UTC stands for
id 7013

a **Universal Time Co-ordinated**

b Universal Time Coefficient

c Universal time constant

d Universal Time Compensated

99 What is the difference between UTC and GMT?
id 7014

a GMT is valid only at the Greenwich meridian, and is of no use at other longitudes

b UTC is adjusted abruptly at announced times, and is hence not practical to use

c **UTC is slightly more accurate than GMT, but the difference between the two is so small that it has no importance in everyday navigation of aircraft**

d All 3 answers above are correct

61.01.03.03. LMT

100 What is the local mean time, position 65°25'N 123°45'W at 2200 UTC?
id 2179

a **1345**

b 2200

c 0615

d 0815

101 "Mean time" has been introduced in order to
id 7006

a Compensate for the irregularities of the speed of rotation of the Earth around it's axis

b Have one fixed time to be used within the border of a country

c **Introduce a constant measurement of time, independent of the daily variations in the movement of the Sun as observed from the Earth**

d Save us the problem of adjusting our watches entering every leap year

102 The relationship between the Mean Sun's movement along the Equator and Mean time is
id 7008

a 1° of arc equals 4 minutes of time

b 180° of arc equals 12 hours of time

c 5 hours of time equals 75° of arc

d **All 3 answers are correct**

103 id 7009 If the Mean Sun moves 121°30' along the Equator, that equals

a 20 hours 10 minutes

b 9 hours 15 minutes

c 6 hours 20 minutes

d **8 hours 06 minutes**

104 id 7011 A day at a place as measured in local mean time starts

a When the mean sun transits the meridian of the place in question

b When the mean sun transits the Greenwich meridian

c **When the mean sun transits the anti meridian of the place in question**

d When the mean sun transits the 180E/W meridian

105 id 7012 A is at longitude 01230E and B is at longitude 04315E. LMT in B is 1749. What is the LMT in A?

a 1456

b 1706

c 1952

d **1546**

61.01.03.04. standard times

106 id 1462 Refer to the table: When it is 1000 Standard Time in Kuwait, the Standard Time in Algeria is:

a 0700

b 1200

c 1300

d **0800**

107 id 1481 Refer to the table: An aircraft takes off from Guam at 2300 Standard Time on 30 April local date. After a flight of 11 HR 15 MIN it lands at Los Angeles (California). What is the Standard Time and local date of arrival (assume summer time rules apply)?

a **1715 on 30 April**

b 1215 on 1 May

c 1315 on 1 May

d 1615 on 30 April

108 id 7016 Standard time is

a The time which is accepted and used as a standard for the whole world

b The time most frequently used for air navigation

c **The time enforced by the legal authority to be used in a country or an area**

d The time used at a particular meridian

109 id 7017 | Some standard times may differ from UTC by other times than whole hours, because

a Some areas have limited communication with neighbouring areas, which does not call for co-ordinated standard times

b The political authorities have emphasised the importance of the sunlight period in a particular position

c It has been considered highly desirable that the sunlight period of the day is balanced around noon, standard time

d **All 3 answers are correct**

61.01.03.05. date line

110 id 7021 | The International Date Line is located

a At the apparent sun's anti meridian

b At the Greenwich meridian

c **At the 180°E/W meridian, or in the vicinity of this meridian**

d At all latitudes on the 180°E/W meridian

111 id 7022 | When approaching the International Date Line from the East, you

a **Should be prepared to increase your date by 1**

b Should increase your date by an extra date at the first midnight you experience

c Should be prepared to decrease your date by 1

d Should not change date at the first midnight you experience

61.01.03.06. determinatin of sunrise/sunset

112 id 399 | The duration of civil twilight is the time:

a between sunset and when the centre of the sun is 12° below the true horizon

b agreed by the international aeronautical authorities which is 12 minutes

c needed by the sun to move from the apparent height of 0° to the apparent height of 6°

d **between sunset and when the centre of the sun is 6° below the true horizon**

113 id 400 | On the 27th of February, at 52°S and 040°E, the sunrise is at 0243 UTC. On the same day, at 52°S and 035°W, the sunrise is at:

a 2143 UTC

b 0243 UTC

c **0743 UTC**

d 0523 UTC

114 id 5578 | Begin of morning civil twilight and end of evening civil twilight are defined by :

a sun altitude is 18° below the celestial horizon

b sun altitude is 12° below the celestial horizon

c **sun altitude is 6° below the celestial horizon**

d sun upper edge tangential to horizon

115 id 7023 Consider the following statements on sunset:

a For positions at the same longitude, sunset will occur simultaneously at all latitudes

b At sunset the centre of the sun is at the observers horizon

c **Sunset is the time when the observer at sea level see the last part of the sun disappear below the horizon**

d Night-flying regulations start at the time of sunset

116 id 7024 Atmospheric refraction

a Causes the Sunrise and the Sunset to occur earlier

b Causes the Sunrise and the Sunset to occur later

c Causes the Sunrise to occur later and the Sunset to occur earlier

d **Cause the Sunrise to occur earlier and the Sunset to occur later**

117 id 7025 Times of Sunrise and Sunset is in the Air Almanac only given for one particular time in every 24 hour period. These data are accurate

a Enough to be used for all longitudes, when calculating light conditions

b But may call for an adjustment if the observer is at a high altitude

c Only for the places on the Greenwich meridian

d **All 3 answers are correct**

118 id 7026 The times given for Sunrise, Sunset, Morning and Evening twilight in the Air Almanac

a Are given in Standard time

b Are given in UTC

c Must always be corrected for atmospheric refraction

d **Are given in LMT**

119 id 7027 G is in position 3500N 03445W. For a particular date sunrise at 3500N is in the Air Almanac listed as 0715. What is the time of sunrise at G, given in UTC?

a **0934 UTC**

b 0715 UTC

c 0504 UTC

d 0456 UTC

120 id 7028 On 4 February the Air Almanac lists 1941 as the time of sunset at 5000S. An observer register sunset at 2113 UTC this day. What is the observers position?

a **5000S 02300W**

b 5000S 01035W

c 5000S 02200E

d 5000S 01035E

121 id 7029 Consider the following statements on Sunrise and Sunset

a **At equator sunrise and sunset occur at quite regular times throughout the year**

b In May sunrise occurs later at 4500N than at 4500S

c In November sunset occurs earlier at 4500S than at 4500N

d In July the period of sunlight is longer at 1500S than at 1500N

122 id 7030 Twilight

a Are periods when it is nearly dark

b Are periods when it is too dark to move around without artificial lighting

c Are the periods when an observer is illuminated by both direct and indirect rays of light from the sun.

d Are the periods before sunrise and after sunset when the light is lower than when the sun is above the horizon

123 id 7031 What is the definition of "Morning Civil Twilight"?

a The period in the morning, just before sunrise

b Morning civil twilight is the period in the morning from the centre of the sun is 6° below the horizon until the upper limb of the sun appears at the horizon

c The period when the sun, in the morning, has its centre between 6° under the horizon and the horizon

d The period of semi-darkness in morning

124 id 7032 The "duration of twilight"

a Will in the period around the Equinoxes increase as you approach the equator from North or South

b Is generally longer in positions at high latitudes that in positions at lower latitudes

c Is independent of the sun's declination, and only depends on the observers latitude and longitude

d Is longer in the morning than in the evening, because of the refraction in the atmosphere

125 id 7033 For 1 February the Air Almanac lists the following data: Latitude: 6600N Morning civil twilight: 0756 Sunrise: 0900 Sunset: 1528 Evening civil twilight: 1632 The duration of morning twilight at 6600N is

a 7 hours 56 minutes and starts at 0900 UTC

b 1 hour 4 minutes and starts at 0900 UTC

c 1 hour 4 minutes and starts at 0756 LMT

d 8 hours 36 minutes and starts at 0756 UTC

61.01.04. Directions

61.01.04.01. terrestrial magnetism: declination

126 id 7034 "True North" is

a The direction along a meridian

b The direction along the meridian, toward the north pole when on the northern hemisphere and toward the south pole when on the southern hemisphere

c Is in any direction out from the true north pole

d The direction along any meridian toward the true north pole

127 id 7035 Directions are stated

a As a reference direction and a number of degrees

b In degrees with reference to True North when plotted with reference to the latitude/longitude grid on a chart

c In degrees in a 360(system, starting out clockwise from the reference direction

d All 3 answers are correct

128 id 7036 The magnetic meridian in a position is

a The direction of the great circle running from the magnetic south pole to the magnetic north pole, measured in the position

b The direction in the Earth's magnetic lines of force in the position

c **The horizontal direction of the Earth's magnetic field in that position, toward the magnetic north pole**

d The direction in which a freely suspended magnet will point in that position

129 id 7040 The magnetic north pole seems to rotate around the geographical north pole. A complete rotation takes about

a 4 years

b 11 years

c **1 degree each 5. year**

d 1 degree each 9. year

130 id 7042 Referring to the Earth's magnetic field,

a The inclination is 90° at the geographical poles

b The inclination decreases with increased geographical latitude

c The dip is maximum at the magnetic equator

d **The inclination is 90° at the magnetic poles**

131 id 7043 In the areas close to the magnetic poles compasses are not to any use in air navigation, mainly because

a The field strength of the Earth's magnetic field is at it's weakest in this area

b The distance from the magnetic equator is too long

c **The horizontal component of the Earth's magnetic field is too weak**

d The inclination is insufficient in these areas

132 id 7044 The forces acting upon the compass needle in a stand-by compass in an aircraft, are

a The Earth's magnetic field, the coriolis effect and aircraft magnetism

b The total magnetic field in the compass location

c Mechanic forces only

d **The Earth's magnetic field, the aircraft magnetic field and the effects of attitude and movement of the aircraft**

61.01.04.03. gridlines, isogrives

133 id 2177 Isogrives are lines that connect positions that have:

a the same horizontal magnetic field strength

b **the same grivation**

c the same variation

d O° magnetic dip

134 id 7046 "Grivation"

a **Is the sum of Grid convergence and variation**

b Is the sum of Grid convergence and deviation

c Is the sum of Grid convergence, variation and deviation

d Is the sum of variation and deviation

135 id 7047 | The following values are given: Grid track: 192, Grid convergence: 48W, Variation: 10E, Deviation: 2W Find: Magnetic heading when WCA is 9L

a **MH 221**

b MH 125

c MH 145

d MH 223

136 id 7048 | Grid convergence

a Is easterly for positions east of the grid datum meridian on the northern hemisphere

b Is easterly in all positions having westerly longitude

c Is easterly in all positions having easterly longitude

d **Is westerly for positions east of the grid datum meridian on the northern hemisphere**

137 id 7049 | The purpose of establishing a grid is

a To make the system of latitude and longitude available on a gridded map

b **To provide a system for directions where a great circle has a constant direction, even if its true direction varies**

c Make a chart covering high latitudes that has the same qualities as the equatorial Mercator chart

d Minimise the errors introduced when making calculations involving variation

138 id 7050 | Grivation is 56W when

a GH is 156° and MH is 103°

b **GH is 103° and MH is 159°**

c Grid convergence is 46W and variation is 10E

d Grid convergence is 58W and deviation is 2E

139 id 7244 | Preparing a chart for use of grid means

a Precalculating grid directions for all positions marked on the chart

b Mark the chart with lines and values for grid latitude and longitude

c Selecting suitable grid tracks, position line and bearings

d **Selecting a meridian on the chart and drawing lines on the chart, parallel to the meridian selected**

140 id 7245 | "Grid convergence"

a Is named easterly when Grid North appears to be east of True North

b Is independent of longitude, depending only of latitude

c Is 1 on an equatorial Mercator chart

d **Is the difference in direction between Grid North and True North**

61.01.05. Distance

61.01.05.01. units of distance and height

141 id 7052 A Nautical mile is defined as

a The length of a 1 minute arc, measured anywhere on the surface of the Earth

b The average length of a 1' arc of longitude and a 1' arc of latitude

c 1855 metres

d **The average length of a 1 minute arc of a meridian**

142 id 7054 In international aviation the following units shall be used for horizontal distance:

a Metres, Statute miles and Nautical miles

b Kilometres, Feet and Nautical miles

c **Metres, Kilometres and Nautical miles**

d Kilometres, Statute miles and Nautical miles

143 id 7055 When dealing with heights and altitudes in international aviation, we use the following units:

a **Metre and Foot**

b Foot, Kilometre and decimals of Nautical mile

c Foot and Yard,

d All 3 answers are correct

144 id 7056 "Kilometre" is defined as

a The mean length of a 1/40000 part of the Equator

b **A 1/10000 part of the meridian length from Equator to the pole**

c 0,621 Statute mile

d 0,454 Nautical mile

61.01.05.02. conversion from one unit to another

145 id 7057 1 nautical mile equal

a 1855 metres

b **6076 feet**

c 0,869 Statute mile

d 3281 Yards

146 id 7058 How long is 25 Kilometres at 6000N?

a 40,2 Statute miles

b 46,3 Nautical mile

c **13,5 Nautical mile**

d 27,0 Nautical mile

61.01.05.03. relationship between NM and min. of Lat.

147 id 7051 | Assuming the Earth being a perfect sphere

a Distances will vary, dependant on the latitude

b Distances will vary, dependant on their directions

c **A 1 minute arc measured on the surface of the Earth will be equally long wherever it is measured**

d All 3 answers are correct

148 id 7053 | Consider the following statements:

a The exact length of a 1' of arc is shorter at high altitude than at sea level, when the arc is observed from the centre of the Earth

b In any position on the surface of the Earth, the length of 1' of arc East/West is equal to the length of 1' of arc North/South in the same position on a perfect sphere

c **The exact length of a 1' of arc varies a little from position to position because the Earth radius vary**

d All 3 statements are correct

61.02. MAGNETISM AND COMPASSES

61.02.01. General principles

61.02.01.01. terrestrial magnetism

149 id 1475 Isogonals converge at the:

a Magnetic equator

b **North and South geographic and magnetic poles**

c North magnetic pole only

d North and South magnetic poles only

150 id 1477 The horizontal component of the earth's magnetic field:

a is approximately the same at all magnetic latitudes less than 60°

b weakens with increasing distance from the magnetic poles

c weakens with increasing distance from the nearer magnetic pole

d **is approximately the same at magnetic latitudes 50°N and 50°S**

151 id 2182 When is the magnetic compass most effective?

a In the region of the magnetic South Pole.

b **About midway between the magnetic poles**

c In the region of the magnetic North Pole.

d On the geographic equator

152 id 3325 The Earth can be considered as being a magnet with the:

a blue pole near the north pole of the earth and the direction of the magnetic force pointing straight up from the earth's surface

b red pole near the north pole of the earth and the direction of the magnetic force pointing straight down to the earth's surface

c **blue pole near the north pole of the earth and the direction of the magnetic force pointing straight down to the earth's surface**

d red pole near the north pole of the earth and the direction of the magnetic force pointing straight up from the earth's surface

153 id 4319 Which of the following statements concerning the earth's magnetic field is completely correct?

a **The blue pole of the earth's magnetic field is situated in North Canada**

b At the earth's magnetic equator, the inclination varies depending on whether the geograhic equator is north or south of the magnetic equator

c The earth's magnetic field can be classified as transient, semi-permanent or permanent

d Dip is the angle between total magnetic field and vertical field component

154 id 5387 The north and south magnetic poles are the only positions on the earth's surface where:

a a freely suspended compass needle will stand horizontal

b isogonals converge

c **a freely suspended compass needle will stand vertical**

d the value of magnetic variation equals 90°

155 The sensitivity of a direct reading compass varies:
id 5562

a inversely with the vertical component of the earth's magnetic field

b directly with the vertical component of the earth's magnetic field

c inversely with both vertical and horizontal components of the earth's magnetic field

d **directly with the horizontal component of the earth's magnetic field**

156 A simple magnet is surrounded by a magnetic field having the following properties:
id 7060

a The magnetic lines of force are straight lines which will not have the characteristics to bend

b **The field's direction is from the magnets red pole to the magnets blue pole**

c A small number of the magnetic lines of force leaving one of the poles will pass out through space and will never return to this magnet

d The direction of the field is from the magnets blue pole to the magnets red pole

157 The approximate location of the Magnetic North Pole is
id 7061

a **7300N 10000W**

b 500 NM north-east of the Bering strait

c Off the northern coast of Greenland

d 7400N 05800E

158 The total Magnetic Force of the terrestrial magnetic field
id 7062

a Is horizontal in all positions on the surface of the Earth

b Is vertical at the magnetic equator

c **Is strongest at the magnetic poles**

d Will be stronger at higher altitudes because the attenuation is less at high altitudes

159 The compass needle marked red
id 7063

a Will be repelled by terrestrial magnetic North Pole

b **Is called "The North-seeking Pole"**

c Will align itself in the reciproke direction of the terrestrial magnetic field

d Is the north-pole of the compass needle

160 In a particular position the total strength of the terrestrial magnetic field is 5 nanotesla. The inclination is 55° . What is the strength of the horizontal component in this position?
id 7064

a 4,09 nanotesla

b **2,87 nanotesla**

c 6,05 nanotesla

d 1,25 nanotesla

161 In a particular position the horizontal and the total strength of the terrestrial magnetic field are the same. This position is
id 7065

a At one of the magnetic poles

b Between the geographic and the magnetic pole

c At magnetic latitude 45°

d **At the magnetic equator**

162 id 7066 As you move from a lower to a higher southern magnetic latitude, the characteristics of the terrestrial magnetic field will change:

a The horizontal component of the field will increase and the inclination will decrease

b The magnetic lines of force will spread further apart

c The magnetic meridian will become more and more vertical

d **The inclination will increase and the vertical component of the field will increase**

61.02.01.05. magnetic dip

163 id 2215 What is the value of the magnetic dip at the magnetic south pole ?

a 60°

b 45°

c **90°**

d 0°

164 id 7067 The dip angle in the terrestrial magnetic field is given by the following equation:

a Dip = sin-1 (H/T)

b **Dip = cos-1 (H/T)**

c Dip = 12 x T/H

d Dip = T/Z

61.02.01.06. Variation

165 id 1463 The value of magnetic variation:

a varies between a maximum of 45° East and 45° West

b must be 0° at the magnetic equator

c **has a maximum of 180°**

d cannot exceed 90°

166 id 1476 A line drawn on a chart which joins all points where the value of magnetic variation is zero is called an:

a isogonal

b aclinic line

c **agonic line**

d isotach

167 id 2212 Isogonic lines connect positions that have:

a **the same variation**

b 0° variation

c the same elevation

d the same angle of magnetic dip

168 id 2860 Complete the following statement regarding magnetic variation. The charted values of magnetic variation on earth normally change annually due to:

a a reducing field strength causing numerical values at all locations to decrease.

b magnetic pole movement causing numerical values at all locations to increase.

c **magnetic pole movement causing numerical values at all locations to increase or decrease**

d an increasing field strength causing numerical values at all locations to increase.

