UNIT TEST – 5(Coordinate geometry, Graphs, Practical geometry)
MATHEMATICS

CLASS: X standard **Marks : 100**
Time : 2.30 Hours

PART-I [Marks 14]

Answer all the 14 questions **14x1=14**

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. A man walks near a wall, such that the distance between him and the wall is 10 units. Consider the wall to be the *Y* axis. The path travelled by the man is
(a) $x = 10$ (b) $y = 10$ (c) $x = 0$ (d) $y = 0$

3. 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)

4. If (5, 7), (3, *p*) and (6, 6) are collinear, then the value of *p* is
(a) 3 (b) 6 (c) 9 (d) 12

5. The point of intersection of $3x - y = 4$ and $x + y = 8$ is
(a) (5,3) (b) (2,4) (c) (3,5) (d) (4,4)

6. The slope of the line joining (12,3),(4, *a)* is 1/ 8 . The value of '*a*' is
(a) 1 (b) 4 (c) -5 (d) 2

7. The slope of a vertical line is_____
(a) 0^o (b) 90^o (c) 45^o (d) undefined

8. The inclination of *X* axis and every line parallel to *X* axis is
(a) 0^o (b) 90^o (c) 45^o (d) 60^o

9. The slope of the line which is perpendicular to a line joining the points (0,0) and (–8,8) is

(a) -1 b) 1 (c) 1/3 (d) -8

10 .If *A* is a point on the *Y* axis whose ordinate is 8 and *B* is a point on the *X* axis whose abscissa is 5 then the equation of the line *AB* is

(a) 8x+5y=40 (b) 8x-5y=40 (c) x=8 (d) y=5

11. A straight line has equation 8*y*= *4x*+21. Which of the following is true?
(a) The slope is 0.5 and the *y* intercept is 2.6 (b) The slope is 5 and the *y* intercept is 1.6
(c) The slope is 0.5 and the *y* intercept is 1.6 (d) the slope is 5 and the *y* intercept is 2.6

12. 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.

13. When proving that a quadrilateral is a parallelogram by using slopes you must find
(a) The slopes of two sides (b) The slopes of two pair of opposite sides
(c) The lengths of all sides (d) Both the lengths and slopes of two sides

14. (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

PARTS-II [MARKS: 20]

Answer all the questions [Question number 28 is compulsory] 10x2=20

15. Show that the points *P* (-1.5, 3), *Q* (6,-2), *R* (-3, 4) are collinear

16. Find the slope of a line joining the given points (-6, 1) and (-3, 2)

17. The line *r* passes through the points (–2, 2) and (5, 8) and the line *s* passes through the points (–8, 7) and (–2, 0). Is the line *r* perpendicular to *s?*

18. The line *p* passes through the points (3, - 2), (12, 4) and the line *q* passes through the points (6,-2) and (12, 2). Is *p* parallel to *q?*

19. The line through the points (-2, *a)* and (9, 3) has slope – 1/2. Find the value of *a*.

20. Find the equation of a straight line whose inclination is 45° and *y* intercept is 11

21. Calculate the slope and *y* intercept of the straight line 8x-7y+6=0

22. Find the equation of a line passing through the point (3,-4) and having slope -5 / 7

23 Find the equation of a straight line passing through(5,-3) and (7,-4)

24. Find the intercepts made by the following lines on the coordinate axes 4x-9y+36=0

25. Find the equation of a line whose intercepts on the *x* and *y* axes are given -5, 3/4

26. Show that the straight lines 2x+3y-8=0 and $4x+6y+18=0$ and are parallel

27. Show that the straight linesx-2y+3=0 and $6x+3y+8=0$ and are perpendicular.

28. Find the equation of a straight line which is parallel to 3x-7y=12 the line and passing through the point (6, 4).

PARTS-III [MARKS: 50]

Answer all the questions [Question number 42 is compulsory] 10x5=50

29. 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.

30. If the points $P(-1,-4)$, $Q(b, c)$ and $R(5,-1)$ are collinear and if $2b+c=4$, then find the values of b and c.

31. The floor of a hall is covered with identical tiles which are in the shapes of triangles. One such triangle has the vertices at (-3, 2) (-1,-1) and (1, 2). If the floor of the hall is completely covered by 110 tiles, find the area of the floor.

32. Find the area of the quadrilateral formed by the points (–9, –2), (–8, –4), (2, 2) and (1, –3)

33. Find the value of k, if the area of a quadrilateral is 28 sq.units, whose vertices are (–4, –2), (–3, k), (3, –2) and (2, 3)

34. Without using Pythagoras theorem, show that the points (1-4), (2,-3) and

(4,-7) form a right angled triangle.

35. Let A (3,-4), B (9,-4), C (5,-7) and D (7,-7). Show that $ABCD$ is a trapezium.

36. A line makes positive intercepts on coordinate axes whose sum is 7 and it

passes through (-3, 8). Find its equation

37. Find the equation of the median of ΔABC through A where the vertices are A (6, 2), B (-5,-1), and C (1, 9)

38. Find the equation of a line passing through (6,–2) and perpendicular to the line joining the points (6, 7) and (2,–3).

39.A(-3,0)B(10,-2) and $C(12,3)$ are the vertices of ΔABC . Find the equation of the altitude through A

40. Find the equation of the perpendicular bisector of the line joining the points A (-4, 2) and B (6,-4)

41. Find the equation of a straight line through the intersection of lines $5x - 6y = 2$, $3x + 2y = 10$ and perpendicular to the line $4x - 7y + 13 = 0$

42. Find the equation of a straight line through the point of intersection of the lines $8x + 3y = 18$, $4x + 5y = 9$ and bisecting the line segment joining the points (5,–4) and (–7, 6).

PARTS-IV [MARKS: 16]

Answer both questions **2x8=16**

43. a) Draw a circle of diameter 6 cm from a point P, which is 8 cm away from its centre. Draw the two tangents PA and PB to the circle and measure their lengths.

(Or)

b) Draw a triangle ABC of base BC = 5.6 cm, $A = \angle 40^{o}$ and the bisector of ĐA meets BC at D such that CD = 4 cm.

44. a) Draw the graph of $y = x^2 + x - 2$ and hence use it to solve $x^2 + x - 2 = 0$

(Or)

b) Draw the graph of $y = x^2 - 5x - 6$ and hence use it to solve $x^2 - 5x - 14 = 0$

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