CHAPTER 07 COORDINATE GEOMETRY

SUBJECT: MATHEMATICS **MAX. MARKS : 40**

CLASS : X **DURATION : 1½ hrs**

General Instructions:

(i). **All** questions are compulsory.

(ii). This question paper contains 2**0** questions divided into five Sections A, B, C, D and E.

(iii). **Section A** comprises of **10 MCQs** of **1 mark** each. **Section B** comprises of 4 questions of **2 marks** each. **Section C** comprises of 3 questions of **3 marks** each. **Section D** comprises of 1 question of **5 marks** each and **Section E** comprises of 2 Case Study Based Questions of **4 marks** each.

(iv). There is no overall choice.

(v). Use of Calculators is not permitted

SECTION – A

Questions 1 to 10 carry 1 mark each.

1. Three vertices of a parallelogram ABCD are A(1, 4), B(–2, 3) and C(5, 8). The ordinate of the fourth vertex D is

(a) 8 (b) 9 (c) 7 (d) 6

2. Points A(–1, y) and B(5, 7) lie on a circle with centre O(2, –3y). The values of y are

(a) 1, –7 (b) –1, 7 (c) 2, 7 (d) –2, –7

3. If A(4, –2), B(7, –2) and C(7, 9) are the vertices of a ΔABC, then ΔABC is

(a) equilateral triangle (b) isosceles triangle

(c) right angled triangle (d) isosceles right angled triangle

4. If (a, b) is the mid point of the line segment joining the points A (10, –6) and B (k, 4) and a – 2b = 18, the values of k is

(a) 30 (b) 22 (c) 4 (d) 40

5. The coordinate of point P on X-axis equidistant from the points A (–1, 0) and B (5, 0) is

(a) (2, 0) (b) (0, 2) (c) (3, 0) (d) (2, 2)

6. A circle drawn with origin as the centre passes through $\left(\frac{13}{2}, 0\right)$. The point which does not lie in the interior of the circle is

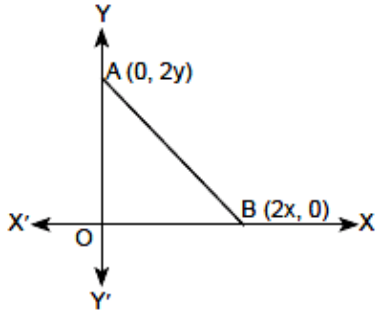
(a) $\left(-\frac{3}{4}, 1\right)$ (b) $\left(2, \frac{7}{3}\right)$ (c) $\left(5, -\frac{1}{2}\right)$ (d) $\left(-6, \frac{5}{2}\right)$

7. If P(1, 2), Q(4, 6), R(5, 7) and S(a, b) are the vertices of a parallelogram PQRS, then

(a) a = 2, b = 4 (b) a = 3, b = 4(c) a = 2, b = 3 (d) a = 3, b = 5

8. The coordinates of the point which is equidistant from the three vertices of the ΔAOB as shown in the figure is

(a) (x, y) (b) (y, x) (c) $\left(\frac{x}{2}, \frac{y}{2}\right)$ (d) $\left(\frac{y}{2}, \frac{x}{2}\right)$



In the following questions 9 and 10, a statement of assertion (A) is followed by a statement of reason (R). Mark the correct choice as:

(a) Both assertion (A) and reason (R) are true and reason (R) is the correct explanation of assertion (A).
(b) Both assertion (A) and reason (R) are true but reason (R) is not the correct explanation of assertion (A).
(c) Assertion (A) is true but reason (R) is false.
(d) Assertion (A) is false but reason (R) is true.

9. **Assertion (A):** Mid-point of a line segment divides line in the ratio 1 : 1.
Reason (R): The ratio in which the point (–3, k) divides the line segment joining the points (–5, 4) and (–2, 3) is 1 : 2.

10. **Assertion (A):** The origin is the only point equidistant from (2, 3) and (-2, -3).
Reason (R): The origin is the mid-point of the line joining (2, 3) and (-2, -3).

SECTION – B

Questions 11 to 14 carry 2 marks each.

11. The line segment AB joining the points A(3, –4) and B(1, 2) is trisected at the points P(p, –2) and Q(5/3, q). Find the values of p and q.

12. Find the point on x-axis which is equidistant from the points (2, – 5) and (–2, 9).

13. Find the value of x such that PQ = QR where the coordinates of P, Q and R are (6, –1), (1, 3) and (x, 8) respectively.

14. Find the coordinates of the point of trisection of the line segment joining (1, –2) and (–3, 4).
Ans: Let the points P and Q trisect AB.

SECTION – C

Questions 15 to 17 carry 3 marks each.

15. Show that the points A(3, 5), B(6, 0), C(1, – 3) and D(–2, 2) are the vertices of a square ABCD.

16. In what ratio does the line $x - y - 2 = 0$ divide the line segment joining (3, –1) and (8, 9)?

17. Show that points A(7, 5), B(2, 3) and C(6, – 7) are the vertices of a right triangle. Also find its area.

OR

Find the ratio in which the point (2, y) divides the line segment joining the points A(–2, 2) and B(3, 7). Also find the value of y.

SECTION – D

Questions 18 carry 5 marks.