169 id 2906 The lines on the earth's surface that join points of equal magnetic variation are called:

a isogrives

b isotachs

c **isogonals**

d isoclines

170 id 3190 The angle between True North and Magnetic North is called :

a compass error

b deviation

c **variation**

d drift

171 id 4421 A negative (westerly) magnetic variation signifies that :

a **True North is East of Magnetic North**

b True North is West of Magnetic North

c Compass North is East of Magnetic North

d Compass North is West of Magnetic North

172 id 4427 Isogonals are lines of equal :

a compass deviation.

b **magnetic variation.**

c pressure.

d wind velocity.

173 id 4428 At a specific location, the value of magnetic variation:

a depends on the true heading

b depends on the type of compass installed

c depends on the magnetic heading

d **varies slowly over time**

174 id 7037 The angular difference between the geographical meridian and the magnetic meridian running through the same position is named

a **Variation**

b Magnetic correction

c Inclination

d Deviation

175 id 7038 An isogonal

a Is a line running through all positions having the same magnetic inclination

b Is a line running through all positions having the same magnetic longitude

c Is a line on the surface of the Earth, running through all positions having the same magnetic latitude

d **Is a line running through all positions having the same variation**

176 id 7041 A line running through positions where the magnetic and the true meridians are parallel, is called

a An agonic line

b An aclinic line

c The magnetic equator

d The zero-variation meridian

177 id 7068 Consider the following statements on magnetic variation:

a Variation will never exceed 90°

b Variation will always increase when the total strength of the terrestrial magnetic field increases

c The variation is east when True North seems to be located west of Magnetic North

d The largest values of variation are found along the anti meridians of the Magnetic poles

61.02.02. Aircraft magnetism

61.02.02.01. hard iron and vertical soft iron

178 id 7069 Hard iron magnetism in aircraft

a Is permanent of nature

b Will change with aircraft heading

c Is easily compensated for by de-gaussing (de-magnetisation)

d Will be the same in all aircraft of the same type

179 id 7070 Soft iron magnetism in aircraft

a Will not cause any compass deviation

b Is non-permanent of nature, and cannot be reduced by de-gaussing (de-magnetisation)

c Is easily compensated for in the compass swing procedure

d Will change at unknown times

180 id 7071 Hard iron magnetism in aircraft may be caused by

a Steel components, mainly in engines and undercarriage

b Magnetic qualities of the cargo or baggage

c A strike of lightening

d All 3 answers are correct

181 id 7079 An aircraft has hard iron magnetism only, and this hard iron magnetism is represented by a red pole in relative bearing 070 from the compass. On what heading will the westerly deviation be maximum?

a Heading 340

b Heading 200

c Heading 110

d Heading 020

182 id 7083 In discussing parameters P, Q and R of aircraft hard iron magnetism

a -Q indicates a blue pole in the left wing

b +P indicates a red pole in the aircraft nose

c +R indicates a red pole under the compass

d All 3 statements are correct

61.02.02.02. the resulting magnetic fields

183 id 4748 Permanent magnetism in aircraft arises chiefly from:

a exposure to the earth's magnetic field during normal operation

b **hammering, and the effect of the earth's magnetic field, whilst under construction**

c the combined effect of aircraft electrical equipment and the earth's magnetic field

d the effect of internal wiring and exposure to electrical storms

61.02.02.04. Deviation

184 id 3186 Compass deviation is defined as the angle between:

a True North and Magnetic North

b **Magnetic North and Compass North**

c True North and Compass North

d the horizontal and the total intensity of the earth's magnetic field

185 id 3191 Deviation applied to magnetic heading gives:

a magnetic course

b true heading

c **compass heading**

d magnetic track

186 id 5386 The angle between Magnetic North and Compass North is called:

a magnetic variation

b compass error

c **compass deviation**

d alignment error

187 id 7045 The deviation of a compass is described as +4. This means that

a The deviation may be described as westerly

b Compass heading will always be different by 4 degrees from true heading

c **The compass heading will have a lower number in degrees than the magnetic heading**

d The compass needle seems to be pointing at a pole located west of the magnetic pole

188 id 7073 Coefficient B, as used in aircraft magnetism, presents

a The resultant deviation from magnetism along the aircraft lateral axis

b **A value representing the deviation registered on headings East and West**

c The resultant deviation from magnetism along the aircraft vertical (normal) axis

d Deviation values caused by hard iron magnetism only

189 id 7074 Deviation on MH 180 is -5 and on MH 000 it is +3. Calculate coefficient C:

a Coefficient C = -1

b **Coefficient C = +4**

c Coefficient C = -2

d Coefficient C = +8

190 id 7075 The magnetic force causing compass deviation will be a force in direction

a Parallel to the magnetic meridian

b Perpendicular to the aircraft lateral axis

c **Perpendicular to the compass needle**

d Perpendicular to the aircraft longitudinal axis

191 id 7076 Consider the following statements on coefficient A, as used to describe deviation:

a Coefficient A is the average deviation on all headings

b Coefficient A will normally be calculated after coefficients B and C has been corrected for

c Coefficient A may be calculated at any stage during a compass swing

d **All 3 answers are correct**

192 id 7078 When an aircraft is moved to a place of lower magnetic latitude

a **The deviation values will decrease because the horizontal component of the terrestrial field is becoming stronger**

b Deviation values will change considerably and irregularly

c The deviation values will become more southerly

d The deviation values will increase

193 id 7080 In the calculation of deviation, the following headings are recorded: MH CH 358 356 091 087 182 186 273 271 Coefficient C is

a -2

b +4

c **+3**

d -1

194 id 7081 In the calculation of deviation, the following headings are recorded: MH CH 358 356 091 087 182 186 273 271 Coefficient B is

a **+1**

b -3

c -2

d +2

195 id 7082 In the calculation of deviation, the following headings are recorded: MH CH 358 356 091 087 182 186 273 271 Coefficient A is

a +2

b -2

c -1

d **+1**

196 id 7084 The deviation will change with a change in aircraft heading

a **Because the undesired magnetic pole then is moved relative to the direction of the Earth's magnetic field**

b Because the relative direction of the magnetic meridian is changed

c Because the strength of the undesired hard magnetism is changed

d Because the magnetic inclination will change whenever the heading is changed

197 id 7087 Which of the following will probably NOT result in a deviation change on a DRC

a A Walk-man headset placed close the compass

b **Turning the ADF on in flight**

c Relocating a steel iron construction in the cargo compartment close to the DRC

d Letting a passenger in cockpit the jump-seat put his mobile phone next to the DRC

61.02.02.05. turning and acceleration errors

198 id 1464 When decelerating on a westerly heading in the Northern hemisphere, the compass card of a direct reading magnetic compass will turn :

a **clockwise giving an apparent turn toward the south**

b anti-clockwise giving an apparent turn towards the south

c clockwise giving an apparent turn towards the north

d anti-clockwise giving an apparent turn towards the north

199 id 1478 An aircraft in the northern hemisphere makes an accurate rate one turn to the right/starboard. If the initial heading was 330°, after 30 seconds of the turn the direct reading magnetic compass should read:

a 060°

b **less than 060°**

c more than 060°

d more or less than 060° depending on the pendulous suspension used

200 id 1479 When turning right from 330°(C) to 040°(C) in the northern hemisphere, the reading of a direct reading magnetic compass will:

a over-indicate the turn and liquid swirl will decrease the effect

b **under-indicate the turn and liquid swirl will increase the effect**

c under-indicate the turn and liquid swirl will decrease the effect

d over-indicate the turn and liquid swirl will increase the effect

201 id 1480 When accelerating on an easterly heading in the Northern hemisphere, the compass card of a direct reading magnetic compass will turn :

a anti-clockwise giving an apparent turn toward the south

b clockwise giving an apparent turn toward the south

c anti-clockwise giving an apparent turn toward the north

d **clockwise giving an apparent turn toward the north**

202 id 1491 An aircraft in the northern hemisphere is making an accurate rate one turn to the right. If the initial heading was 135°, after 30 seconds the direct reading magnetic compass should read:

a **more than 225°**

b 225°

c less than 225°

d more or less than 225° depending on the pendulous suspension used

203 id 1492 When accelerating on a westerly heading in the northern hemisphere, the compass card of a direct reading magnetic compass will turn:

a clockwise giving an apparent turn towards the north

b anti-clockwise giving an apparent turn towards the south

c **anti-clockwise giving an apparent turn towards the north**

d clockwise giving an apparent turn towards the south

204 id 2183 When an aircraft on a westerly heading on the northern hemisphere accelerates, the effect of the acceleration error causes the magnetic compass to:

a lag behind the turning rate of the aircraft

b **indicate a turn towards the north**

c indicate a turn towards the south

d to turn faster than the actual turning rate of the aircraft

205 id 2862 Which of the following statements is correct concerning the effect of turning errors on a direct reading compass?

a Turning errors are greatest on north/south headings, and are least at high latitudes

b Turning errors are greatest on east/west headings, and are least at high latitudes

c **Turning errors are greatest on north/south headings, and are greatest at high latitudes**

d Turning errors are greatest on east/west headings, and are greatest at high latitudes

206 id 4422 In northern hemisphere, during an acceleration in an easterly direction, the magnetic compass will indicate:

a **a decrease in heading**

b an increase in heading

c an apparent turn to the South

d a heading of East

207 id 5559 At the magnetic equator, when accelerating after take off on heading West, a direct reading compass :

a underreads the heading

b overreads the heading

c **indicates the correct heading**

d indicates a turn to the south

208 id 5571 Concerning direct reading magnetic compasses, in the northern hemisphere, it can be said that :

a on an Easterly heading, a longitudinal acceleration causes an apparent turn to the South

b **on an Easterly heading, a longitudinal acceleration causes an apparent turn to the North**

c on a Westerly heading, a longitudinal acceleration causes an apparent turn to the South

d on a Westerly heading, a longitudinal deceleration causes an apparent turn to the North

209 id 7085 A direct reading compass is used. Accelerating an aircraft on heading 090 at South Magnetic Latitude will result in

a No change in compass indication

b A stable oscillation of the compass indication around heading 090

c **An indication of a right turn on the compass**

d An indication of a left turn on the compass

210 id 7086 A direct reading compass is used at North Magnetic Latitude. Starting a right hand turn from heading 300 will result in

a At first a compass indication of a left hand turn

b The turn has to be broken off before the compass indicate the desired end heading 080

c The compass indication will lag during at least the first 90° of the turn

d **All 3 answers are correct**

61.02.03. Standby-, landing- and remote reading compasses

61.02.03.01. detailed knowledge

211 id 1465 | In a remote indicating compass system the amount of deviation caused by aircraft magnetism and electrical circuits may be minimised by:

a positioning the master unit in the centre of the aircraft

b the use of repeater cards

c **mounting the detector unit in the wingtip**

d using a vertically mounted gyroscope

212 id 1485 | A direct reading compass should be swung when:

a **there is a large, and permanent, change in magnetic latitude**

b there is a large change in magnetic longitude

c the aircraft is stored for a long period and is frequently moved

d the aircraft has made more than a stated number of landings

213 id 1486 | The direct reading magnetic compass is made aperiodic (dead beat) by:

a using the lowest acceptable viscosity compass liquid

b **keeping the magnetic assembly mass close to the compass point and by using damping wires**

c using long magnets

d pendulous suspension of the magnetic assembly

214 id 1487 | The annunciator of a remote indicating compass system is used when:

a **synchronising the magnetic and gyro compass elements**

b compensating for deviation

c setting local magnetic variation

d setting the 'heading' pointer

215 id 7072 | The directive force acting on a compass needle in an aircraft

a Will always pull the north-seeking end down at southern magnetic latitudes and up at northern magnetic latitudes

b Will be higher at high magnetic latitudes than near the magnetic equator

c **Is the resultant magnetic force in the horizontal plane in the position where the compass is installed**

d Will be cancelled by the compass compensation system

216 id 7077 | Coefficient A is corrected for

a Using the compensation magnets

b **Moving the compass housing around its vertical axis**

c Removing disturbing magnetic material from the close vicinity of the compass

d De-gaussing (de-magnetising) the compass

217 id 7088 In a typical remote reading compass, the gyro is kept aligned with the magnetic meridian by means of

a The annunciator

b Heading selector

c **A torque motor**

d The gyro rigidity controller

218 id 7089 A "Landing Compass"

a **Is used to establish aircraft magnetic heading during a compass swing**

b Is painted on the ground at airfields to indicate the direction of the cardinal magnetic headings to observers on the ground or in the air

c Is the compass used as reference during landing

d Is a compass on which the runway direction for landing may be set as a "bug"

61.02.03.02. serviceability tests

219 id 4423 The purpose of compass check swing is to:

a cancel out the horizontal component of the earth's magnetic field

b cancel out the vertical component of the earth's magnetic field

c **measure the angle between Magnetic North and Compass North**

d cancel out the effects of the magnetic fields found on board the aeroplane

61.02.03.03. advantages and disadvantages

220 id 2861 Which one of the following is an advantage of a remote reading compass as compared with a standby compass?

a **It senses the magnetic meridian instead of seeking it, increasing compass sensitivity**

b It is lighter than a direct reading compass because it employs, apart from the detector unit, existing aircraft equipment

c It eliminates the effect of turning and acceleration errors by pendulously suspending the detector unit

d It is more reliable because it is operated electrically and power is always available from sources within the aircraft

221 id 3273 Which of the following is an occasion for carrying out a compass swing on a Direct Reading Compass?

a **After an aircraft has passed through a severe electrical storm, or has been struck by lightning**

b Before an aircraft goes on any flight that involves a large change of magnetic latitude

c After any of the aircraft radio equipment has been changed due to unserviceability

d Whenever an aircraft carries a large freight load regardless of its content

222 id 4268 The main reason for mounting the detector unit of a remote reading compass in the wingtip of an aeroplane is:

a to ensure that the unit is in the most accessible position on the aircraft for ease of maintenance

b to maximise the units exposure to the earth's magnetic field

c **to minimise the amount of deviation caused by aircraft magnetism and electrical circuits**

d by having detector units on both wingtips, to cancel out the deviation effects caused by the aircraft strucure

223 id 4749 The main reason for usually mounting the detector unit of a remote indicating compass in the wingtip of an aeroplane is to:

a facilitate easy maintenance of the unit and increase its exposure to the Earth's magnetic field

b **reduce the amount of deviation caused by aircraft magnetism and electrical circuits**

c place it in a position where there is no electrical wiring to cause deviation errors

d place it where it will not be subjected to electrical or magnetic interference from the aircraft

224 id 4750 The main advantage of a remote indicating compass over a direct reading compass is that it:

a is able to magnify the earth's magnetic field in order to attain greater accuracy

b has less moving parts

c requires less maintenance

d **senses, rather than seeks, the magnetic meridian**

61.03. CHARTS

61.03.01. General properties of miscellaneous types of proje

225 id 5389 | On which of the following chart projections is it NOT possible to represent the north or south poles?

a Lambert's conformal

b **Direct Mercator**

c Transverse Mercator

d Polar stereographic

226 id 7090 | A map is conformal when

a The variation information is printed on the map as isogonals

b **The meridians and the parallels of latitude intersect at right angles and when the scale from any selected point is the same in all directions**

c When it conforms to the specifications

d The meridians are straight lines and the scale is constant

227 id 7091 | In producing chart projections, the following projection surfaces may be used:

a **Plane, Cylinder, Cone**

b Plane, Sphere, Cone

c Cylinder, Sphere, Plane

d Parabola, Cone, Plane, Cylinder

228 id 7092 | The term "oblique" in relation to map projections means that

a The meridians and the parallels of latitude do not intersect at right angles on the whole map

b The scale is different N/S from E/W

c **The axis of the cylinder or cone is neither parallel to or perpendicular to the Earth's axis of rotation**

d The projection may not be printed on a flat sheet of paper

229 id 7094 | On an aeronautical chart it is common that

a The chart has best conformality only along one parallel of latitude

b **The exact scale vary within the chart**

c The exact meridians are curved lines

d Isoclins are printed on the chart

61.03.01.01. mercator

230 id 5585 | A direct Mercator graticule is based on a projection that is :

a concentric

b conical

c spherical

d **cylindrical**

61.03.01.02. lambert conformal conic

231 id 771 The nominal scale of a Lambert conformal conic chart is the:

a **scale at the standard parallels**

b mean scale between pole and equator

c mean scale between the parallels of the secant cone

d scale at the equator

232 id 775 The standard parallels of a Lambert's conical orthomorphic projection are 07°40'N and 38°20' N. The constant of the cone for this chart is:

a 0.60

b **0.39**

c 0.92

d 0.42

233 id 1466 The constant of cone of a Lambert conformal conic chart is quoted as 0.3955. At what latitude on the chart is earth convergency correctly represented?

a **23°18'**

b 66°42'

c 68°25'

d 21°35'

234 id 1473 A Lambert conformal conic projection, with two standard parallels:

a shows lines of longitude as parallel straight lines

b shows all great circles as straight lines

c the scale is only correct at parallel of origin

d **the scale is only correct along the standard parallels**

235 id 1493 On a Lambert Conformal Conic chart earth convergency is most accurately represented at the:

a north and south limits of the chart

b **parallel of origin**

c standard parallels

d Equator

61.03.01.03. polar stereographic

236 id 772 The chart that is generally used for navigation in polar areas is based on a:

a **Stereographical projection**

b Direct Mercator projection

c Gnomonic projection

d Lambert conformal projection

237 id 7093 The Polar Stereographic projection is

a A cylinder projection

b **A plane projection**

c A variable cone projection

d A conical projection

61.03.01.04. transverse mercator (1.87)

