

## COMMON SECOND MID-TERM TEST - 2019

V

Standard IX

Reg.No.

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Time: 2.30 hours.

MATHEMATICS

Marks 100

## Part - I

## I. Choose the correct answer:

14 x 1 = 14

- If  $(x-2, 4) = (6, y+2)$  then  $(x, y) =$   
 a) (1,0)      b) (8,2)      c) (2,8)      d) (2,-2)
- Mid point of  $(-a, 2b)$  and  $(-3a, -4b)$  is  
 a)  $(2a, 3b)$       b)  $(-2a, -b)$       c)  $(2a, b)$       d)  $(-2a, -3b)$
- The centroid of the triangle whose vertices are  $A(6, -1)$ ,  $B(8, 3)$ ,  $C(10, -5)$  is  
 a)  $(-8, 1)$       b)  $(8, -1)$       c)  $(0, 1)$       d)  $(1, 0)$
- The mid point of  $(-2p, 2q)$  and origin is  
 a)  $(p, q)$       b)  $(-p, -q)$       c)  $(-p, q)$       d)  $(-p, 2q)$
- If  $\sin A = \frac{1}{2}$  then  $\cos A =$   
 a)  $\frac{1}{2}$       b)  $\frac{\sqrt{3}}{2}$       c)  $\frac{1}{\sqrt{2}}$       d) 1
- If  $\tan \theta = \cot 37^\circ$ , then the value of  $\theta$  is  
 a)  $37^\circ$       b)  $53^\circ$       c)  $18^\circ$       d)  $72^\circ$
- The value of  $\frac{1 - \tan^2 45^\circ}{1 + \tan^2 45^\circ} =$   
 a) 2      b) 0      c) 1      d) -1
- If  $2 \sin 2\theta = \sqrt{3}$ , then the value of  $\theta$  is  
 a)  $90^\circ$       b)  $30^\circ$       c)  $45^\circ$       d)  $60^\circ$
- The value of  $\frac{\operatorname{cosec} 63^\circ}{\sec 27^\circ} =$   
 a) 0      b) 1      c)  $\infty$       d)  $63^\circ$
- The L.S.A of a cube of side 12 cm is  
 a)  $144 \text{ cm}^2$       b)  $196 \text{ cm}^2$       c)  $576 \text{ cm}^2$       d)  $664 \text{ cm}^2$
- The capacity of a water-tank of dimension 10 m x 5 m x 1.5 m is  
 a) 75 Lts.      b) 750 Lts.      c) 7500 Lts.      d) 75000 Lts.
- The perimeter of a triangle of sides 10 cm, 24 cm, 26 cm is  
 a) 50 cm      b) 60 cm      c) 24 cm      d) 30 cm
- The perimeter of an equilateral triangle is 30 cm, then the area is  
 a)  $10\sqrt{3} \text{ cm}^2$       b)  $12\sqrt{3} \text{ cm}^2$       c)  $15\sqrt{3} \text{ cm}^2$       d)  $25\sqrt{3} \text{ cm}^2$
- The volume of a cuboid whose dimensions are length = 12 cm, breadth = 8 cm, height = 6 cm is  
 a)  $576 \text{ cm}^3$       b)  $526 \text{ cm}^3$       c)  $276 \text{ cm}^3$       d)  $426 \text{ cm}^3$

## Part - II

## II. Answer any 10 questions: (Ques.No.28 is compulsory)

10 x 2 = 20

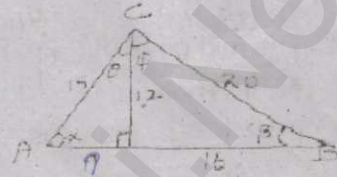
- Find the mid point of  $(\frac{1}{2}, -\frac{3}{7})$  and  $(\frac{3}{2}, -\frac{11}{7})$
- What are the coordinates of B if point P(-2, 3) divides the line segment joining A(-3, 5) and B internally in the ratio 1:6?

48 x 12

(2)

IX Maths

17. The point  $(3, -4)$  is the centre of a circle. If AB is a diameter of the circle and B is origin then find the coordinates of A.
18. Find the centroid of the triangle whose vertices are  $(5, -5)$ ,  $(1, -4)$  and  $(-6, 9)$ .
19. If  $(x, 3)$ ,  $(6, y)$ ,  $(8, 2)$  and  $(9, 4)$  are the vertices of a parallelogram taken in order, then find the value of  $x$  and  $y$ .
20. If  $\sin A = \frac{4}{5}$  then find  $\tan A$ .
21. Verify  $\cos^2 60 + \sin^2 60 = 1$
22.  $\left(\frac{\cos 47^\circ}{\sin 43^\circ}\right)^2 + \left(\frac{\sin 72^\circ}{\cos 18^\circ}\right)^2 - 2 \cos^2 45 = ?$
23. Show that  $\sin 90 = \sin 30 \cos 60 + \cos 30 \sin 60$



