EDUCATION DEPARTMENT, VILLUPURAM DISTRICT.

Class : X
Subject: Mathematics

UNIT TEST

UNIT 5 - Coordinate Geometry

Marks: 50
Time: 1½ hrs.

I Choose the correct answer. 7×1=7

1. **The area of triangle formed by the points (−5, 0), (0, −5) and (5, 0) is**
   a) 0 sq.units b) 25 sq.units c) 5 sq.units d) none of these
2. **The straight line given by the equation $x = 11$ is**
   a) parallel to X axis b) parallel to Y axis
   c) passing through the origin d) passing through the point (0, 11)
3. **If (5, 7), (3, p) and (6, 6) are collinear, then the value of p is**
   a) 3 b) 6 c) 9 d) 12
4. **The slope of the line joining (12, 3), (4, a) is $\frac{1}{8}$. The value of 'a' is**
   a) 1 b) 4 c) –5 d) 2
5. **The equation of a line passing through the origin and perpendicular to the line $7x - 3y + 4 = 0$ is**
   a) $7x - 3y + 4 = 0$ b) $3x - 7y + 4 = 0$ c) $3x + 7y = 0$ d) $7x - 3y = 0$
6. **When proving that a quadrilateral is a trapezium, it is necessary to show**
   a) Two sides are parallel. b) Two parallel and two non-parallel sides.
   c) Opposite sides are parallel. d) All sides are of equal length.
7. **(2, 1) is the point of intersection of two lines.**
   a) $x - y - 3 = 0; 3x - y - 7 = 0$ b) $x + y = 3; 3x + y = 7$
   c) $3x + y = 3; x + y = 7$ d) $x + 3y - 3 = 0; x - y - 7 = 0$

II Answer the following questions. (any 5) 5×2=10

1. If the area of the triangle formed by the vertices A(–1, 2), B(k, –2) and C(7, 4) (taken in order) is 22 sq. units, find the value of k.
2. Show that the given points are collinear: (–3, –4) , (7, 2) and (12, 5)
3. Find the equation of a line passing through the point (3,-4) and having slope $\frac{-5}{7}$
4. Find the equation of a line whose intercepts on the x and y axes are given below. 4, –6
5. Show that the straight lines $x - 2y + 3 = 0$ and $6x + 3y + 8 = 0$ are perpendicular.
6. Find the equation of a straight line which is parallel to the line $3x - 7y = 12$ and passing through the point (6, 4).
7. A cat is located at the point(–6, –4) in xy plane. A bottle of milk is kept at (5, 11). The cat wish to consume the milk travelling through shortest possible distance. Find the equation of the path it needs to take its milk.

III Answer the following questions. (any 5) 5×5=25

1. If the points A(–3, 9) B(a, b) and C(4, –5) are collinear and if a + b = 1, then find a and b.
2. Without using Pythagoras theorem, show that the points (1,-4) , (2,-3) and (4,-7) form a right angled triangle.

3. Show that the given points form a parallelogram: A (2.5, 3.5), B (10, –4), C (2.5, –2.5) and D (–5, 5).
4. A line makes positive intercepts on coordinate axes whose sum is 7 and it passes through (–3, 8). Find its equation.
5. Find the equation of the median and altitude of ΔABC through A where the vertices are A(6, 2) , B(–5, –1) and C(1, 9)
6. Find the equation of a straight line through the intersection of lines $5x - 6y = 2$, $3x + 2y = 10$ and perpendicular to the line $4x - 7y + 13 = 0$
7. Find the equation of a straight line joining the point of intersection of $3x + y + 2 = 0$ and $x - 2y - 4 = 0$ to the point of intersection of $7x - 3y = -12$ and $2y = x + 3$.

IV Answer the following question. 1×8=8

1. a) A company initially started with 40 workers to complete the work by 150 days. Later, it decided to fasten up the work increasing the number of workers as shown below.

Number of workers (x)	40	50	60	75
Number of days (y)	150	120	100	80

(i) Graph the above data and identify the type of variation.

(ii) From the graph, find the number of days required to complete the work if the company decides to opt for 120 workers?

(iii) If the work has to be completed by 30 days, how many workers are required?

(OR)

b) Draw the graph of $y = x^2 + 3x - 4$ and hence use it to solve $x^2 + 3x - 4 = 0$

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