238 id 1494 | On a Transverse Mercator chart, scale is exactly correct along the:

a Equator, parallel of origin and prime vertical

b **meridian of tangency**

c datum meridian and meridian perpendicular to it

d prime meridian and the equator

239 id 4269 | On a transverse Mercator chart, the scale is exactly correct along the:

a prime meridian and the equator

b equator and parallel of origin

c meridian of tangency and the parallel of latitude perpendicular to it

d **meridians of tangency**

240 id 4270 | On a transverse Mercator chart, with the exception of the Equator, parallels of latitude appear as:

a hyperbolic lines

b straight lines

c **ellipses**

d parabolas

241 id 4272 | Transverse Mercator projections are used for:

a radio navigation charts in equatorial areas

b maps of large east/west extent in equatorial areas

c **maps of large north/south extent**

d plotting charts in equatorial areas

61.03.01.05. oblique mercator (1.87)

242 id 4271 | An Oblique Mercator projection is used specifically to produce:

a plotting charts in equatorial regions

b radio navigational charts in equatorial regions

c topographical maps of large east/ west extent

d **charts of the great circle route between two points**

243 id 7097 | If you want a chart where a particular great circle is an exact straight line, you should look for a chart using the

a Lambert conformal projection

b **Oblique Mercator projection**

c Polar stereographic projection

d Transverse Mercator projection

61.03.02. The representation of meridians, parallels

61.03.02.01. direct mercator

244 id 773 A Mercator chart has a scale at the equator = 1 : 3 704 000. What is the scale at latitude 60° S?

a **1 : 1 852 000**

b 1 : 7 408 000

c 1 : 3 208 000

d 1 : 185 200

---

245 id 779 On a Direct Mercator chart, a rhumb line appears as a:

a **straight line**

b small circle concave to the nearer pole

c spiral curve

d curve convex to the nearer pole

---

246 id 1490 On a Direct Mercator chart a great circle will be represented by a:

a complex curve

b **curve concave to the equator**

c curve convex to the equator

d straight line

---

247 id 2202 Parallels of latitude on a Direct Mercator chart are :

a arcs of concentric circles equally spaced

b parallel straight lines equally spaced

c **parallel straight lines unequally spaced**

d straight lines converging above the pole

---

248 id 4183 On a Direct Mercator chart at latitude 15°S, a certain length represents a distance of 120 NM on the earth. The same length on the chart will represent on the earth, at latitude 10°N, a distance of :

a **122.3 NM**

b 117.7 NM

c 124.2 NM

d 118.2 NM

---

249 id 4184 On a Direct Mercator chart at latitude of 45°N, a certain length represents a distance of 90 NM on the earth. The same length on the chart will represent on the earth, at latitude 30°N, a distance of :

a 45 NM

b 73.5 NM

c 78 NM

d **110 NM**

250 id 5388 On a Direct Mercator chart, meridians are:

a inclined, equally spaced, straight lines that meet at the nearer pole

b **parallel, equally spaced, vertical straight lines**

c parallel, unequally spaced, vertical straight lines

d inclined, unequally spaced, curved lines that meet at the nearer pole

251 id 5390 Which one of the following, concerning great circles on a Direct Mercator chart, is correct?

a They are all curves convex to the equator

b They are all curves concave to the equator

c They approximate to straight lines between the standard parallels

d **With the exception of meridians and the equator, they are curves concave to the equator**

252 id 5759 On a Direct Mercator, rhumb lines are:

a **straight lines**

b curves concave to the equator

c ellipses

d curves convex to the equator

61.03.02.02. lambert conformal conic

253 id 776 On a Lambert conformal conic chart the convergence of the meridians:

a **is the same as earth convergency at the parallel of origin**

b is zero throughout the chart

c varies as the secant of the latitude

d equals earth convergency at the standard parallels

254 id 782 On a Lambert Conformal Conic chart great circles that are not meridians are:

a **curves concave to the parallel of origin**

b straight lines

c curves concave to the pole of projection

d straight lines within the standard parallels

255 id 2206 A straight line on a Lambert Conformal Projection chart for normal flight planning purposes:

a can only be a parallel of latitude

b is a Loxodromic line

c is a Rhumb line

d **is approximately a Great Circle**

256 id 2908 The parallels on a Lambert Conformal Conic chart are represented by:

a parabolic lines

b straight lines

c **arcs of concentric circles**

d hyperbolic lines

257 id 3247 The angular difference, on a Lambert conformal conic chart, between the arrival and departure track is equal to:

a map convergence

b earth convergence

c conversion angle

d difference in longitude

258 id 5568 On a Lambert chart (standard parallels 37°N and 65°N), with respect to the straight line drawn on the map the between A (N49° W030°) and B (N48° W040°), the:

a great circle is to the north, the rhumb line is to the south

b great circle and rhumb line are to the north

c great circle and rhumb line are to the south

d rhumb line is to the north, the great circle is to the south

259 id 5755 On a Lambert's conformal conic chart, the distance between parallels of latitude spaced the same number of degrees apart :

a is constant throughout the chart

b is constant between, and expands outside, the standard parallels

c expands between, and reduces outside, the standard parallels

d reduces between, and expands outside, the standard parallels

260 id 7095 Which map projection is described as follows: - Meridians are straight lines - The scale vary with latitude - Most rhumb lines are curved lines

a An Equatorial Mercator projection

b A Lambert conformal projection

c A Lambert conformal or a Polar stereographic projection

d A polar Stereographic projection

261 id 7098 On a Lambert conformal chart the scale is correct

a At the standard parallels

b In the middle of the chart

c At the latitude where the convergence on the chart corresponds to the Earth convergence

d At the selected parallel (parallel of origin)

262 id 7099 On a Lambert conformal chart the distance between two parallels of latitude having a difference of latitude = 2° , is measured to be 112 millimetres. The distance between two meridians, spaced 2° longitude, is, according to the chart 70 NM. What is the scale of the chart, in the middle of the square described?

a 1 : 756 000

b 1 : 1 056 000

c 1 : 1 233 000

d 1 : 1 984 000

263 id 7100 On a Lambert conformal chart the distance between two parallels of latitude having a difference of latitude = 2° , is measured to be 112 millimetres. The distance between two meridians, spaced 2° longitude, is, according to the chart 70 NM. What is the latitude in the centre of the described square?

a 49°

b 38°

c 54°

d 42°

264 id 7101 On a Lambert conformal chart the distance between two parallels of latitude having a difference of latitude = 2° , is measured to be 112 millimetres. The distance between two meridians, spaced 2° longitude, is, according to the chart 70 NM. The parallel of origin (selected parallel) runs through the middle of the described square. What is the convergence for a dlong of 15° on this

a 9,23°

b 14,56°

c **12,18°**

d 7,50°

61.03.02.03. polar stereographic

265 id 5756 Which one of the following statements is correct concerning the appearance of great circles, with the exception of meridians, on a Polar Stereographic chart whose tangency is at the pole ?

a **The higher the latitude the closer they approximate to a straight line**

b Any straight line is a great circle

c They are complex curves that can be convex and/or concave to the Pole

d They are curves convex to the Pole

266 id 5757 Which one of the following describes the appearance of rhumb lines, except meridians, on a Polar Stereographic chart?

a Straight lines

b Ellipses around the Pole

c Curves convex to the Pole

d **Curves concave to the Pole**

267 id 5758 What is the value of the convergence factor on a Polar Stereographic chart?

a 0.5

b 0.866

c **1.0**

d 0.0

268 id 7096 On a polar stereographic chart the scale at the pole is 1 : 5 mill. Calculate the scale of the chart at 6500N:

a 1 : 4,213 mill

b 1 : 5,250 mill

c 1 : 5 mill

d **1 : 4,766 mill**

61.03.03. The use of current aeronautical charts

61.03.03.02. methods of indicating scale and relief

269 id 777 A straight line drawn on a chart measures 4.63 cm and represents 150 NM. The chart scale is:

a 1 : 3 000 000

b **1 : 6 000 000**

c 1 : 5 000 000

d 1 : 1 000 000

270 id 786 On a direct Mercator projection, the distance measured between two meridians spaced 5° apart at latitude 60°N is 8 cm. The scale of this chart at latitude 60°N is approximately:

a 1 : 4 750 000

b **1 : 3 500 000**

c 1 : 7 000 000

d 1 : 6 000 000

---

271 id 788 On a Mercator chart, the scale:

a **varies as 1/cosine of latitude (1/cosine= secant)**

b varies as the sine of the latitude

c is constant throughout the chart

d varies as 1/2 cosine of the co-latitude

---

272 id 1467 On a Lambert Conformal chart the distance between meridians 5° apart along latitude 37° North is 9 cm. The scale of the chart at that parallel approximates:

a 1 : 3 750 000

b **1 : 5 000 000**

c 1 : 2 000 000

d 1 : 6 000 000

---

273 id 1469 In a navigation chart a distance of 49 NM is equal to 7 cm. The scale of the chart is approximately:

a 1 : 130 000

b 1 : 700 000

c **1 : 1 300 000**

d 1 : 7 000 000

---

274 id 1470 At 60° N the scale of a direct Mercator chart is 1 : 3 000 000. What is the scale at the equator?

a 1 : 1 500 000

b 1 : 3 000 000

c 1 : 3 500 000

d **1 : 6 000 000**

---

275 id 1472 The total length of the 53°N parallel of latitude on a direct Mercator chart is 133 cm. What is the approximate scale of the chart at latitude 30°S?

a **1 : 26 000 000**

b 1 : 30 000 000

c 1 : 18 000 000

d 1 : 21 000 000

---

276 id 1483 The chart distance between meridians 10° apart at latitude 65° North is 3.75 inches. The chart scale at this latitude approximates:

a 1 : 6 000 000

b **1 : 5 000 000**

c 1 : 2 500 000

d 1 : 3 000 000

277 id 1489 At 47° North the chart distance between meridians 10° apart is 5 inches. The scale of the chart at 47° North approximates:

a 1 : 2 500 000

b 1 : 8 000 000

c 1 : 3 000 000

d **1 : 6 000 000**

278 id 2203 A chart has the scale 1 : 1 000 000. From A to B on the chart measures 1.5 inches (one inch equals 2.54 centimetres), the distance from A to B in NM is :

a 44.5

b 38.1

c **20.6**

d 54.2

279 id 4431 At latitude 60°N the scale of a Mercator projection is 1 : 5 000 000. The length on the chart between 'C' N60° E008° and 'D' N60° W008° is:

a 19.2 cm

b 16.2 cm

c 35.6 cm

d **17.8 cm**

280 id 5560 On a chart, the distance along a meridian between latitudes 45°N and 46°N is 6 cm. The scale of the chart is approximately:

a 1 : 1 000 000

b **1 : 1 850 000**

c 1 : 185 000

d 1 : 18 500 000

281 id 5561 Given: Chart scale is 1 : 1 850 000. The chart distance between two points is 4 centimetres. Earth distance is approximately :

a 4 NM

b 74 NM

c 100 NM

d **40 NM**

282 id 5565 On a Mercator chart, at latitude 60°N, the distance measured between W002° and E008° is 20 cm. The scale of this chart at latitude 60°N is approximately:

a 1 : 5 560 000

b 1 : 278 000

c **1 : 2 780 000**

d 1 : 556 000

283 id 5567 Assume a Mercator chart. The distance between positions A and B, located on the same parallel and 10° longitude apart, is 6 cm. The scale at the parallel is 1 : 9 260 000. What is the latitude of A and B?

a 45° N or S

b 30° N or S

c 0°

d **60° N or S**

284 id 5573 A straight line on a chart 4.89 cm long represents 185 NM. The scale of this chart is approximately :

a 1 : 5 000 000

b 1 : 3 500 000

c 1 : 6 000 000

d **1 : 7 000 000**

285 id 5584 The scale on a Lambert conformal conic chart :

a is constant along a meridian of longitude

b **is constant along a parallel of latitude**

c is constant across the whole map

d varies slightly as a function of latitude and longitude

61.03.03.03. conventional signs

286 id 2204 Contour lines on aeronautical maps and charts connect points :

a of equal latitude

b with the same variation

c having the same longitude

d **having the same elevation above sea level**

287 id 5913 Which of the aeronautical chart symbols indicates a VOR/DME?

a 5

b **3**

c 1

d 2

288 id 5914 Which of the aeronautical chart symbols indicates a DME?

a 3

b 8

c 1

d **2**

289 id 5915 Which of the aeronautical chart symbols indicates a VOR?

a 2

b **1**

c 3

d 8

290 id 5916 Which of the aeronautical chart symbols indicates an NDB?

a 7

b **6**

c 12

d 11

291 id 5918 Which of the aeronautical chart symbols indicates a TACAN?

a 4

b 5

c 3

d 8

292 id 5919 Which of the aeronautical chart symbols indicates a VORTAC?

a 4

b 5

c 3

d 8

293 id 5920 Which aeronautical chart symbol indicates a Flight Information Region (FIR) boundary?

a 13

b 16

c 15

d 17

294 id 5922 Which aeronautical chart symbol indicates an uncontrolled route?

a 17

b 16

c 13

d 15

295 id 5923 Which aeronautical chart symbol indicates the boundary of advisory airspace?

a 15

b 16

c 13

d 17

296 id 5924 Which aeronautical chart symbol indicates a non-compulsory reporting point?

a 11

b 10

c 8

d 4

297 id 5925 Which aeronautical chart symbol indicates a compulsory reporting point?

a 8

b 9

c 11

d 10

298 id 5926 Which aeronautical chart symbol indicates a Way-point?

a 9

b **8**

c 11

d 10

299 id 5927 Which aeronautical chart symbol indicates an unlighted obstacle?

a 24

b 22

c **23**

d 9

300 id 5929 Which aeronautical chart symbol indicates a group of unlighted obstacles?

a 18

b 21

c **24**

d 20

301 id 5930 Which aeronautical chart symbol indicates a group of lighted obstacles?

a **18**

b 21

c 20

d 24

302 id 5931 Which aeronautical chart symbol indicates an exceptionally high unlighted obstacle?

a 12

b 23

c **22**

d 20

303 id 5933 What is the meaning of aeronautical chart symbol No. 12?

a Visual reference point

b **Aeronautical ground light**

c Hazard to aerial navigation

d Lighthouse

304 id 5934 What is the meaning of aeronautical chart symbol No. 19?

a Off-shore helicopter landing platform

b **Lightship**

c Shipwreck showing above the surface at low tide

d Off-shore lighthouse

305 id 5935 Which aeronautical chart symbol indicates an aeronautical ground light?

a 12

b 9

c 18

d 19

306 id 5936 Which aeronautical chart symbol indicates a lightship?

a 20

b 9

c 19

d 12

61.03.03.04. measuring tracks and distances

307 id 774 The distance measured between two points on a navigation map is 42 mm (millimetres). The scale of the chart is 1:1 600 000. The actual distance between these two point is approximately:

a 3.69 NM

b 370.00 NM

c 67.20 NM

d 36.30 NM

308 id 778 On a Polar Stereographic chart, the initial great circle course from A 70°N 060°W to B 70°N 060°E is approximately:

a 030° (T)

b 330° (T)

c 150° (T)

d 210° (T)

309 id 783 On a direct Mercator projection, at latitude 45° North, a certain length represents 70 NM. At latitude 30° North, the same length represents approximately:

a 57 NM

b 86 NM

c 70 NM

d 81 NM

310 id 785 On a polar stereographic projection chart showing the South Pole, a straight line joins position A (70°S 065°E) to position B (70°S 025°W). The true course on departure from position A is approximately:

a 250°

b 225°

c 135°

d 315°

311 id 787 Two positions plotted on a polar stereographic chart, A (80°N 000°) and B (70°N 102°W) are joined by a straight line whose highest latitude is reached at 035°W. At point B, the true course is:

a 247°

b 023°

c **203°**

d 305°

312 id 789 Given: Magnetic heading 311° Drift angle 10° left Relative bearing of NDB 270° What is the magnetic bearing of the NDB measured from the aircraft?

a 211°

b 208°

c **221°**

d 180°

313 id 1471 What is the chart distance between longitudes 179°E and 175°W on a direct Mercator chart with a scale of 1 : 5 000 000 at the equator?

a **133 mm**

b 106 mm

c 167 mm

d 72 mm

314 id 2848 A Lambert conformal conic chart has a constant of the cone of 0.75. The initial course of a straight line track drawn on this chart from A (40°N 050°W) to B is 043°(T) at A; course at B is 055°(T). What is the longitude of B?

a 41°W

b 36°W

c 38°W

d **34°W**

315 id 2855 A Lambert conformal conic chart has a constant of the cone of 0.80. A straight line course drawn on this chart from A (53°N 004°W) to B is 080° at A; course at B is 092°(T). What is the longitude of B?

a **011°E**

b 009°36'E

c 008°E

d 019°E

316 id 3271 Approximately how many nautical miles correspond to 12 cm on a map with a scale of 1 : 2 000 000?

a **130**

b 150

c 329

d 43

317 id 5572 At 0020 UTC an aircraft is crossing the 310° radial at 40 NM of a VOR/DME station. At 0035 UTC the radial is 040° and DME distance is 40 NM. Magnetic variation is zero. The true track and ground speed are :

a 080° - 226 kt

b 090° - 232 kt

c **085° - 226 kt**

d 088° - 232 kt

318 id 5582 Given: An aircraft is flying a track of 255°(M), 2254 UTC, it crosses radial 360° from a VOR station, 2300 UTC, it crosses radial 330° from the same station. At 2300 UTC, the distance between the aircraft and the station is :

a the same as it was at 2254 UTC

b greater than it was at 2254 UTC

c randomly different than it was at 2254 UTC

d less than it was at 2254 UTC

319 id 5760 For this question use chart AT(H/L) 1: What are the average magnetic course and distance between INGO VOR (N6350 W01640) and Sumburg VOR (N5955 W 00115)?

a 131° - 494 NM

b 118° - 440 NM

c 117° - 494 NM

d 130° - 440 NM

320 id 5761 For this question use chart AT(H/L) 1: What are the average magnetic course and distance between position N6000 W02000 and Sumburg VOR (N5955 W 00115)?

