NAME……………………………………………….ADM NO…………

REVISION EXAM: LATITUDE AND LONGITUDE   **FORM 4**

TIME: 1 HOUR 30 MINUTES

Answer all questions

(Take $\pi=\frac{22}{7}$, $R = 6371km$, $Hint\ 1nm = 1.853km$)

1. Find the distance between points P (40^0 N, 50^0E) and Q(20^030'S, 50^0E) and express it in;

    a. Nm   (2 marks)

    b. Km   (2 marks)

2. Find the distance between points A(0^0,30^0E) and B(0^0,50^0E) and express it in
    a. Nm   (2 marks)

    b. Km   (2 marks)

3. Find the distance in **km** and **nm** between two points P(30^0N,45^0E) and Q(30^0N,60^0W)

    (4 marks)

4. Find the distance between point A(50^0S,25^0E) and B(50^0S,140^0E) in ***KM*** and ***NM***.

    (4 marks)

5. P and Q are two points on latitude 50^0N. They lie on longitudes 48^0W and 132^0E respectively. Find the distance in nautical miles;
    a. Along a parallel of a latitude   (3 marks)

    b. Along a great circle   (2 marks)

6. Find the circumference of the latitude 70^0S in km.   (2 marks)

7. Find the circumference of tropic of cancer (23.5N) in nm.   (2 marks)

8. Find the length of the parallel of latitude through Nairobi (1^0S,37^0E) in **nm**.   (2 marks)

9. A ship sails 450nm due East of a point T (40^0N,60^0E). find the new longitude. (3 marks)

10. A spherical globe is of radius 20cm. find the shortest distance along the equator between longitude 15^0W and 120^0E.   (3 marks)

11. Two points P and Q on the surface of the earth are on the same latitude. The difference between their longitude is 72^0. If the distance between them along the latitude is 1280km, find the latitude of P and Q   (4 marks)

12. A point B is due east of A along the equator. The distance between A and B is 1040KM. if the longitude of A is 15^0E, calculate the longitude of B.   (4 marks)

13. Find the shortest distance between two P(50^0N, 70^0W) and Q(50^0N, 110^0E) on the earth's surface in km. (3 marks)

14. Find the local time of Nairobi (1^0S, 37^0E) when the local time of Mandera (4^0N, 42^0E) is 3.00pm. (3 marks)

15. If the local time of London (52^0N, 0^0) is 12.00 noon. Find the local time of Nairobi (1^0S, 37^0E) (3 marks)

16. If the local time of a point $A(0^0, 170^0E)$ is 12.30 a.m on Monday, find the local time of a point $B(0^0, 170^0W)$ (3 marks)

17. A ship leaves Mombasa $(4^0S, 39^0E)$ and sails due east for 98 hours to a point $K(40^0S, 80^0E)$ in the Indian Ocean. Calculate its average speed in;
    a. Km/h (3 marks)

    b. Knots (3 marks)

18. A ship leaves port $(50^0N, 120^0W)$ and sails due west at an average speed of 30 knots. How many nautical miles has it travelled after sailing continuously for 3 days and what is its latitude then? (3marks)

19. A plane leaves an airport X(41.5^0N,36.4^0W) at 9.00 am and flies due north to airport Y on latitude 53.2^0N.
    a. Calculate the distance covered by the plane in km. (4 marks)

    b. After stopping for 30 minutes to refuel at Y the plane than flies due east to airport Z 2500km from Y. Find:
        i.   The position of Z. (3 marks)

        ii.   The time the plane lands at Z, if its speed is 500km/h. (3 marks)

20. A and B are two points on the latitude 50^0N. The two points lie on longitudes 30^0E and 150^0W respectively.
   a. Calculate;
      i. The distance in km from A to B along a parallel of latitude.   (5 marks)

      ii. The shortest distance from A to B along a great circle in **nm**.   (3 marks)

   b. An aircraft takes 54 hours to fly between the two points A and B along the great circle. Calculate its speed in knots.   (2 marks)