18. Find the centre of a circle passing through (5, – 8), (2, – 9) and (2, 1).

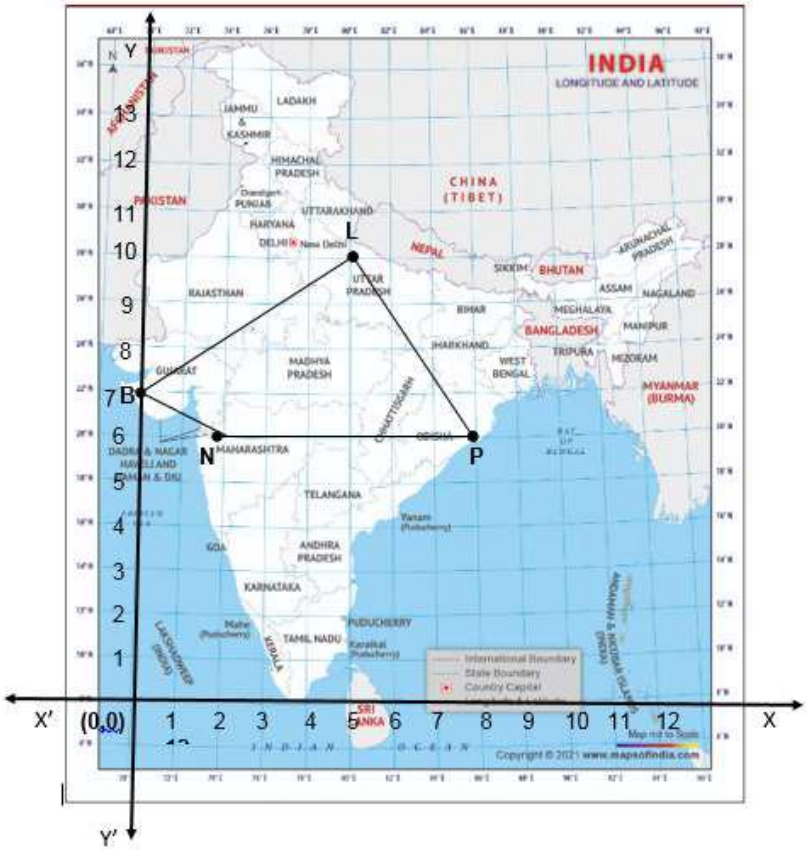
OR

If the points (10, 5), (8, 4) and (6, 6) are the mid-points of the sides of a triangle, find its vertices.

SECTION – E (Case Study Based Questions)

Questions 19 to 20 carry 4 marks each.

19. In a GPS, The lines that run east-west are known as lines of latitude, and the lines running north-south are known as lines of longitude. The latitude and the longitude of a place are its coordinates and the distance formula is used to find the distance between two places. The distance between two parallel lines is approximately 150 km. A family from Uttar Pradesh planned a round trip from Lucknow (L) to Puri (P) via Bhuj (B) and Nashik (N) as shown in the given figure below.



Based on the above information answer the following questions using the coordinate geometry.

(i) Find the distance between Lucknow (L) to Bhuj(B).

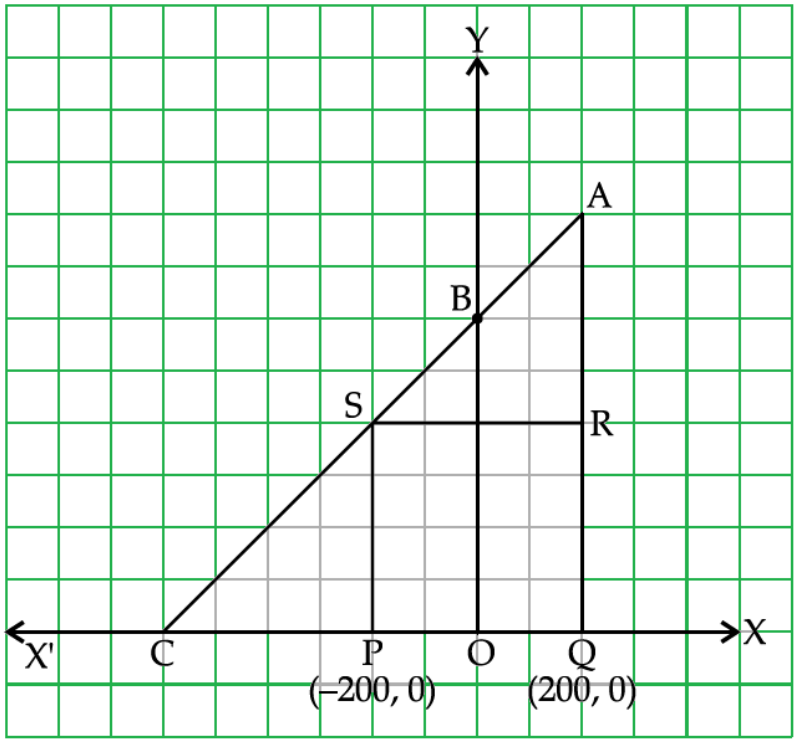
(ii) If Kota (K), internally divide the line segment joining Lucknow (L) to Bhuj (B) into 3 : 2 then find the coordinate of Kota (K).

(iii) Name the type of triangle formed by the places Lucknow (L), Nashik (N) and Puri (P)

OR

Find a place (point) on the longitude (y-axis) which is equidistant from the points Lucknow (L) and Puri (P).

20. Jagdhish has a field which is in the shape of a right angled triangle AQC. He wants to leave a space in the form of a square PQRS inside the field from growing wheat and the remaining for growing vegetables (as shown in the figure). In the field, there is a pole marked as O.



Based on the above information, answer the following questions:

(i) Taking O as origin, coordinates of P are (–200, 0) and of Q are (200, 0). PQRS being a square, what are the coordinates of R and S?

(ii) (a) What is the area of square PQRS ?

OR

(b) What is the length of diagonal PR in square PQRS?

(iii) If S divides CA in the ratio K : 1, what is the value of K, where point A is (200, 800) ?