a 105° - 562 NM

b 091° - 480 NM

c 091° - 562 NM

d 105° - 480 NM

321 id 5763 For this question use chart AT(H/L) 1: An aircraft on radial 315° at a range of 150 NM from MYGGENES NDB (N6206 W00732) is at position:

a N6320 W01205

b N6020 W00405

c N6345 W01125

d N6040 W00320

322 id 5784 A course of 120°(T) is drawn between 'X' (61°30'N) and 'Y' (58°30'N) on a Lambert Conformal conic chart with a scale of 1 : 1 000 000 at 60°N. The chart distance between 'X' and 'Y' is:

a 33.4 cm

b 66.7 cm

c 38.5 cm

d 36.0 cm

323 id 5785 Route 'A' (44°N 026°E) to 'B' (46°N 024°E) forms an angle of 35° with longitude 026°E. Average magnetic variation between 'A' and 'B' is 3°E. What is the average magnetic course from 'A' to 'B'?

a 322°

b 328°

c 032°

d 038°

324 id 5786 Given: Direct Mercator chart with a scale of 1 : 200 000 at equator; Chart length from 'A' to 'B', in the vicinity of the equator, 11 cm. What is the approximate distance from 'A' to 'B'?

a 21 NM

b **12 NM**

c 22 NM

d 14 NM

325 id 5848 For this question use chart E(LO)1: What is the radial and DME distance from CRK VOR/DME (N5150.4 W00829.7) to position N5220 W00810?

a 048° - 40 NM

b **030° - 33 NM**

c 014° - 33 NM

d 220° - 40 NM

326 id 5849 For this question use chart E(LO)1: What is the radial and DME distance from CRK VOR/DME (N5150.4 W00829.7) to position N5210 W00920?

a 295° - 38 NM

b 350° - 22 NM

c **311° - 38 NM**

d 170° - 22 NM

327 id 5852 For this question use chart E(LO)1: What is the radial and DME distance from SHA VOR/DME (N5243.3 W00853.1) to position N5300 W00940?

a 057° - 27 NM

b **309° - 33 NM**

c 293° - 33 NM

d 324° - 17 NM

328 id 5853 For this question use chart E(LO)1: What is the radial and DME distance from SHA VOR/DME (N5243.3 W00853.1) to position N5310 W00830?

a 019° - 31 NM

b 070° - 58 NM

c 207° - 31 NM

d **035° - 30 NM**

329 id 5856 For this question use chart E(LO)1: What is the radial and DME distance from CON VOR/DME (N5354.8 W00849.1) to position N5430 W00900?

a 049° - 45 NM

b 214° - 26 NM

c **358° - 36 NM**

d 169° - 35 NM

330 id 5857 For this question use chart E(LO)1: What is the radial and DME distance from CON VOR/DME (N5354.8 W00849.1) to position N5400 W00800?

a 320° - 8 NM

b **088° - 29 NM**

c 094° - 64 NM

d 260° - 30 NM

331 id 5860 For this question use chart E(LO)1: What is the radial and DME distance from BEL VOR/DME (N5439.7 W00613.8) to position N5410 W00710?

a 223° - 36 NM

b **236° - 44 NM**

c 320° - 44 NM

d 333° - 36 NM

332 id 5861 For this question use chart E(LO)1: What is the radial and DME distance from BEL VOR/DME (N5439.7 W00613.8) to position N5440 W00730?

a 090° - 46 NM

b **278° - 44 NM**

c 278° - 10 NM

d 098° - 45 NM

333 id 5863 For this question use chart E(LO)1: What is the average track (°M) and distance between WTD NDB (N5211.3 W00705.0) and KER NDB (N5210.9 W00931.5)?

a 270° - 89 NM

b 090° - 91 NM

c **278° - 90 NM**

d 098° - 90 NM

334 id 5864 For this question use chart E(LO)1: What is the average track (°M) and distance between CRK VOR (N5150.4 W00829.7) and CRN NDB (N5318.1 W00856.5)?

a 177° - 92 NM

b 169° - 91 NM

c 349° - 90 NM

d **357° - 89 NM**

335 id 5865 For this question use chart E(LO)1: What is the average track (°M) and distance between CRN NDB (N5318.1 W00856.5) and WTD NDB (N5211.3 W00705.0)?

a 135° - 96 NM

b 315° - 94 NM

c **142° - 95 NM**

d 322° - 95 NM

336 id 5868 For this question use chart E(LO)1: What is the average track (°M) and distance between BAL VOR (N5318.0 W00626.9) and SLG NDB (N5416.7 W00836.0)?

a 128° - 99 NM

b 262° - 86 NM

c **316° - 96 NM**

d 308° - 98 NM

337 id 5869 For this question use chart E(LO)1: What is the average track (°M) and distance between CRN NDB (N5318.1 W00856.5) and BEL VOR (N5439.7 W00613.8)?

a 229° - 125 NM

b 089° - 95 NM

c **057° - 126 NM**

d 237° - 130 NM

338 id 5870 For this question use chart E(LO)1: What is the average track (°T) and distance between CON VOR (N5354.8 W00849.1) and BEL VOR (N5439.7 W00613.8)?

a 293° - 98 NM

b 071° - 100 NM

c 113° - 97 NM

d **063° - 101 NM**

339 id 5871 For this question use chart E(LO)1: What is the average track (°T) and distance between SLG NDB (N5416.7 W00836.0) and CFN NDB (N5502.6 W00820.4)?

a 191° - 45 NM

b 020° - 46 NM

c 348° - 46 NM

d **011° - 47 NM**

340 id 5872 For this question use chart E(LO)1: What is the average track (°T) and distance between WTD NDB (N5211.3 W00705.0) and FOY NDB (N5234.0 W00911.7)?

a 075° - 81 NM

b 294° - 80 NM

c **286° - 81 NM**

d 277° - 83 NM

341 id 5873 For this question use chart E(LO)1: What is the average track (°T) and distance between WTD NDB (N5211.3 W00705.0) and SLG NDB (N5416.7 W00836.0)?

a 344° - 139 NM

b **336° - 137 NM**

c 156° - 136 NM

d 164° - 138 NM

342 id 5874 For this question use chart E(LO)1: What is the average track (°T) and distance between SHA VOR (N5243.3 W00853.1) and CON VOR (N5354.8 W00849.1)?

a **002° - 72 NM**

b 010° - 71 NM

c 358° - 72 NM

d 006° - 71 NM

343 id 5878 For this question use chart E(LO)1: Given: SHA VOR (N5243.3 W00853.1) radial 223°, CRK VOR (N5150.4 W00829.7) radial 322°. What is the aircraft position?

a **N5220 W00920**

b N5230 W00910

c N5210 W00910

d N5210 W00930

344 id 5879 For this question use chart E(LO)1: Given: SHA VOR (N5243.3 W00853.1) radial 205°, CRK VOR (N5150.4 W00829.7) radial 317°. What is the aircraft position?

a **N5210 W00910**

b N5118 W00913

c N5205 W00915

d N5215 W00917

345 id 5880 For this question use chart E(LO)1: Given: SHA VOR (N5243.3 W00853.1) radial 120°, CRK VOR (N5150.4 W00829.7) radial 033°. What is the aircraft position?

a N5230 W00800

b N5225 W00805

c N5220 W00750

d N5240 W00750

346 id 5881 For this question use chart E(LO)1 Given: SHA VOR (N5243.3 W00853.1) radial 129°, CRK VOR (N5150.4 W00829.7) radial 047°. What is the aircraft position?

a N5205 W00755

b N5215 W00755

c N5210 W00750

d N5220 W00750

347 id 5882 For this question use chart E(LO)1 Given: SHA VOR (N5243.3 W00853.1) radial 143°, CRK VOR (N5150.4 W00829.7) radial 050°. What is the aircraft position?

a N5205 W00805

b N5155 W00810

c N5210 W00800

d N5200 W00800

348 id 5883 For this question use chart E(LO)1 Given: SHA VOR/DME (N5243.3 W00853.1) radial 120°/35 NM. What is the aircraft position?

a N5230 W00800

b N5300 W00945

c N5225 W00805

d N5250 W00950

349 id 5888 For this question use chart E(LO)1 Given: SHA VOR N5243.3 W00853.1 CRK VOR N5150.4 W00829.7 Aircraft position N5220 W00910 Which of the following lists two radials that are applicable to the aircraft position?

a SHA 025° CRK 141°

b SHA 212° CRK 328°

c SHA 205° CRK 321°

d SHA 033° CRK 149°

350 id 5889 For this question use chart E(LO)1 Given: SHA VOR N5243.3 W00853.1 CRK VOR N5150.4 W00829.7 Aircraft position N5230 W00820 Which of the following lists two radials that are applicable to the aircraft position?

a SHA 131° CRK 017°

b SHA 304° CRK 189°

c SHA 312° CRK 197°

d SHA 124° CRK 009°

351 id 5890 For this question use chart E(LO)1 Given: SHA VOR N5243.3 W00853.1 CRK VOR N5150.4 W00829.7 Aircraft position N5230 W00930 Which of the following lists two radials that are applicable to the aircraft position?

a SHA 068° CRK 145°

b SHA 248° CRK 325°

c SHA 060° CRK 138°

d SHA 240° CRK 137°

352 id 5893 For this question use chart E(LO)1 Given: SHA VOR (N5243.3 W00853.1) DME 50 NM, CRK VOR (N5150.4 W00829.7) DME 41 NM, Aircraft heading 270°(M), Both DME distances increasing. What is the aircraft position?

a N5215 W00745

b N5215 W00940

c **N5200 W00935**

d N5235 W00750

353 id 5894 For this question use chart E(LO)1 Given: SHA VOR (N5243.3 W00853.1) DME 41 NM, CRK VOR (N5150.4 W00829.7) DME 30 NM, Aircraft heading 270°(M), Both DME distances decreasing. What is the aircraft position?

a N5205 W00915

b **N5215 W00805**

c N5215 W00915

d N5225 W00810

354 id 5895 For this question use chart E(LO)1 Given: CRN VOR (N5318.1 W00856.5) DME 18 NM, SHA VOR (N5243.3 W00853.1) DME 30 NM, Aircraft heading 270°(M), Both DME distances decreasing. What is the aircraft position?

a N5252 W00923

b **N5310 W00830**

c N5307 W00923

d N5355 W00825

355 id 5898 For this question use chart E(LO)1 Given: CRK VOR/DME (N5150.4 W00829.7) Kerry aerodrome (N5210.9 W00931.4) What is the CRK radial and DME distance when overhead Kerry aerodrome?

a **307° - 43 NM**

b 119° - 44 NM

c 127° - 45 NM

d 299° - 42 NM

356 id 5899 For this question use chart E(LO)1 Given: SHA VOR/DME (N5243.3 W00853.1) Birr aerodrome (N5304 W00754) What is the SHA radial and DME distance when overhead Birr aerodrome?

a **068° - 41 NM**

b 248° - 42 NM

c 060° - 42 Nm

d 240° - 41 NM

357 id 5900 For this question use chart E(LO)1 Given: SHA VOR/DME (N5243.3 W00853.1) Connemara aerodrome (N5314 W00928) What is the SHA radial and DME distance when overhead Connemara aerodrome?

a **333° - 37 NM**

b 154° - 38 NM

c 326° - 37 NM

d 146° - 38 NM

358 id 5903 | For this question use chart E(LO)1 What feature is shown on the chart at position N5211 W00931?

a KERRY/Farranfore aerodrome

b Waterford NDB

c Connemara aerodrome

d Punchestown aerodrome

359 id 5904 | For this question use chart E(LO)1 What feature is shown on the chart at position N5212 W00612?

a TUSKAR ROCK LT.H. NDB

b WTD NDB

c KERRY/Farranfore aerodrome

d Clonbullogue aerodrome

360 id 5905 | For this question use chart E(LO)1 What feature is shown on the chart at position N5311 W00637?

a Clonbullogue aerodrome

b Connemara aerodrome

c KERRY/Farranfore aerodrome

d Punchestown aerodrome

361 id 5909 | For this question use chart E(LO)1 Which of the following lists all the aeronautical chart symbols shown at position N5318.0 W00626.9?

a VOR: DME: danger area

b civil airport: VOR: DME

c military airport: VOR: NDB

d military airport: VOR: DME

362 id 5911 | For this question use chart E(LO)1 Which of the following lists all the aeronautical chart symbols shown at position N5318.1 W00856.5?

a civil airport: VOR: DME: non-compulsory reporting point

b VOR: DME: NDB: non-compulsory reporting point

c civil airport: NDB: DME: non-compulsory reporting point

d VOR: DME: NDB: compulsory reporting point

363 id 5912 | For this question use chart E(LO)1 Which of the following lists all the aeronautical chart symbols shown at position N5211 W00705?

a NDB: ILS

b VOR: NDB

c civil airport: ILS

d civil airport: NDB

61.03.03.05. plotting bearings

364 id 8940 | A DR position is to be found

a On the heading line corrected by the actual drift

b On the actual track corrected by the track error

c On the desired track

d On the desired track corrected by the track error

365 id 8941 The DR position represents

a The estimated position taking account of the estimated TAS and wind condition

b The estimated position in no wind condition

c The actual position corrected by the track error

d The air position corrected by the track error

366 id 8942 The air position

a Is along the intended track

b Shows where the aircraft would be as a result if its TAS and true heading if there were no wind

c Can never coincide with the DR position

d Shows where the aircraft will be taking account of the TAS and actual wind condition

367 id 8943 Given an intended track 270°, W/V 040/40, TAS 180 MPH

a The air position is south of the intended track

b The air position is on the intended track

c The DR position is on the intended track

d The DR position is north of the intended track

368 id 8944 Given an intended track 270°, W/V 040/40, TAS 180 MPH

a The DR position is south of the intended track

b The air position is south of the intended track

c The DR position is north of the intended track

d The air position is north of the intended track

369 id 8945 You should follow a track due north taking account of a north westerly wind. The line connecting your last known position with the DR position represents

a The estimated track

b The heading line and the TAS

c The TAS only

d The no wind line and the GS

370 id 8946 Your should follow a track due north taking account of a north westerly wind. The line connecting your last known position with the air position

a Shows a north easterly direction

b Shows a north westerly direction

c Represents the track line

d Represents the wind velocity

371 id 8947 Your should follow a track due north taking account of a north westerly wind. You calculated a WCA –8°.

a The drift will be 8° right

b The drift will be 8° left

c A track error of –2° (left) shows a WCA of only –6°

d A track error of 2° (right) shows a drift of 10° right

372 id 8948 The evaluation of your plotting work shows a WCA +3° and a drift 3° left

a Your actual position is on the intended track

b The track error is 6°

c The expected W/V and the actual W/V coincide

d The GS was exactly calculated

373 id 8949 The track plot

a Is used to determine the actual W/V

b Shows the path of the aircraft relative to the ground

c Is used to determine the drift angle

d Leeds from the air position to the new fix.

374 id 8950 To establish a track plot you need

a The last position, air position and DR position

b The last position and the DR position

c At least two pinpoints or fixes

d The air position and a pinpoint or fix

375 id 8951 An aircraft follows a coastline during a particular time. This coast line is

a A speedline

b A line of position

c A VFR line

d An unknown line of position

376 id 8952 Given true heading 256°, VAR 13°E, relative bearing to a station is 333°. The true bearing to the station is

a 216°

b 229°

c 252°

d 320°

377 id 8953 Given magnetic heading 075°, variation 4°W, drift angle 12°R, relative bearing to the station 270°. What is the true bearing of the aircraft from the station?

a 149°

b 173°

c 169°

d 161°

378 id 8954 Given true heading 066°, variation 4°W, drift angle 12°R, relative bearing to the station 070°. What is the true bearing of the aircraft from the station?

a 136°

b 148°

c 312°

d 316°

379 Transferring position lines
id 8955

a **The lines of position are transferred along to the track line**

b The lines of position are transferred along the heading line

c The lines of position are transferred along the track line corrected by the track error

d The lines of position are transferred along the heading line corrected by the track error

380 Transferring position lines
id 8956

a **The lines of position are transferred at ground speed**

b The lines of position are transferred at TAS effective

c The lines of position are transferred at TAS

d The lines of position are transferred TAS effective plus wind speed

381 Transferring position lines
id 8957

a It is necessary to plot the lines of position in its original position before transferring them

b **It is unnecessary to plot the lines of position in its original position before transferring them**

c In practice it is usual the position lines to intersect in one point

d The fix obtained by transferring position lines is called off track correction

382 Transferring position lines can be done with
id 8958

a Radials and QDM/QDR only

b QDM/QDR and QTE

c Radials and DME only

d **Radials, DME, QDM/QDR**

383 Transferring position lines (LOP):An aircraft should follow a true course 120°, given TAS 100 KT and W/V 360/50. It obtains position lines at 1400, 1403, 1406 hours.
id 8959

a 1 LOP is transferred by 8.0 NM, 1 LOP by 4.0 NM, the third one is not transferred

b 1 LOP is transferred by 10.0 NM, 1 LOP by 5.0 NM, the third one is not transferred

c 1 LOP is transferred by 12.5 NM, 1 LOP by 6.25 NM, the third one is not transferred

d **1 LOP is transferred by 11.6 NM, 1 LOP by 5.8 NM, the third one is not transferred**

384 Transferring range position lines, you should
id 8960

a Always plot the original position line as well as the transferred range position line

b **Transfer the origin and plot the range position lines from the transferred origin**

c Never transfer the origin (DME station)

d Include at least 1 straight position line

61.04. DEAD RECKONING NAVIGATION (DR)

61.04.01. Basics of dead reckoning

61.04.01.01. track

385 id 7103 Construct the triangle of velocities on a piece of paper, showing the following data: TH 305, TAS 135 Kt, W/V 230/40, Period of time from 1130 to 1145. What is the track in this period of time?

a **322°**

b 290°

c 310°

d 316°

61.04.01.02. heading (compass, magnetic, true, grid)

386 id 791 Given the following: True track: 192° Magnetic variation: 7°E Drift angle: 5° left What is the magnetic heading required to maintain the given track?

a **190°**

b 194°

c 204°

d 180°

387 id 792 Given the following: Magnetic heading: 060° Magnetic variation: 8°W Drift angle: 4° right What is the true track?

a 048°

b 064°

c **056°**

d 072°

388 id 3187 Given: True course 300° drift 8°R variation 10°W deviation -4° Calculate the compass heading?