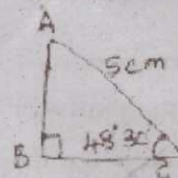
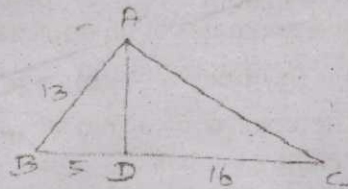
24. From the given figure, find the values of  $\sin \alpha$  and  $\cos \beta$
25. Express  $\cos 74^\circ$  in terms of sine and  $\cot 12^\circ$  in terms of tangent.
26. The lengths of sides of a triangular field are 28 m, 15 m and 41 m. Calculate the area of the field.
27. Find the area of an equilateral triangle whose perimeter is 180 cm.
28. Find the value of  $\tan 15^\circ \tan 30^\circ \tan 45^\circ \tan 60^\circ \tan 75^\circ$

## Part - III

## III. Answer any 10 questions: (Ques.No.42 is compulsory)

10 x 5 = 50

29. The mid points of sides of a triangle are  $(2, 4)$ ,  $(-2, 3)$ ,  $(5, 2)$ . Find the coordinates of the vertices of the triangle.
30. Find the points of trisection of the segment joining  $(-2, -1)$  and  $(4, 8)$
31. The vertices of a triangle are  $(1, 2)$ ,  $(h, -3)$  and  $(-4, k)$ . If the centroid is  $(5, -1)$  then find the value of  $\sqrt{(h+k)^2 + (h+3k)^2}$
32. A line segment AB is increased along its length by 25% by producing it to C on the side of B. If A and B have the coordinates  $(-2, -3)$  and  $(2, 1)$ , then find C.
33. Evaluate:  $\tan^2 60 - 2 \tan^2 45 - \cot^2 30 + 2 \sin^2 30 + \frac{3}{4} \operatorname{cosec}^2 45$
34. If  $\cos \theta : \sin \theta = 1 : 2$ , find the value of  $\frac{8 \cos \theta - 2 \sin \theta}{4 \cos \theta + 2 \sin \theta}$
35. From the adjacent figure, find the values of  
i)  $\sin B$  ii)  $\cot B$  iii)  $\tan C$  iv)  $\operatorname{cosec} C$
36. Find the area of right angled triangle with hypotenuse 5 cm and one of the acute angle is  $48^\circ 30'$   
( $\sin 48^\circ 30' = 0.7490$ ,  $\cos 48^\circ 30' = 0.6626$ ,  $\tan 48^\circ 30' = 1.1303$ )

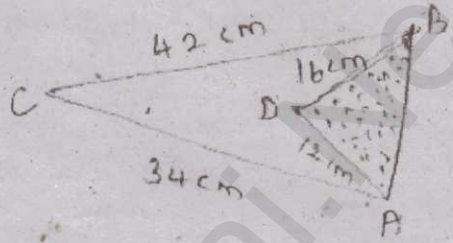


(3)

IX Maths

37. Find the angle made by a ladder of length 5 m with the ground, if one of its end is 4 m away from the wall and the other end is on the wall.
38. Find the value of  $\frac{\cot\theta}{\tan(90^\circ-\theta)} + \frac{\cos(90^\circ-\theta)\tan\theta\sec(90^\circ-\theta)}{\sin(90^\circ-\theta)\cot(90^\circ-\theta)\operatorname{cosec}(90^\circ-\theta)}$
39. Using Heron's formula, find the area of triangle whose side are 1.8 m, 8 m, 8.2 m
40. The adjacent sides of a parallelogram measures 34 m, 20 m and the measure of one of the diagonal is 42 m, find the area of parallelogram.

41. Find the area of the unshaded region.



42. Find the points which divide the line segment joining A(-11,4) and B(9,8) into four equal parts.

#### Part - IV

#### IV. Answer all the questions:

2 × 8 = 16

43. Find the coordinates of the point which divides the line segment joining the points (3,5) and (8,-10) internally in the ratio 3:2, by using the method of graph.

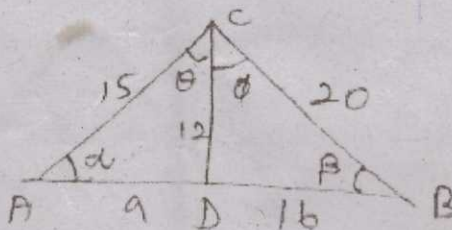
(or)

In what ratio does the point (-2,4) divide the line segment joining the points A(-3,6) and (1,-2) internally using the graph.

44. If  $(\frac{3}{2}, 5)$ ,  $(7, \frac{-9}{2})$  and  $(\frac{13}{2}, \frac{-13}{2})$  are mid-points of the sides of a triangle, then find the centroid of the triangle.

(or)

From the given figure, prove that  $\theta + \phi = 90^\circ$ . Also prove that there are two other right angled triangles. Find  $\sin\alpha$ ,  $\cos\beta$  and  $\tan\phi$ .



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