

LATITUDES AND LONGITUDES

KCSE 1989 – 2012 Form 4 Mathematics

Answer all the questions

1.

1989 Q18 P1

A globe representing the earth has a radius 0.5m. Points $A(10^\circ W)$, $B(0^\circ, 35^\circ E)$, $P(60^\circ N, 110^\circ E)$ and $Q(60^\circ N, 120^\circ W)$ are marked on the globe.

(a) Find the length of the arc AB, leaving your answer in terms of π (3marks)

(b) If O is the centre of the latitude $60^\circ N$, find the area of the minor sector OPQ (5marks)

2.

1990 Q18 P1

(a) Calculate the distance round the latitude $60^\circ N$. (4marks)

(Take the radius of the earth, $R = 6370$ km and $\pi = \frac{22}{7}$)

(b) An aeroplane flew due south from a point

A ($60^\circ N, 45^\circ E$), to a point B. The distance covered by the aeroplane was 800km. Determine the position of B. (4marks)

3.

1991 Q13 P2

The latitude and longitude of two stations A and B are ($47^\circ N, 25^\circ E$) and ($47^\circ N, 70^\circ E$). Calculate the distance in nautical miles between A and B along latitude $47^\circ N$. (3marks)

4.

1992 Q11 P2

A point Q is 2000 nm to the west of P ($60^\circ N, 0^\circ$). Find the longitude of Q to the nearest degree.

(3marks)

5.

1994 Q18 P1

A and B are two points on the latitude $40^\circ N$. The two points lie on the longitudes $20^\circ W$ and $100^\circ E$ respectively. Calculate

(i) The distance from A to B along a parallel of latitude (5marks)

(ii) The shortest distance from A to B along a great circle (Take $\pi = \frac{22}{7}$ and $R = 6370$ km) (4marks)

6.

1995 Q24 P1

An aeroplane flies from a point A ($1^\circ 15' S, 37^\circ E$) to a point B directly north of A. The arc AB subtends an angle of 45° at the centre of the earth. From B, the aeroplane flies due West to a point C on longitude $23^\circ W$. (Take the value of π as $\frac{22}{7}$ and radius of the earth as 6370)

a) (i) Find the latitude of B

(ii) Find the distance travelled by the aeroplane between B and C (5marks)

b) The aeroplane left B at 1.00 am local time. When the aeroplane was leaving B, what was the local time at C? (2marks)