a **306°**

b 322°

c 294°

d 278°

389 id 3188 Given: true track 352° variation 11° W deviation is -5° drift 10°R. Calculate the compass heading?

a **358°**

b 346°

c 018°

d 025°

390 id 3189 Given: true track 070° variation 30°W deviation +1° drift 10°R Calculate the compass heading?

a 100°

b 091°

c **089°**

d 101°

61.04.01.04. airspeed (IAS, RAS, TAS, Machnumber)

391 id 7104 Using mental navigation, the local speed of sound may be found using the following equation:

a LSS = TAS + Mach number x TATc

b LSS = 333 x TAS/Mach number

c **LSS = 644 + 1,2 TATc**

d LSS = 735 - 1,05 TATc

61.04.01.05. groundspeed

392 id 7102 Construct the triangle of velocities on a piece of paper, showing the following data: TH 305, TAS 135 Kt, W/V 230/40, Period of time from 1130 to 1145. What is the GS in this period of time?

a **130 Kt**

b 135 Kt

c 145 Kt

d 97 Kt

61.04.01.06. ETA

393 id 2909 The ICAO definition of ETA is the:

a actual time of arrival at a point or fix

b **estimated time of arrival at destination**

c estimated time of arrival at an en-route point or fix

d estimated time en route

394 id 3236 Given: True course A to B = 250° Distance A to B = 315 NM TAS = 450 kt. W/V = 200°/60kt. ETD A = 0650 UTC. What is the ETA at B?

a 0730 UTC

b **0736 UTC**

c 0810 UTC

d 0716 UTC

61.04.02. Use of the navigational computer

61.04.02.01. speed

395 id 2174 An aircraft travels 2.4 statute miles in 47 seconds. What is its groundspeed?

a 183 kt

b **160 kt**

c 209 kt

d 131 kt

61.04.02.02. time

396 id 2173 How long will it take to fly 5 NM at a groundspeed of 269 Kt ?

a **1 MIN 07 SEC**

b 1 MIN 55 SEC

c 2 MIN 30 SEC

d 0 MIN 34 SEC

397 id 2910 An aircraft travels 100 statute miles in 20 MIN, how long does it take to travel 215 NM?

a 50 MIN

b 100 MIN

c 90 MIN

d 80 MIN

398 id 3237 Given: GS = 510 kt. Distance A to B = 43 NM What is the time (MIN) from A to B?

a 6

b 4

c 5

d 7

399 id 3238 Given: GS = 122 kt. Distance from A to B = 985 NM. What is the time from A to B?

a 7 HR 48 MIN

b 8 HR 04 MIN

c 7 HR 49 MIN

d 8 HR 10 MIN

400 id 3239 Given: GS = 236 kt. Distance from A to B = 354 NM What is the time from A to B?

a 1 HR 09 MIN

b 1 HR 30 MIN

c 1 HR 10 MIN

d 1 HR 40 MIN

401 id 3240 Given: GS = 435 kt. Distance from A to B = 1920 NM. What is the time from A to B?

a 4 HR 10 MIN

b 3 HR 25 MIN

c 3 HR 26 MIN

d 4 HR 25 MIN

402 id 3241 Given: GS = 345 kt. Distance from A to B = 3560 NM. What is the time from A to B?

a 10 HR 19 MIN

b 10 HR 05 MIN

c 11 HR 00 MIN

d 11 HR 02 MIN

403 id 3242 Given: GS = 480 kt. Distance from A to B = 5360 NM. What is the time from A to B?

a 11 HR 07 MIN

b 11 HR 06 MIN

c 11 HR 10 MIN

d 11 HR 15 MIN

404 id 3243 | Given: GS = 95 kt. Distance from A to B = 480 NM. What is the time from A to B?

a 4 HR 59 MIN

b **5 HR 03 MIN**

c 5 HR 00 MIN

d 5 HR 08 MIN

405 id 3244 | Given: GS = 105 kt. Distance from A to B = 103 NM. What is the time from A to B?

a 01 HR 01 MIN

b 00 HR 57 MIN

c 00 HR 58 MIN

d **00 HR 59 MIN**

406 id 3245 | Given: GS = 120 kt. Distance from A to B = 84 NM. What is the time from A to B?

a **00 HR 42 MIN**

b 00 HR 43 MIN

c 00 HR 44 MIN

d 00 HR 45 MIN

407 id 3246 | Given: GS = 135 kt. Distance from A to B = 433 NM. What is the time from A to B?

a 3 HR 20 MIN

b 3 HR 25 MIN

c 3 HR 19 MIN

d **3 HR 12 MIN**

61.04.02.03. distance

408 id 2201 | How many NM would an aircraft travel in 1 MIN 45 SEC if GS is 135 kt?

a 39.0

b 2.36

c 3.25

d **3.94**

61.04.02.04. fuel consumption

409 id 2208 | Fuel flow per HR is 22 US-GAL, total fuel on board is 83 IMP GAL. What is the endurance?

a **4 HR 32 MIN**

b 3 HR 12 MIN

c 3 HR 53 MIN

d 2 HR 15 MIN

410 id 7105 The tank capacity of an aircraft is 310 US GAL. Fuel specific gravity is 0,78 kg/litre. The tanks are now 3/4 full. You want to refuel so that total fuel will be 850 kg. How much fuel will you have to refuel? Answer in pounds.

a 164 LB

b **360 LB**

c 320 LB

d 410 LB

411 id 8900 Fuel flow per HR is 31 US-GAL, total fuel on board is 260 Liter. What is the endurance?

a 8 HR 39 MIN

b 2 HR 22 MIN

c **2 HR 13 MIN**

d 8 HR 23 MIN

412 id 8901 A fuel amount of 146 Imp Gal allows a endurance of 4 HR 26 Min. What is the corresponding fuel flow ?

a 34.3 Imp Gal /HR

b 32.9 US Gal / HR

c **39.5 US Gal / HR**

d 39.5 Imp Gal / HR

413 id 8902 A fuel amount of 160 US Gal allows a endurance of 3 HR 10 Min with a light twin engine piston aircraft. What is the corresponding fuel flow per engine ?

a **25.3 US Gal / HR**

b 50.5 US Gal / HR

c 51.6 US Gal / HR

d 25.8 US Gal / HR

414 id 8903 Given: Fuel flow 42 US Gal / HR, specific gravity 0.72, TAS 210 KT.What is the specific fuel consumption ?

a 1.052 kg / NM air distance

b 0.757 kg / NM air distance

c 0.144 kg / NM air distance

d **0.545 kg / NM air distance**

415 id 8904 Given: Fuel flow 28 Imp Gal / HR, specific gravity 0.72, TAS 154 MPH.What is the specific fuel consumption ?

a 0.60 kg / NM air distance

b **0.68 kg / NM air distance**

c 1.46 kg / NM air distance

d 0.50 kg / NM air distance

416 id 8905 Given: Fuel flow 28 Imp Gal / HR, specific gravity 0.72, TAS 154 MPH.What is the specific range ?

a **1.46 NM air distance / kg**

b 1.67 NM air distance / kg

c 0.68 NM air distance / kg

d 2.0 NM air distance / kg

417 id 8906 Which of the following formula is correct for the calculation of Maximum Range ?

a Maximum Range = Safe Fuel available x Specific Range

b Maximum Range = Block Fuel x Specific Range

c Maximum Range = Block Fuel / Specific Range

d Maximum Range = Safe Fuel available / Specific Range

418 id 8907 Given: fuel flow 8.4 t/HR, specific gravity 0.80, mach number 0.76, OAT –36°C.What is the specific fuel consumption ?

a 14.7 kg / NM air distance

b 18.4 kg / NM air distance

c 19.5 kg / NM air distance

d 15.6 kg / NM air distance

419 id 8908 Given: fuel flow 6.5 t/HR, specific gravity 0.80, mach number 0.68, OAT –30°C, headwind component 25 KT. What is the specific fuel consumption ?

a 16.7 kg / NM air distance

b 13.4 kg / NM ground distance

c 13.4 kg / NM air distance

d 16.7 kg / NM ground distance

61.04.02.05. conversions

420 id 2171 265 US-GAL equals? (Specific gravity 0.80)

a 862 kg

b 803 kg

c 895 kg

d 940 kg

421 id 2172 730 FT/MIN equals:

a 3.7 m/sec

b 5.2 m/sec

c 1.6 m/sec

d 2.2 m/sec

422 id 2209 What is the ratio between the litre and the US-GAL ?

a 1 litre equals 4.55 US-GAL

b 1 litre equals 3.78 US-GAL

c 1 US-GAL equals 4.55 litres

d 1 US-GAL equals 3.78 litres

423 id 2853 The equivalent of 70 m/sec is approximately:

a 145 kt

b 136 kt

c 210 kt

d 35 kt

61.04.02.07. airspeed

424 id 4426 | Given: IAS 120 kt, FL 80, OAT +20°C. What is the TAS?

a 132 kt

b 102 kt

c 120 kt

d **141 kt**

425 id 8909 | Given: CAS 140 kt, FL 80, OAT +20°C. What is the TAS?

a 156 kt

b 160 kt

c **164 kt**

d 168 kt

426 id 8910 | Given: CAS 230 kt, FL 120, OAT -10°C. What is the TAS?

a 266 kt

b **273 kt**

c 280 kt

d 287 kt

427 id 8911 | Given: CAS 324 kt, FL 290, OAT -46°C. What is the TAS?

a **487 kt**

b 473 kt

c 458 kt

d 444 kt

428 id 8912 | Given: TAS 140 kt, FL 80, OAT +20°C. What is the CAS?

a **120 kt**

b 129 kt

c 151 kt

d 163 kt

429 id 8913 | Given: TAS 168 kt, FL 85, OAT -10°C. What is the CAS?

a 145 kt

b **150 kt**

c 195 kt

d 188 kt

430 id 8914 | Given: CAS 140 kt, FL 130, TAS 174. What is the OAT ?

a -11° C

b +6° C

c **0° C**

d -6° C

431 id 8915 | Given: CAS 130 kt, PA 1000 ft, TAS 127 What is the OAT ?

a +20° C

b +10° C

c 0° C

d **-8° C**

432 id 8916 | Given: CAS 300 kt, M 0.76. What is the PA ?

a 26000 ft

b **28000 ft**

c 30000 ft

d 32000 ft

433 id 8917 | Given: CAS 268 kt, M 0.82. What is the PA ?

a 35000 ft

b 36000 ft

c **37000 ft**

d 38000 ft

434 id 8918 | Given: FL310, M 0.76. What is the CAS ?

a **280 kt**

b 274 kt

c 292 kt

d 287 kt

435 id 8919 | Given: CAS 296 kt, M 0.72, FL 260. What is the OAT ?

a -37°C

b -26°C

c -43°C

d **Is not defined**

436 id 8920 | If the TAS exceeds the CAS by 20% at FL 100, the OAT should be

a -5°C

b +5°C

c **+15°C**

d Is not defined

437 id 8933 | Given: CAS 140 kt, FL 130, TAS 174. What is the OAT ?

a -11° C

b +6° C

c **0° C**

d -6° C

438 id 8934 | Given: CAS 130 kt, PA 1000 ft, TAS 127 What is the OAT ?

a +20° C

b +10° C

c 0° C

d **-8° C**

439 id 8935 | Given: CAS 300 kt, M 0.76. What is the PA ?

a 26000 ft

b **28000 ft**

c 30000 ft

d 32000 ft

440 id 8936 | Given: CAS 268 kt, M 0.82. What is the PA ?

a 35000 ft

b 36000 ft

c **37000 ft**

d 38000 ft

441 id 8937 | Given: FL310, M 0.76. What is the CAS ?

a **280 kt**

b 274 kt

c 292 kt

d 287 kt

442 id 8938 | Given: CAS 296 kt, M 0.72, FL 260. What is the OAT ?

a -37°C

b -26°C

c -43°C

d **Is not defined**

443 id 8939 | If the TAS exceeds the CAS by 20% at FL 100, the OAT should be

a -5°C

b +5°C

c **+15°C**

d Is not defined

61.04.02.08. wind velocity

444 id 4425 | Given: Course 040°(T), TAS is 120 kt, Wind speed 30 kt. Maximum drift angle will be obtained for a wind direction of:

a 120°

b 145°

c 115°

d **130°**

61.04.03. The triangle of velocities, methods of solution fo

445 id 793 An aircraft is following a true track of 048° at a constant TAS of 210 kt. The wind velocity is 350° / 30 kt. The GS and drift angle are:

a 192 kt, 7° left

b 200 kt, 3.5° right

c **192 kt, 7° right**

d 225 kt, 7° left

446 id 796 Given: Magnetic heading = 255° VAR = 40°W GS = 375 kt W/V = 235°(T) / 120 kt Calculate the drift angle?

a **7° left**

b 7° right

c 9° left

d 16° right

447 id 797 Given: True Heading = 180° TAS = 500 kt W/V 225° / 100 kt Calculate the GS?

a 450 kt

b 600 kt

c 535 kt

d **435 kt**

448 id 801 Given: True Heading = 090° TAS = 180 kt GS = 180 kt Drift 5° right Calculate the W/V?

a **360° / 15 kt**

b 190° / 15 kt

c 010° / 15 kt

d 180° / 15 kt

449 id 804 The following information is displayed on an Inertial Navigation System: GS 520 kt, True HDG 090°, Drift angle 5° right, TAS 480 kt. SAT (static air temperature) -51°C. The W/V being experienced is:

a 225° / 60 kt

b **320° / 60 kt**

c 220° / 60 kt

d 325° / 60 kt

450 id 805 The reported surface wind from the Control Tower is 240°/35 kt. Runway 30 (300°). What is the cross-wind component?

a 24 kt

b **30 kt**

c 27 kt

d 21 kt

451 id 2195 Given: M 0.80, OAT -50°C, FL 330, GS 490 kt, VAR 20°W, Magnetic heading 140°, Drift is 11° Right. Calculate the true W/V?

a 200°/95 kt

b 025°/47 kt

c **020°/95 kt**

d 025°/45 kt

452 id 2197 Given: Compass Heading 090°, Deviation 2°W, Variation 12°E, TAS 160 kt. Whilst maintaining a radial 070° from a VOR station, the aircraft flies a ground distance of 14 NM in 6 MIN. What is the W/V °(T)?

a 155°/25 kt

b 340°/25 kt

c 340°/98 kt

d **160°/50 kt**

453 id 2678 Given: TAS = 90 kt, HDG (T) = 355°, W/V = 120/20kt. Calculate the Track (°T) and GS?

a 006 - 95 kt

b **346 - 102 kt**

c 358 - 101 kt

d 359 - 102 kt

454 id 2679 Given: TAS = 485 kt, HDG (T) = 168°, W/V = 130/75kt. Calculate the Track (°T) and GS?

a 175 - 432 kt

b 173 - 424 kt

c 175 - 420 kt

d **174 - 428 kt**

455 id 2680 Given: TAS = 155 kt, Track (T) = 305°, W/V = 160/18kt. Calculate the HDG (°T) and GS?

a **301 - 169 kt**

b 305 - 169 kt

c 309 - 170 kt

d 309 - 141 kt

456 id 2681 Given: TAS = 130 kt, Track (T) = 003°, W/V = 190/40kt. Calculate the HDG (°T) and GS?

a 002 - 173 kt

b **001 - 170 kt**

c 359 - 166 kt

d 357 - 168 kt

457 id 2682 Given: TAS = 227 kt, Track (T) = 316°, W/V = 205/15kt. Calculate the HDG (°T) and GS?

a 313 - 235 kt

b 311 - 230 kt

c **312 - 232 kt**

d 310 - 233 kt

458 id 2719 Given: TAS = 465 kt, Track (T) = 007°, W/V = 300/80kt. Calculate the HDG (°T) and GS?

a 000 - 430 kt

b 001 - 432 kt

c **358 - 428 kt**

d 357 - 430 kt

459 id 2720 Given: TAS = 200 kt, Track (T) = 073°, W/V = 210/20kt. Calculate the HDG (°T) and GS?

a 077 - 214 kt

b 079 - 211 kt

c 075 - 213 kt

d 077 - 210 kt

460 id 2721 Given: TAS = 200 kt, Track (T) = 110°, W/V = 015/40kt. Calculate the HDG (°T) and GS?

a 097 - 201 kt

b 121 - 207 kt

c 121 - 199 kt

d 099 - 199 kt

461 id 2722 Given: TAS = 270 kt, Track (T) = 260°, W/V = 275/30kt. Calculate the HDG (°T) and GS?

a 264 - 237 kt

b 262 - 237 kt

c 264 - 241 kt

d 262 - 241 kt

462 id 2723 Given: True HDG = 307°, TAS = 230 kt, Track (T) = 313°, GS = 210 kt. Calculate the W/V?

a 255/25kt

b 257/35kt

c 260/30kt

d 265/30kt

463 id 2843 Given: For take-off an aircraft requires a headwind component of at least 10 kt and has a cross-wind limitation of 35 kt. The angle between the wind direction and the runway is 60°, Calculate the minimum and maximum allowable wind speeds?

a 12 kt and 38 kt

b 20 kt and 40 kt

c 15 kt and 43 kt

d 18 kt and 50 kt

464 id 2845 Given: Runway direction 230°(T), Surface W/V 280°(T)/40 kt. Calculate the effective cross-wind component?

a 21 kt

b 36 kt

c 31 kt

d 26 kt

465 id 2849 Given: Runway direction 210°(M), Surface W/V 230°(M)/30kt. Calculate the cross-wind component?

a 19 kt

b 10 kt

c 16 kt

d 13 kt

466 id 2856 | Given: Runway direction 305°(M), Surface W/V 260°(M)/30 kt. Calculate the cross-wind component?

a 18 kt

b 24 kt

c 27 kt

d **21 kt**

467 id 2911 | Given: TAS = 220 kt; Magnetic course = 212 º, W/V 160 º(M)/ 50kt, Calculate the GS?

a **186 kt**

b 290 kt

c 246 kt

d 250 kt

468 id 2915 | Given: Magnetic track = 315 º, HDG = 301 º(M), VAR = 5ºW, TAS = 225 kt, The aircraft flies 50 NM in 12 MIN. Calculate the W/V(°T)?

