

10th CLASS MARCH - 2020
MATHS - I

Time : 2.45 Hours]

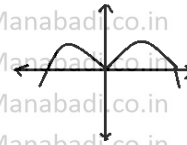
[Max. Marks : 50

I. Answer ALL the following questions :

12 x 1/2 = 6 M

1. Write prime factorization of 140.
2. What is the nature of roots if $b^2 - 4ac = 0$.
3. If A and B are disjoint sets, then how can you find $n(A \cup B)$.
4. Expand $\log \frac{p^2 q^3}{r}$
5. Find curved surface area of cylinder whose radius and height are 14cm, 21cm respectively.
6. If $2x + 3y = 12$ and $x - y - 1 = 0$ then find value of x.
7. How many solutions to the pair of equations $x + 2y + 5 = 0$ and $-3x - 6y + 1 = 0$ write without doing actual process.

8. Write how many zeros of the polynomial from the given figure



9. If the numbers in the list are $P, \frac{4P}{3}, \frac{5P}{3}, \dots$ find 6th term.

10. Volume of cone is $288\pi \text{ cm}^3$ and radius is 6cm. the find its height.

11. Write set builder form for $\{2, 4, 8, 16, 32\}$.

12. Check whether $(x - 1)^2 = 2x - 6$ is Quadratic equation (or) not?

II. Answer ALL the following questions.

8 x 1 = 8 M

13. If $A = \{1, 2, 3\}$, $B = \{2, 3, 4\}$ find $A - B$ and $B - A$.

14. If $a = +5$, $d = 3$, $n = 4$ find S_4 .

15. Check whether 1, -3 are zeros of the polynomial $P(x) = x^3 - 1$ (or) not.

16. Length, Breadth and height of cuboids are 6cm, 4cm, 2cm. respectively. Find its volume.

17. Write 9th term of the series 3, 9, 27, 81,.....

18. If $\log_5^{625} = x$ find x.

19. The cost of each Maths text book is `Y. The cost of each English book is `Z. if a shopkeeper purchased 15 Maths books and 12 English books and paid `5400. Write the linear equation for given data.

20. Find the total surface Area of hemisphere whose radius is 4.9 cm.

III. Answer all the following Questions

8 x 2 = 16 M

21. Write $2\log 3 + 3\log 5 - 5\log 2$ as a single logarithm.

22. Find Quadratic polynomial with zeros 2, -1.

23. Solve the equations $2x - y = 5$; $3x + 2y = 11$ by using substitution method.

24. Find the nature of roots of Quadratic equation $2x^2 - 3x + 5 = 0$. If real roots exists find them.

25. Determine the A.P whose 3rd term is 5 and 7th term is 9.

26. A sphere, a cylinder and a cone are of the same radius and same height. Find ratio of their curved Surface Areas.

27. Find 20th and nth term of the G.P

$\frac{5}{2}, \frac{5}{4}, \frac{5}{8}, \dots$

28. A cylinder and a cone have bases of equal radii and are of equal heights. Show that their volumes are in the ratio 3 : 1.

III. Answer the following Questions. 5 × 4 = 20 M

29. a) A cylindrical container is filled with ice cream whose diameter is 12cm and height is 15cm. The whole ice cream is distributed to 10 children in equal cones having hemispherical tops. If the height of the conical portion is twice the diameter of its base, find the diameter of ice cream cone.

(or)

b) 200 logs are stocked in the following manner. 20 logs in the bottom row, 19 in the next row, 18 in the row next to it. In how many rows the logs placed and find no. of logs in top row.

30. a) Find the roots of the equation $5x^2 - 6x - 2 = 0$ by the method of completing the square.

(or)

b) How many silver coins 1.75cm in diameter and thickness 2mm, need to be melted to form a cuboid of dimensions 5.5cm × 10cm × 3.5cm?

31. a) Prove that $\sqrt{3} + \sqrt{5}$ is an irrational number

(or)

b) Verify that 1, -1, -3 are the zeroes of the cubic polynomial $x^3 + 3x^2 - x - 3$ and check the relationship between zeroes and co-efficients.

32. a) If $A = \{x : x \text{ is a natural number}\}$

$B = \{x : x \text{ is an even natural number}\}$

$C = \{x : x \text{ is an odd natural number}\}$

$D = \{x : x \text{ is a prime number}\}$

Find i) $A \cap B$ ii) $A \cap C$ iii) $A \cap D$ iv) $C \cap D$

(or)

b) If a polygon of 'n' sides has $\frac{1}{2}n(n-3)$ diagonals. How many sides will a polygon having 65 diagonals. Is there any polygon with 50 diagonals.

33. a) Draw the graphs of given polynomial and find zeros. Justify your Answer.

$P(x) = x^2 - x - 12$

(or)

b) Check whether the following equations are consistent (or) Inconsistent. Solve them graphically.

$3x + 2y = 8$

$2x - 3y = 1$

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