a 195 º/63 kt

b 355 º/15 kt

c 195 º/61 kt

d **190 º/63 kt**

469 id 3195 | Given: TAS = 270 kt, True HDG = 270°, Actual wind 205°(T)/30kt, Calculate the drift angle and GS?

a **6R - 259kt**

b 6L - 256kt

c 6R - 251kt

d 8R - 259kt

470 id 3196 | Given: TAS = 270 kt, True HDG = 145°, Actual wind = 205°(T)/30kt. Calculate the drift angle and GS?

a 8°R - 261 kt

b 6°R - 251 kt

c **6°L - 256 kt**

d 6°R - 259 kt

471 id 3197 | Given: TAS = 470 kt, True HDG = 317° W/V = 045°(T)/45kt Calculate the drift angle and GS?

a 3°R - 470 kt

b **5°L - 470 kt**

c 5°L - 475 kt

d 5°R - 475 kt

472 id 3198 | Given: TAS = 140 kt, True HDG = 302°, W/V = 045°(T)/45kt Calculate the drift angle and GS?

a 9°R - 143 kt

b **16°L - 156 kt**

c 9°L - 146 kt

d 18°R - 146 kt

473 id 3199 Given: TAS = 290 kt, True HDG = 171°, W/V = 310°(T)/30kt Calculate the drift angle and GS?

a 4°R - 310 kt

b **4°L - 314 kt**

c 4°R - 314 kt

d 4°L - 310 kt

474 id 3200 Given: TAS = 485 kt, True HDG = 226°, W/V = 110°(T)/95kt. Calculate the drift angle and GS?

a 7°R - 531 kt

b **9°R - 533 kt**

c 9°R - 433 kt

d 8°L - 435 kt

475 id 3201 Given: TAS = 472 kt, True HDG = 005°, W/V = 110°(T)/50kt. Calculate the drift angle and GS?

a **6°L - 487 kt**

b 7°R - 491 kt

c 7°L - 491 kt

d 7°R - 487 kt

476 id 3202 Given: TAS = 190 kt, True HDG = 085°, W/V = 110°(T)/50kt. Calculate the drift angle and GS?

a **8°L - 146 kt**

b 7°L - 156 kt

c 4°L - 168 kt

d 4°L - 145 kt

477 id 3203 Given: TAS = 132 kt, True HDG = 257° W/V = 095°(T)/35kt. Calculate the drift angle and GS?

a 2°R - 166 kt

b **4°R - 165 kt**

c 4°L - 167 kt

d 3°L - 166 kt

478 id 3204 Given: TAS = 370 kt, True HDG = 181°, W/V = 095°(T)/35kt. Calculate the true track and GS?

a **186 - 370 kt**

b 176 - 370 kt

c 192 - 370 kt

d 189 - 370 kt

479 id 3205 Given: TAS = 375 kt, True HDG = 124°, W/V = 130°(T)/55kt. Calculate the true track and GS?

a 125 - 322 kt

b **123 - 320 kt**

c 126 - 320 kt

d 125 - 318 kt

480 id 3206 | Given: TAS = 125 kt, True HDG = 355°, W/V = 320°(T)/30kt. Calculate the true track and GS?

a 002 - 98 kt

b 345 - 100 kt

c 348 - 102 kt

d **005 - 102 kt**

481 id 3207 | Given: TAS = 198 kt, HDG (°T) = 180, W/V = 359/25. Calculate the Track(°T) and GS?

a **180 - 223 kt**

b 179 - 220 kt

c 181 - 180 kt

d 180 - 183 kt

482 id 3208 | Given: TAS = 135 kt, HDG (°T) = 278, W/V = 140/20kt Calculate the Track (°T) and GS?

a 279 - 152 kt

b **283 - 150 kt**

c 282 - 148 kt

d 275 - 150 kt

483 id 3209 | Given: TAS = 225 kt, HDG (°T) = 123°, W/V = 090/60kt. Calculate the Track (°T) and GS?

a 134 - 188 kt

b **134 - 178 kt**

c 120 - 190 kt

d 128 - 180 kt

484 id 3210 | Given: TAS = 480 kt, HDG (°T) = 040°, W/V = 090/60kt. Calculate the Track (°T) and GS?

a 032 - 425 kt

b 028 - 415 kt

c **034 - 445 kt**

d 036 - 435 kt

485 id 3211 | Given: TAS = 155 kt, HDG (T) = 216°, W/V = 090/60kt. Calculate the Track (°T) and GS?

a 224 - 175 kt

b **231 - 196 kt**

c 222 - 181 kt

d 226 - 186 kt

486 id 3212 | Given: TAS = 170 kt, HDG(T) = 100°, W/V = 350/30kt. Calculate the Track (°T) and GS?

a **109 - 182 kt**

b 091 - 183 kt

c 103 - 178 kt

d 098 - 178 kt

487 id 3213 | Given: TAS = 235 kt, HDG (T) = 076° W/V = 040/40kt. Calculate the drift angle and GS?

a 5R - 207 kt

b 7L - 269 kt

c 5L - 255 kt

d **7R - 204 kt**

488 id 3214 | Given: TAS = 440 kt, HDG (T) = 349° W/V = 040/40kt. Calculate the drift and GS?

a **4L - 415 kt**

b 2L - 420 kt

c 6L - 395 kt

d 5L - 385 kt

489 id 3215 | Given: TAS = 465 kt, HDG (T) = 124°, W/V = 170/80kt. Calculate the drift and GS?

a **8L - 415 kt**

b 3L - 415 kt

c 4L - 400 kt

d 6L - 400 kt

490 id 3216 | Given: TAS = 95 kt, HDG (T) = 075°, W/V = 310/20kt. Calculate the drift and GS?

a **9R - 108 kt**

b 10L - 104 kt

c 9L - 105 kt

d 8R - 104 kt

491 id 3217 | Given: TAS = 140 kt, HDG (T) = 005°, W/V = 265/25kt. Calculate the drift and GS?

a 11R - 140 kt

b 9R - 140 kt

c 11R - 142 kt

d **10R - 146 kt**

492 id 3218 | Given: TAS = 190 kt, HDG (T) = 355°, W/V = 165/25kt. Calculate the drift and GS?

a 1R - 165 kt

b 1L - 225 kt

c 1R - 175 kt

d **1L - 215 kt**

493 id 3219 | Given: TAS = 230 kt, HDG (T) = 250°, W/V = 205/10kt. Calculate the drift and GS?

a 1R - 221 kt

b 2L - 224 kt

c 1L - 225 kt

d **2R - 223 kt**

494 id 3220 Given: TAS = 205 kt, HDG (T) = 180°, W/V = 240/25kt. Calculate the drift and GS?

a 7L - 192 kt

b **6L - 194 kt**

c 3L - 190 kt

d 4L - 195 kt

495 id 3221 Given: TAS = 250 kt, HDG (T) = 029°, W/V = 035/45kt. Calculate the drift and GS?

a **1L - 205 kt**

b 1R - 205 kt

c 1L - 265 kt

d 1R - 295 kt

496 id 3222 Given: TAS = 132 kt, HDG (T) = 053°, W/V = 205/15kt. Calculate the Track (°T) and GS?

a 057 - 144 kt

b **050 - 145 kt**

c 052 - 143 kt

d 051 - 144 kt

497 id 3223 Given: True HDG = 233°, TAS = 480 kt, Track (T) = 240°, GS = 523 kt. Calculate the W/V?

a 115/70kt

b **110/75kt**

c 110/80kt

d 105/75kt

498 id 3224 Given: True HDG = 133°, TAS = 225 kt, Track (T) = 144°, GS = 206 kt. Calculate the W/V?

a 070/40kt

b **075/45kt**

c 070/45kt

d 075/50kt

499 id 3225 Given: True HDG = 074°, TAS = 230 kt, Track (T) = 066°, GS = 242 kt. Calculate the W/V?

a 180/30kt

b **180/35kt**

c 185/35kt

d 180/40kt

500 id 3226 Given: True HDG = 206°, TAS = 140 kt, Track (T) = 207°, GS = 135 kt. Calculate the W/V?

a 180/10kt

b 000/05kt

c 000/10kt

d **180/05kt**

501 id 3227 | Given: True HDG = 054°, TAS = 450 kt, Track (T) = 059°, GS = 416 kt. Calculate the W/V?

a 010/55kt

b 005/50kt

c **010/50kt**

d 010/45kt

502 id 3228 | Given: True HDG = 145°, TAS = 240 kt, Track (T) = 150°, GS = 210 kt. Calculate the W/V?

a 295/35kt

b 360/35kt

c 180/35kt

d **115/35kt**

503 id 3229 | Given: True HDG = 002°, TAS = 130 kt, Track (T) = 353°, GS = 132 kt. Calculate the W/V?

a 088/15kt

b **093/20kt**

c 088/20kt

d 093/25kt

504 id 3230 | Given: True HDG = 035°, TAS = 245 kt, Track (T) = 046°, GS = 220 kt. Calculate the W/V?

a 335/55kt

b 335/45kt

c **340/50kt**

d 340/45kt

505 id 3231 | Given: course required = 085° (T), Forecast W/V 030/100kt, TAS = 470 kt, Distance = 265 NM. Calculate the true HDG and flight time?

a 096°, 29 MIN

b 076°, 34 MIN

c **075°, 39 MIN**

d 095°, 31 MIN

506 id 3232 | Given: True course from A to B = 090°, TAS = 460 kt, W/V = 360/100kt, Average variation = 10°E, Deviation = -2°. Calculate the compass heading and GS?

a 078° - 450 kt

b 068° - 460 kt

c **069° - 448 kt**

d 070° - 453 kt

507 id 3233 | For a landing on runway 23 (227° magnetic) surface W/V reported by the ATIS is 180/30kt. VAR is 13°E. Calculate the cross wind component?

a 15 kt

b 26 kt

c **22 kt**

d 20 kt

508 id 3234 Given: Maximum allowable tailwind component for landing 10 kt. Planned runway 05 (047° magnetic). The direction of the surface wind reported by ATIS 210°. Variation is 17°E. Calculate the maximum allowable windspeed that can be accepted without exceeding the tailwind limit?

a 15 kt

b 18 kt

c 8 kt

d **11 kt**

509 id 3235 Given: Maximum allowable crosswind component is 20 kt. Runway 06, RWY QDM 063°(M). Wind direction 100°(M) Calculate the maximum allowable windspeed?

a 26 kt

b 31 kt

c **33 kt**

d 25 kt

510 id 3270 Given: Runway direction 083°(M), Surface W/V 035/35kt. Calculate the effective headwind component?

a **24 kt**

b 27 kt

c 31 kt

d 34 kt

511 id 4292 Given: Magnetic track = 075°, HDG = 066°(M), VAR = 11°E, TAS = 275 kt Aircraft flies 48 NM in 10 MIN. Calculate the true W/V °?

a **340°/45 kt**

b 320°/50 kt

c 210°/15 kt

d 180°/45 kt

512 id 4293 Given: Magnetic track = 210°, Magnetic HDG = 215°, VAR = 15°E, TAS = 360 kt, Aircraft flies 64 NM in 12 MIN. Calculate the true W/V?

a **265°/50 kt**

b 195°/50 kt

c 235°/50 kt

d 300°/30 kt

513 id 4430 Given: FL120, OAT is ISA standard, CAS is 200 kt, Track is 222°(M), Heading is 215°(M), Variation is 15°W. Time to fly 105 NM is 21 MIN. What is the W/V?

a **050°(T) / 70 kt.**

b 040°(T) / 105 kt.

c 055°(T) / 105 kt .

d 065°(T) / 70 kt.

514 id 5563 Given: An aircraft is on final approach to runway 32R (322°); The wind velocity reported by the tower is 350°/20 kt.; TAS on approach is 95 kt. In order to maintain the centre line, the aircraft's heading (°M) should be :

a 322°

b **328°**

c 316°

d 326°

515 id 5575 | Given: Required course 045°(M); Variation is 15°E; W/V is 190°(T)/30 kt; CAS is 120 kt at FL 55 in standard atmosphere. What are the heading (°M) and GS?

a 036° and 151 kt

b **055° and 147 kt**

c 052° and 154 kt

d 056° and 137 kt

516 id 7106 | Determine the W/V by using the multi-drift method (multiple drift W/V) when the following observations have been made while TAS was 187 Kt: MH 015: Drift 7R, MH 075: Drift 8R, MH 177: Drift 3L

a W/V 310M/41

b W/V 296M/36

c W/V 320M/18

d **W/V 328M/29**

61.04.04. Determination of DR position

517 id 5766 | A useful method of a pilot resolving, during a visual flight, any uncertainty in the aircraft's position is to maintain visual contact with the ground and:

a **set heading towards a line feature such as a coastline, motorway, river or railway**

b fly the reverse of the heading being flown prior to becoming uncertain until a pinpoint is obtained

c fly expanding circles until a pinpoint is obtained

d fly reverse headings and associated timings until the point of departure is regained

61.04.05. Measurement of DR elements

518 id 404 | Given: TAS = 485 kt, OAT = ISA +10°C, FL 410. Calculate the Mach Number?

a 0.85

b 0.90

c **0.825**

d 0.87

519 id 794 | Given: FL 350, Mach 0.80, OAT -55°C. Calculate the values for TAS and local speed of sound (LSS)?

a 461 kt , LSS 296 kt

b 237 kt, LSS 296 kt

c 490 kt, LSS 461 kt

d **461 kt , LSS 576 kt**

520 id 810 | An aircraft is maintaining a 5.2% gradient is at 7 NM from the runway, on a flat terrain; its height is approximately:

a 680 FT

b **2210 FT**

c 1890 FT

d 3640 FT

521 id 2184 What is the ISA temperature value at FL 330?

a -81°C

b -56°C

c -66°C

d **-50°C**

522 id 2192 Given: TAS 487kt, FL 330, Temperature ISA + 15. Calculate the MACH Number?

a **0.81**

b 0.84

c 0.76

d 0.78

523 id 2196 Given: Pressure Altitude 29000 FT, OAT -55°C. Calculate the Density Altitude?

a **27500 FT**

b 31000 FT

c 33500 FT

d 26000 FT

524 id 2912 Given: FL250, OAT -15 ºC, TAS 250 kt. Calculate the Mach No.?

a 0.42

b **0.40**

c 0.44

d 0.39

525 id 5576 Given: Airport elevation is 1000 ft. QNH is 988 hPa. What is the approximate airport pressure altitude? (Assume 1 hPa = 27 FT)

a 680 FT

b 320 FT

c **1680 FT**

d - 320 FT

526 id 5581 Given : Indicated altitude 9000 FT, OAT -32°C, CAS 200 kt. QNH 1013. What is the TAS?

a **217 kt**

b 222 kt

c 207 kt

d 212 kt

527 id 5586 Given: Aircraft at FL 150 overhead an airport Elevation of airport 720 FT. QNH is 1003 hPa. OAT at FL150 -5°C. What is the true altitude of the aircraft? (Assume 1 hPa = 27 FT)

a 15 840 FT

b **15 280 FT**

c 14 160 FT

d 14 720 FT

528 id 5587 An aircraft takes off from the aerodrome of BRIOUDE (altitude 1 483 FT, QFE = 963 hPa, temperature = 32°C). Five minutes later, passing 5 000 FT on QFE, the second altimeter set on 1 013 hPa will indicate approximately :

a 6 800 FT

b **6 400 FT**

c 6 000 FT

d 4 000 FT

529 id 7107 What is the distance to touchdown when you are 670 ft QFE on a 3,2° glideslope approach?

a 2,06 NM

b 2,40 NM

c **1,96 NM**

d 1,63 NM

530 id 7108 You want to fly 12000 ft above a frozen lake at elevation 930 ft AMSL. You have obtained QNH from an airfield in the area. Climbing, you observe that the air temperature at FL 80 is -20° C. What should your indicated altitude be when you are 12 000 ft above the frozen lake? Use the mechanical computer for the calculations

a 11950 ft

b 12000 ft

c 12560 ft

d **13950 ft**

531 id 7109 You are flying at FL 80 and the air temperature is ISA+15. What CAS is required to make TAS 240 Kt?

a **206 Kt**

b 214 Kt

c 220 Kt

d 226 Kt

61.04.06. Resolution of current DR problems by means of:

532 id 1140 Given: A polar stereographic chart whose grid is aligned with the zero meridian. Grid track 344°, Longitude 115°00'W, Calculate the true course?

a 099°

b **229°**

c 279°

d 049°

533 id 1141 For this question use chart AT(H/L) 1: 1215 UTC LAJES VORTAC (38°46'N 027°05'W) RMI reads 178°, range 135 NM. Calculate the aircraft position at 1215 UTC?

a 40°50'N 027°40'W

b **40°55'N 027°55'W**

c 41°00'N 028°10'W

d 41°05'N 027°50'W

534 id 1142 For this question use chart AT(H/L) 2: 1300 UTC DR position 37°30'N 021°30'W alter heading PORT SANTO NDB (33°03'N 016°23'W) TAS 450 kt, Forecast W/V 360°/30kt. Calculate the ETA at PORT SANTO NDB?

a 1341

b 1344

c **1348**

d 1354

61.04.07. PET/PSR

61.04.07.01. Point of Equal Time

535 id 1144 Two points A and B are 1000 NM apart. TAS = 490 kt. On the flight between A and B the equivalent headwind is -20 kt. On the return leg between B and A, the equivalent headwind is +40 kt. What distance from A, along the route A to B, is the the Point of Equal Time (PET)?

a 470 NM

b **530 NM**

c 455 NM

d 500 NM

536 id 1145 Given: AD = Air distance GD = Ground distance TAS = True Airspeed GS = Groundspeed Which of the following is the correct formula to calculate ground distance (GD) gone?

a **GD = (AD X GS)/TAS**

b GD = (AD - TAS)/TAS

c GD = AD X (GS -TAS)/GS

d GD = TAS/(GS X AD)

537 id 4276 Given: Distance 'A' to 'B' 2484 NM Groundspeed 'out' 420 kt Groundspeed 'back' 500 kt The time from 'A' to the Point of Equal Time (PET) between 'A' and 'B' is:

a 173 MIN

b 163 MIN

c **193 MIN**

d 183 MIN

538 id 4280 Given: Distance 'A' to 'B' 1973 NM Groundspeed 'out' 430 kt Groundspeed 'back' 385 kt The time from 'A' to the Point of Equal Time (PET) between 'A' and 'B' is:

a 145 MIN

b **130 MIN**

c 162 MIN

d 181 MIN

539 id 4284 Given: Distance 'Q' to 'R' 1760 NM Groundspeed 'out' 435 kt Groundspeed 'back' 385 kt The time from 'Q' to the Point of Equal Time (PET) between 'Q' and 'R' is:

a 110 MIN

b **114 MIN**

c 106 MIN

d 102 MIN

540 id 4286 Given: Distance 'A' to 'B' 3623 NM Groundspeed 'out' 370 kt Groundspeed 'back' 300 kt The time from 'A' to the Point of Equal Time (PET) between 'A' and 'B' is:

a 323 MIN

b 288 MIN

c **263 MIN**

d 238 MIN

541 id 5574 The flight time from the PET to either of the landing places is:

a proportional to the sum of ground speed out and ground speed back

b **inversely proportional to the sum of ground speed out and ground speed back**

c inversely proportional to the total distance to go

d inversely proportional to ground speed back

542 id 5588 Given: Distance A to B is 360 NM. Wind component A - B is -15 kt, Wind component B - A is +15 kt, TAS is 180 kt. What is the distance from the equal-time-point to B?

a 170 NM

b 195 NM

c 180 NM

d **165 NM**

543 id 7111 Why do we normally overlook the descend phase when calculating Point of Equal Time (PET)?

a Because there are so many uncertain factors in the descend phase

b Because we never know what kind of descend clearance we will get from ATC

c **Because the descend will have an equal effect, whatever destination we decide to proceed to**

d Because the W/V during the descend is not known in academic situations

544 id 7113 You fly from C to D, a distance of 450 NM. The WC C - D is +30, and the WC D - C is -40. TAS is 160 Kt and reduced TAS is 130 Kt. The Fuel Flow is 165 kg/hr, and the Safe endurance when overhead C is 4 hours. Calculate PET between C and D, based on reduced TAS for the flight from PET to C/D. What is the flying time from C to PET?

a 1:04

b 1:48

c 1:21

d **0:51**

61.04.07.02. Point of Safe Return

545 id 803 An aeroplane is flying at TAS 180 kt on a track of 090°. The W/V is 045° / 50kt. How far can the aeroplane fly out from its base and return in one hour?

a 56 NM

b 88 NM

c **85 NM**

d 176 NM

546 id 1143 For a distance of 1860 NM between Q and R, a ground speed "out" of 385 kt, a ground speed "back" of 465 kt and an endurance of 8 HR (excluding reserves) the distance from Q to the point of safe return (PSR) is:

a 930 NM

b 1532 NM

c **1685 NM**

d 1865 NM

547 id 4277 Given: Distance 'A' to 'B' 2484 NM Mean groundspeed 'out' 420 kt Mean groundspeed 'back' 500 kt Safe endurance 08 HR 30 MIN The distance from 'A' to the Point of Safe Return (PSR) 'A' is:

a 1908 NM

b **1940 NM**

c 1736 NM

d 1630 NM

548 id 4281 Given: Distance 'A' to 'B' 1973 NM Groundspeed 'out' 430 kt Groundspeed 'back' 385 kt Safe endurance 7 HR 20 MIN The distance from 'A' to the Point of Safe Return (PSR) 'A' is:

a **1490 NM**

b 1664 NM

c 1698 NM

d 1422 NM

549 id 4285 Given: Distance 'Q' to 'R' 1760 NM Groundspeed 'out' 435 kt Groundspeed 'back' 385 kt Safe endurance 9 HR The distance from 'Q' to the Point of Safe Return (PSR) between 'Q' and 'R' is:

a 1313 NM

b **1838 NM**

c 1467 NM

d 1642 NM

550 id 5566 An aircraft takes-off from an airport 2 hours before sunset. The pilot flies a track of 090°(T), W/V 130°/ 20 kt, TAS 100 kt. In order to return to the point of departure before sunset, the furthest distance which may be travelled is:

a **97 NM**

b 115 NM

c 105 NM

d 84 NM

551 id 7110 You have calculated Point of No Return (PNR) on a flight, having all negative WCs in the flight plan. During the flight you experience that the W/V is stronger but coming from the same direction as in the flight plan. Consider the following statements:

a The PNR will not change because the neither TAS nor Fuel Flow has changed

b The PNR will, if recalculated, move toward the no-wind PNR

c You will arrive at the PNR at a later time than flightplanned

d **A recalculated PNR will move toward the place of departure**

552
id 7112

You fly from C to D, a distance of 450 NM. The WC C - D is +30, and the WC D - C is -40. TAS is 160 Kt and reduced TAS is 130 Kt. The Fuel Flow is 165 kg/hr, and the Safe endurance when overhead C is 4 hours. Calculate PNR for return to C. What is the distance from PNR to D?

a 243,0 NM

b **155,5 NM**

c 180,0 NM

d 95,5 NM

61.05. IN-FLIGHT NAVIGATION

61.05.01. Use of visual observations and application to in-f

553 id 1458
A ground feature appears 30° to the left of the centre line of the CRT of an airborne weather radar. If the heading of the aircraft is 355° (M) and the magnetic variation is 15° East, the true bearing of the aircraft from the feature is:

a 160°
b 220°
c 310°
d 130°

554 id 2858
An island is observed by weather radar to be 15° to the left. The aircraft heading is 120°(M) and the magnetic variation 17°W. What is the true bearing of the aircraft from the island?

a 122°
b 302°
c 088°
d 268°

555 id 2913
During a low level flight 2 parallel roads that are crossed at right angles by an aircraft. The time between these roads can be used to check the aircraft:

a groundspeed
b position
c track
d drift

556 id 3164
An island appears 30° to the left of the centre line on an airborne weather radar display. What is the true bearing of the aircraft from the island if at the time of observation the aircraft was on a magnetic heading of 276° with the magnetic variation 12°W?

a 318°
b 054°
c 234°
d 038°

557 id 3267
A ground feature was observed on a relative bearing of 325° and five minutes later on a relative bearing of 280°. The aircraft heading was 165°(M), variation 25°W, drift 10°Right and GS 360 kt. When the relative bearing was 280°, the distance and true bearing of the aircraft from the feature was:

a 30 NM and 240°
b 40 NM and 110°
c 40 NM and 290°
d 30 NM and 060°

558 id 4287
A ground feature was observed on a relative bearing of 315° and 3 MIN later on a relative bearing of 270°. The W/V is calm; aircraft GS 180 kt. What is the minimum distance between the aircraft and the ground feature?

a 3 NM
b 12 NM
c 9 NM
d 6 NM

559 id 4288 An island is observed to be 15° to the left. The aircraft heading is 120°(M), variation 17°(W). The bearing °(T) from the aircraft to the island is:

a 122

b **088**

c 268

d 302

560 id 4739 An island appears 60° to the left of the centre line on an airborne weather radar display. What is the true bearing of the aircraft from the island if at the time of observation the aircraft was on a magnetic heading (MH) of 276° with the magnetic variation (VAR) 10°E?

a **046°**

b 086°

c 226°

d 026°

561 id 4740 An island appears 45° to the right of the centre line on an airborne weather radar display. What is the true bearing of the aircraft from the island if at the time of observation the aircraft was on a magnetic heading (MH) of 215° with the magnetic variation (VAR) 21°W?

a 101°

b **059°**

c 239°

d 329°

562 id 4741 An island appears 30° to the right of the centre line on an airborne weather radar display. What is the true bearing of the aircraft from the island if at the time of observation the aircraft was on a magnetic heading (MH) of 355° with the magnetic variation (VAR) 15°E?

a 160°

b 130°

c **220°**

d 190°

563 id 4742 An island appears 30° to the left of the centre line on an airborne weather radar display. What is the true bearing of the aircraft from the island if at the time of observation the aircraft was on a magnetic heading (MH) of 020° with the magnetic variation (VAR) 25°W?

a **145°**

b 195°

c 205°

d 325°

564 id 7114 What do you understand by the term "white-out"?

a Flight conditions when you suddenly enter a cloud and all "get white" outside the cockpit windows

b **When the terrain is covered with snow and the horizon blend with the sky, visual visual determination of height becoming difficult**

c Flying in heavy snow

d Taking off from a snow-covered lake

61.05.02. Navigation in climb and descent

565 id 1071 An aircraft is descending down a 12% slope whilst maintaining a GS of 540 kt. The rate of descent of the aircraft is approximately:

a 650 FT/MIN

b **6500 FT/MIN**

c 4500 FT/MIN

d 3900 FT/MIN

566 id 2844 An aircraft at FL390 is required to descend to cross a DME facility at FL70. Maximum rate of descent is 2500 FT/MIN, mean GS during descent is 248 kt. What is the minimum range from the DME at which descent should commence?

a **53 NM**

b 58 NM

c 63 NM

d 68 NM

567 id 2851 An aircraft at FL330 is rerquired to commence descent when 65 NM from a VOR and to cross the VOR at FL100. The mean GS during the descent is 330 kt. What is the minimum rate of descent required?

a **1950 FT/MIN**

b 1650 FT/MIN

c 1750 FT/MIN

d 1850 FT/MIN

568 id 2854 An aircraft at FL290 is required to commence descent when 50 NM from a VOR and to cross that VOR at FL80. Mean GS during descent is 271kt. What is the minimum rate of descent required?

a 1700 FT/MIN

b 2000 FT/MIN

c **1900 FT/MIN**

d 1800 FT/MIN

569 id 2857 An aircraft at FL350 is required to commence descent when 85 NM from a VOR and to cross the VOR at FL80. The mean GS for the descent is 340 kt. What is the minimum rate of descent required?

a 1900 FT/MIN

b **1800 FT/MIN**

c 1600 FT/MIN

d 1700 FT/MIN

570 id 2914 Assuming zero wind, what distance will be covered by an aircraft descending 15000 FT with a TAS of 320 kt and maintaining a rate of descent of 3000 FT/MIN?

a **26.7 NM**

b 19.2 NM

c 38.4 NM

d 16.0 NM

571 id 3265 An aircraft at FL370 is required to commence descent at 120 NM from a VOR and to cross the facility at FL130. If the mean GS for the descent is 288 kt, the minimum rate of descent required is:

a 960 FT/MIN

b 860 FT/MIN

c 890 FT/MIN

d 920 FT/MIN

572 id 4320 What is the effect on the Mach number and TAS in an aircraft that is climbing with constant CAS?

a Mach number decreases; TAS decreases

b Mach number remains constant; TAS increases

c Mach number increases; TAS increases

d Mach number increases; TAS remains constant

573 id 4322 Given: ILS GP angle = 3.5 DEG, GS = 150 kt. What is the approximate rate of descent?

a 350 FT/MIN

b 300 FT/MIN

c 875 FT/MIN

d 700 FT/MIN

574 id 4323 Given: aircraft height 2500 FT, ILS GP angle 3°. At what approximate distance from THR can you expect to capture the GP?

a 14.5 NM

b 7.0 NM

c 13.1 NM

d 8.3 NM

575 id 7115 You are required to descend from FL 230 to FL 50 over a distance of 32 NM in 7 minutes. What is the required TAS when you expect WC-25 during the descent?

a 317 Kt

b 329 Kt

c 308 Kt

d 300 Kt

576 id 7116 You are required to descend from FL 230 to FL 50 over a distance of 32 NM in 7 minutes. What is the required Rate of Descent when you expect WC-25 during the descent?

a 2157 ft/min

b 2230 ft/min

c 2458 ft/min

d 2570 ft/min

577 id 7117 You are required to descend from FL 230 to FL 50 over a distance of 32 NM in 7 minutes. What will the glideslope be when you expect WC-25 during the descend?

a 4,07°

b 5,29°

c 6,25°

d 4,68°

578 id 8928 | What is the average TAS climbing from 2000 ft up to FL 120 at standard temperatures, given a CAS 185 KT and QNH 1013 ?

a 188 kt

b 197 kt

c **205 kt**

d 221 kt

579 id 8929 | What is the average TAS climbing from 1500 ft up to FL 180, given a temperature ISA +15°C, a CAS 230 KT and QNH 1032 ?

a 263 kt

b **273 kt**

c 283kt

d 309 kt

580 id 8930 | An aircraft is descending from FL 270 to FL 100 following MT 054° and maintaining CAS 250 KT.Given are variation 13°E, temperatures ISA-10°C, W/V 020/60What is your GS?

a **281 kt**

b 270 kt

c 325 kt

d 320 kt

581 id 8931 | An aircraft is following a descent profile of 4 degrees. What is the requested rate of descent at FL 200, assuming a CAS 280 KT, standard temperatures and 30 KT tailwind?

a **2850 FT / MIN**

b 2650 FT / MIN

c 2200 FT / MIN

d 2430 FT / MIN

582 id 8932 | Due to pressurization problems you are requested do descent with 1000 FT/MIN only from FL 120 down to FL 50 maintaining a CAS 200 KT.What descent profile will you follow at no wind conditions and standard temperature?

a 2°

b **2.5°**

c 3°

d 1.5°

61.05.03. Navigation in cruising flight, use of fixes to rev

583 id 809 | A pilot receives the following signals from a VOR DME station: radial 180°+/- 1°, distance = 200 NM. What is the approximate error?

a **+/- 3.5 NM**

b +/- 1 NM

c +/- 2 NM

d +/- 7 NM

584 id 2852 An aircraft obtains a relative bearing of 315° from an NDB at 0830. At 0840 the relative bearing from the same position is 270°. Assuming no drift and a GS of 240 kt, what is the approximate range from the NDB at 0840?

a 50 NM

b **40 NM**

c 60 NM

d 30 NM

585 id 3269 An aircraft at FL120, IAS 200kt, OAT -5° and wind component +30kt, is required to reduce speed in order to cross a reporting point 5 MIN later than planned. Assuming flight conditions do not change, when 100 NM from the reporting point IAS should be reduced to:

a 169 kt

b 165 kt

c **159 kt**

d 174 kt

586 id 4273 Given: Distance A to B = 120 NM, After 30 NM aircraft is 3 NM to the left of course. What heading alteration should be made in order to arrive at point 'B'?

a 8° left

b 6° right

c 4° right

d **8° right**

587 id 4290 An aircraft is planned to fly from position 'A' to position 'B',distance 320 NM, at an average GS of 180 kt. It departs 'A' at 1200 UTC. After flying 70 NM along track from 'A', the aircraft is 3 MIN ahead of planned time. Using the actual GS experienced, what is the revised ETA at 'B'?

a 1401 UTC

b **1333 UTC**

c 1347 UTC

d 1340 UTC

588 id 4291 An aircraft is planned to fly from position 'A' to position 'B', distance 250 NM at an average GS of 115 kt. It departs 'A' at 0900 UTC. After flying 75 NM along track from 'A', the aircraft is 1.5 MIN behind planned time. Using the actual GS experienced, what is the revised ETA at 'B'?

a 1110 UTC

b **1115 UTC**

c 1044 UTC

d 1050 UTC

589 id 4294 Given: Distance 'A' to 'B' is 475 NM, Planned GS 315 kt, ATD 1000 UTC, 1040 UTC - fix obtained 190 NM along track. What GS must be maintained from the fix in order to achieve planned ETA at 'B'?

a 320 kt.

b 360 kt.

c 300 kt

d **340 kt**

590 id 4296 | Given: Distance 'A' to 'B' is 100 NM, Fix obtained 40 NM along and 6 NM to the left of course. What heading alteration must be made to reach 'B'?

a 6° Right

b 9° Right

c **15° Right**

d 18° Right

591 id 4297 | Given: Distance 'A' to 'B' is 90 NM, Fix obtained 60 NM along and 4 NM to the right of course. What heading alteration must be made to reach 'B'?

a 4° Left

b 16° Left

c **12° Left**

d 8° Left

592 id 4419 | Given: Half way between two reporting points the navigation log gives the following information: TAS 360 kt, W/V 330°/80kt, Compass heading 237°, Deviation on this heading -5°, Variation 19°W. What is the average ground speed for this leg?

a 360 kt

b 354 kt

c 373 kt

d **403 kt**

593 id 5569 | Given : ETA to cross a meridian is 2100 UTC GS is 441 kt TAS is 491 kt At 2010 UTC, ATC requests a speed reduction to cross the meridian at 2105 UTC. The reduction to TAS will be approximately:

a 60 kt

b 90 kt

c 75 kt

d **40 kt**

594 id 5583 | The distance between two waypoints is 200 NM, To calculate compass heading, the pilot used 2°E magnetic variation instead of 2°W. Assuming that the forecast W/V applied, what will the off track distance be at the second waypoint?

a 0 NM

b 7 NM

c **14 NM**

d 21 NM

595 id 7118 | TT from A to B is 167°, and the distance is 140 NM. Variation is 12W at A and 14W at B You flight-plan WCA 8L. When the remaining distance to B is 35 NM you find that your position is 5 NM right of the flight plan track. Since over A you have steered as flight planned. What change of heading is required at this time to bring you directly to B?

a 3° left

b 8° left

c **11° left**

d 14° left

596 id 7119 TT from A to B is 167°, and the distance is 140 NM. Variation is 12W at A and 14W at B You flight-plan WCA 8L. When the remaining distance to B is 35 NM you notice that your position is 5 NM right of the flight plan track. Since over A you have steered as flight planned. What has the drift been since you were overhead A?

a 10,8 R

b 2,9 R

c 5,6 R

d 12,2 R

61.05.04. Flight log (including navigation records)

597 id 5570 The flight log gives the following data : "True track, Drift, True heading, Magnetic variation, Magnetic heading, Compass deviation, Compass heading" The right solution, in the same order, is :

a 125°, 2°R, 123°, 2°W, 121°, -4°, 117°

b 115°, 5°R, 120°, 3°W, 123°, +2°, 121°

c 117°, 4°L, 121°, 1°E, 122°, -3°, 119°

d 119°, 3°L, 122°, 2°E, 120°, +4°, 116°

61.05.05. Purposes of FMS (flight management systems)

598 id 4762 The purpose of the Flight Management System (FMS), as for example installed in the B737-400, is to provide:

a both manual navigation guidance and performance management

b manual navigation guidance and automatic performance management

c continuous automatic navigation guidance as well as manual performance management

d continuous automatic navigation guidance and performance management

599 id 4763 Which component of the B737-400 Flight Management System (FMS) is used to enter flight plan routeing and performance parameters?

a Flight Management Computer

b Multi-Function Control Display Unit

c Inertial Reference System

d Flight Director System

600 id 4764 What indication, if any, is given in the B737-400 Flight Management System if radio updating is not available?

a A warning message is displayed on the IRS displays

b A warning message is displayed on the EHSI and MFDU

c A warning message is displayed on the Flight Director System

d No indication is given so long as the IRS positions remain within limits

601 id 4765 What is the validity period of the 'permanent' data base of aeronautical information stored in the FMC In the B737-400 Flight Management System?

a 28 days

b one calendar month

c 3 calendar months

d 14 days

602 id 4766 In the B737-400 Flight Management System the CDUs are used during preflight to:

a **manually initialize the IRSs and FMC with dispatch information**

b automatically initialize the IRSs and FMC with dispatch information

c manually initialize the Flight Director System and FMC with dispatch information

d manually initialize the IRSs, FMC and Autothrottle with dispatch information

603 id 4767 How is the radio position determined by the FMC in the B737-400 Electronic Flight Instrument System?

a DME ranges and/ or VOR/ADF bearings

b DME/DME or VOR/DME

c **DME/DME**

d VOR/DME range and bearing

604 id 4768 In which of the following situations is the FMC present position of a B737-400 Electronic Flight Instrument System likely to be least accurate?

a At top of descent

b At top of climb

c **Just after take-off**

d On final approach

605 id 4769 What are, in order of highest priority followed by lowest, the two levels of message produced by the CDU of the B737-400 Electronic Flight Instrument System?

a Priority and Alerting

b Urgent and Routine

c **Alerting and Advisory**

d Urgent and Advisory

606 id 4770 Which of the following can all be stored as five letter waypoint identifiers through the CDU of a B737-400 Electronic Flight Instrument System?

a Waypoint names; navaid frequencies; runway codes; airport ICAO identifiers

b Airway names; navaid identifiers; airport names; waypoint code numbers

c **Waypoint names; navaid identifiers; runway numbers; airport ICAO identifiers**

d Waypoint names; navaid positions; airport ICAO identifiers; airport names

607 id 4771 Which of the following lists all the methods that can be used to enter 'Created Waypoints' into the CDU of a B737-400 Electronic Flight Instrument System?

a Identifier bearing/distance; place bearing/place bearing; latitude and longitude; waypoint name

b Identifier bearing/distance; place bearing/place distance; along/across-track displacement; latitude and longitude

c **Identifier bearing/distance; place bearing/place bearing; along-track displacement; latitude and longitude**

d Identifier bearing/distance; place distance/place distance; along-track displacement; latitude and longitude

608 id 4772 Which FMC/CDU page normally appears on initial power application to the B737-400 Electronic Flight Instrument System?

a **IDENT**

b INITIAL

c POS INIT

d PERF INIT

609 id 4773 | Which of the following lists the first three pages of the FMC/CDU normally used to enter data on initial start-up of the B737-400 Electronic Flight Instrument System?

a IDENT - RTE - DEPARTURE

b POS INIT - RTE - IDENT

c **IDENT - POS INIT - RTE**

d POS INIT - RTE - DEPARTURE

610 id 7120 | The Flight management System consists of the following major units:

a The flight management unit and a VOR/DME computerised receiver unit

b **The Flight management computer and the Command display unit**

c The Command display unit and an INS unit

d The Command and display unit and a flight-planning computer

611 id 7121 | A typical FMS installation consists of 2 EFIS and 2 CDU. When the FMC switch is placed in the "ALTN" position

a **The related CDU and EFIS displays will be connected to the other computer**

b The EFIS displays will shift between the 2 FMCs every 30 seconds

c The pilot will be presented with an alternative picture on his EFIS at the interval he selects

d Alternative sources of data are used to supply data to the FMC

61.06. INERTIAL NAVIGATION SYSTEMS (INS)

61.06.01. Principles and practical application

612 id 1151 With reference to inertial navigation systems, a TAS input is:

a not required

b **required to provide a W/V read out**

c required for Polar navigation

d required for rhumb line navigation

613 id 1152 The platform of an inertial navigation system (INS) is maintained at right angles to the local vertical by applying corrections for the effects of:

a **aircraft manoeuvres, earth rotation, transport wander and coriolis**

b gyroscopic inertia, earth rotation and real drift

c vertical velocities, earth precession, centrifugal forces and transport drift

d movement in the yawing plane, secondary precession and pendulous oscillation

614 id 1154 Some inertial reference and navigation systems are known as "strapdown". This means that:

a **the gyroscopes and accelerometers become part of the unit's fixture to the aircraft structure**

b only the gyros, and not the accelerometers, become part of the unit's fixture to the aircraft structure

c gyros and accelerometers are mounted on a stabilised platform in the aircraft

d gyros and accelerometers need satellite information input to obtain a vertical reference

615 id 1156 In order to maintain an accurate vertical using a pendulous system, an aircraft inertial platform incorporates a device:

a without damping and a period of 84.4 MIN

b **with damping and a period of 84.4 MIN**

c without damping and a period of 84.4 SEC

d with damping and a period of 84.4 SEC

616 id 1834 The term drift refers to the wander of the axis of a gyro in:

a the vertical and horizontal plane

b the vertical plane

c **the horizontal plane**

d any plane

617 id 2758 In an Inertial Navigation System (INS), Ground Speed (GS) is calculated:

a from TAS and W/V from RNAV data

b from TAS and W/V from Air Data Computer (ADC)

c **by integrating measured acceleration**

d by integrating gyro precession in N/S and E/W directions respectively

618 id 4304 One of the errors inherent in a ring laser gyroscope occurs at low input rotation rates tending towards zero when a phenomenon known as 'lock-in' is experienced. What is the name of the technique, effected by means of a piezo-electric motor, that is used to correct this error?

a **dither**

b cavity rotation

c zero drop

d beam lock

619 id 4305 The resultant of the first integration of the output from the east/west accelerometer of an inertial navigation system (INS) in NAV MODE is:

a **velocity along the local parallel of latitude**

b change of longitude

c vehicle longitude

d departure

620 id 4306 Which of the following lists, which compares an Inertial Reference System that utilises Ring Laser Gyroscopes (RLG) instead of conventional gyroscopes, is completely correct?

a It does not suffer from 'lock in' error and it is insensitive to gravitational ('g') forces

b The platform is kept stable relative to the earth mathematically rather than mechanically but it has a longer 'spin up' time

c **There is little or no 'spin up' time and it is insensitive to gravitational ('g') forces**

d There is little or no 'spin up' time and it does not suffer from 'lock in' error

621 id 4307 The principle of 'Schuler Tuning' as applied to the operation of Inertial Navigation Systems/ Inertial Reference Systems is applicable to:

a only gyro-stabilised systems

b **both gyro-stabilised platform and 'strapdown' systems**

c both gyro-stabilised and laser gyro systems but only when operating in the non 'strapdown' mode

d only to 'strapdown' laser gyro systems

622 id 4308 The resultant of the first integration from the north/south accelerometer of an inertial navigation system (INS) in the NAV MODE is:

a latitude

b groundspeed

c change latitude

d **velocity along the local meridian**

623 id 4309 Double integration of the output from the east/west accelerometer of an inertial navigation system (INS) in the NAV MODE give:

a distance north/south

b vehicle longitude

c **distance east/west**

d velocity east/west

624 id 4751 What additional information is required to be input to an Inertial Navigation System (INS) in order to obtain an W/V readout?

a Mach Number

b IAS

c Altitude and OAT

d **TAS**

625 id 4752 What is the name given to an Inertial Reference System (IRS) which has the gyros and accelerometers as part of the unit's fixture to the aircraft structure?

a Solid state

b Rigid

c **Strapdown**

d Ring laser

626 id 7122 In a strap down INS the accelerometers are oriented with their axes

a With the local vertical, True North and True East

b With the lateral axis of the aircraft, True North/South and True East/West

c **Along yaw, longitudinal and lateral axis of the aircraft**

d With the local horizontal plane, The aircraft lateral axis and True North/South

627 id 7123 Few modern INS systems use a mechanically stabilised platform and mechanical gyros. These components has been replaced by

a Rotating accelerometers and analogue computers

b **Strap down Ring laser gyros and accelerometers plus advanced digital computers**

c A digital horizon and gyrosyn true-reading compass

d A combination of rate gyros and True North gyros

61.06.02. Alignment procedures

628 id 1146 During the alignment phase of an inertial platform, the platform orientation is determined:

a **through platform gyroscopes sensing the earth's angular components**

b through horizontal accelerometers sensing the earth's angular components of velocity

c by realizing the SCHULER condition before the platform is set horizontaly

d through a gyrocompass (Magnetic Slaved Indicator)

629 id 1147 During initial alignment an inertial navigation system is north aligned by inputs from:

a **horizontal accelerometers and the east gyro**

b the aircraft remote reading compass system

c computer matching of measured gravity magnitude to gravity magnitude of initial alignment

d vertical accelerometers and the north gyro

630 id 4310 During the initial alignment of an inertial navigation system (INS) the equipment:

a will accept a 10° error in initial latitude but will not accept a 10° error in initial longitude

b **will not accept a 10° error in initial latitude but will accept a 10° error in initial longitude**

c will not accept a 10° error in initial latitude or initial longitude

d will accept a 10° error in initial latitude and initial longitude

631 id 4311 Which of the following statement is correct concerning gyro-compassing of an inertial navigation system (INS)?

a Gyro-compassing of an INS is possible in flight because it can differentiate between movement induced and misalignment induced accelerations.

b **Gyro-compassing of an INS is not possible in flight because it cannot differentiate between movement induced and misalignment induced accelerations.**

c Gyro-compassing of an INS is possible in flight because it cannot differentiate between movement induced and misalignment induced accelerations.

d Gyro-compassing of an INS is not possible in flight because it can differentiate between movement induced and misalignment induced accelerations.

632 id 4734 Which of the following statements concerning the loss of alignment by an Inertial Reference System (IRS) in flight is correct?

a It is not usable in any mode and must be shut down for the rest of the flight

b The IRS has to be coupled to the remaining serviceable system and a realignment carried out in flight

c The mode selector has to be rotated to ATT then back through ALIGN to NAV in order to obtain an in-flight realignment

d **The navigation mode, including present position and ground speed outputs, is inoperative for the remainder of the flight**

633 id 4753 The alignment time, at mid-latitudes, for an Inertial Navigation System using gymballed gyros is approximately:

a **20 MIN**

b 30 MIN

c 10 MIN

d 5 MIN

634 id 4754 The alignment time, at mid-latitudes, for an Inertial Reference System using laser ring gyros is approximately:

a 5 MIN

b 20 MIN

c 2 MIN

d **10 MIN**

635 id 4755 Which of the following statements concerning the alignment procedure for Inertial Navigation Systems(INS)/Inertial Reference Systems (IRS) at mid-latitudes is correct?

a INS/IRS can only be aligned in the ALIGN mode

b **INS/IRS can be aligned in either the ALIGN or NAV mode**

c INS/IRS can be aligned in either the ALIGN or ATT mode

d INS/IRS can only be aligned in NAV mode

636 id 5589 A pilot accidently turning OFF the INS in flight, and then turns it back ON a few moments later. Following this incident:

a everything returns to normal and is usable

b no useful information can be obtained from the INS

c **it can only be used for attitude reference**

d the INS is usable in NAV MODE after a position update

61.06.03. Accuracy, reliability, errors and coverage

637 id 1149 The azimuth gyro of an inertial unit has a drift of 0.01°/HR. After a flight of 12 HR with a ground speed of 500 kt, the error on the aeroplane position is approximately :

a 12 NM

b 1 NM

c **6 NM**

d 60 NM

638 id 1150 The drift of the azimuth gyro on an inertial unit induces an error in the position given by this unit. "t" being the elapsed time. The total error is:

a sinusoîdal

b proportional to the square of time, t^2

c proportional to t/2

d **proportional to t**

61.06.04. Flight deck equipment and operation

639 id 4312 With reference to an inertial navigation system (INS), the initial great circle track between computer inserted waypoints will be displayed when the control display unit (CDU) is selected to:

a TK/GS

b HDG/DA

c **DSRTK/STS**

d XTK/TKE

640 id 4313 Gyrocompassing of an inertial reference system (IRS) is accomplished with the mode selector switched to:

a ATT/REF

b STBY

c **ALIGN**

d ON

641 id 4318 Which of the following correctly lists the order of available selections of the Mode Selector switches of an inertial reference system (IRS) mode panel?

a OFF - ON - ALIGN - NAV

b **OFF - ALIGN - NAV - ATT**

c OFF - STBY - ALIGN - NAV

d OFF - ALIGN - ATT - NAV

642 id 4732 ATT Mode of the Inertial Reference System (IRS) is a back-up mode providing:

a **only attitude and heading information**

b only attitude information

c navigation information

d altitude, heading and position information

643 id 4756 Which of the following statements concerning the operation of an Inertial Navigation System (INS)/Inertial Reference System (IRS) is correct?

a NAV mode must be selected prior to movement of the aircraft off the gate

b NAV mode must be selected on the runway just prior to take-off

c NAV mode must be selected prior to the loading of passengers and/or freight

d NAV mode must be selected when the alignment procedure is commenced

644 id 4757 Which of the following statements concerning the aircraft positions indicated on a triple fit Inertial Navigation System (INS)/ Inertial Reference System (IRS) on the CDU is correct?

a The positions will only differ if one of the systems has been decoupled because of a detected malfunction

b The positions will be the same because they are an average of three different positions

c The positions are likely to differ because they are calculated from different sources

d The positions will only differ if an error has been made when inputting the present position at the departure airport

645 id 5599 Waypoints can be entered in an INS memory in different formats. In which of the following formats can waypoints be entered into all INSs?

a bearing and distance

b geographic coordinates

c hexadecimal

d by waypoints name

646 id 5799 An aircraft equipped with an Inertial Navigation System (INS) flies with INS 1 coupled with autopilot 1. Both inertial navigation systems are navigating from way-point A to B. The inertial systems' Central Display Units (CDU) shows: - XTK on INS 1 = 0 - XTK on INS 2 = 8L (XTK = cross track) From this information it can be deduced that:

a the autopilot is unserviceable in NAV mode

b only inertial navigation system No. 2 is drifting

c only inertial navigation system No. 1 is drifting

d at least one of the inertial navigaton systems is drifting

61.06.05. INS operation

647 id 1148 An aircraft is flying with the aid of an inertial navigation system (INS) connected to the autopilot. The following two points have been entered in the INS computer: WPT 1: 60°N 030°W WPT 2: 60°N 020°W When 025°W is passed the latitude shown on the display unit of the inertial navigation system will be:

a 60°00.0'N

b 60°05.7'N

c 59°49.0'N

d 60°11.0'N

648 id 1153 An aircraft travels from point A to point B, using the autopilot connected to the aircraft's inertial system. The coordinates of A (45°S 010°W) and B (45°S 030°W) have been entered. The true course of the aircraft on its arrival at B, to the nearest degree, is:

a 277°

b 284°

c 263°

d 270°

649 id 1155 As the INS position of the departure aerodrome, coordinates 35°32.7'N 139°46.3'W are input instead of 35°32.7'N 139°46.3'E. When the aircraft subsequently passes point 52°N 180°W, the longitude value shown on the INS will be:

a 080° 27.4'E

b 099° 32.6'E

c **099° 32.6'W**

d 080° 27.4'W

650 id 4314 The following points are entered into an inertial navigation system (INS). WPT 1: 60°N 30°W WPT 2: 60°N 20°W WPT 3: 60°N 10°W The inertial navigation system is connected to the automatic pilot on route (1-2-3). The track change when passing WPT 2 will be approximately:

a a 9° increase

b zero

c **a 9° decrease**

d a 4° decrease

651 id 4315 The automatic flight control system (AFCS) in an aircraft is coupled to the guidance outputs from an inertial navigation system (INS) and the aircraft is flying from waypoint No. 2 (60°00'S 070°00'W) to No. 3 (60°00'S 080°00'W). Comparing the initial track (°T) at 070°00'W and the final track (°T) at 080°00'W, the difference between them is that the initial track is approximately:

a 9° greater than the final one

b 5° greater than the final one

c **9° less than the final one**

d 5° less than the final one

652 id 4316 The automatic flight control system is coupled to the guidance outputs from an inertial navigation system. Which pair of latitudes will give the greatest difference between initial track read-out and the average true course given, in each case, a difference of longitude of 10°?

a 30°S to 25°S

b 60°N to 50°N

c 30°S to 30°N

d **60°N to 60°N**

653 id 4317 The automatic flight control system (AFCS) in an aircraft is coupled to the guidance outputs from an inertial navigation system (INS). The aircraft is flying between inserted waypoints No. 3 (55°00'N 020°00'W) and No.4 (55°00'N 030°00'W). With DSRTK/STS selected on the CDU, to the nearestwhole degree, the initial track read-out from waypoint No. 3 will be:

a 278°

b **274°**

c 266°

d 270°

654 id 4696 What is the source of magnetic variation information in a Flight Management System (FMS)?

a Magnetic variation is calculated by each IRS based on the respective IRS position and the aircraft magnetic heading

b The main directional gyro which is coupled to the magnetic sensor (flux valve) positioned in the wingtip

c The FMS calculates MH and MT from the FMC position

d **Magnetic variation information is stored in each IRS memory; it is applied to the true heading calculated by the respective IRS**

655 id 4698 Where and when are the IRS positions updated?

a During flight IRS positions are automatically updated by the FMC

b **Only on the ground during the alignment procedure**

c IRS positions are updated by pressing the 'Take-off/ Go-around' button at the start of the take-off roll

d Updating is normally carried out by the crew when over-flying a known position (VOR station or NDB)

656 id 4733 Which of the following statements concerning the position indicated on the Inertial Reference System (IRS) display is correct?

a It is updated when 'go-around' is selected on take-off

b It is constantly updated from information obtained by the FMC

c **It is not updated once the IRS mode is set to NAV**

d The positions from the two IRSs are compared to obtain a 'best position' which is displayed on the IRS

657 id 5595 The sensors of an INS measure:

a precession

b velocity

c the horizontal component of the earth's rotation

d **acceleration**