

10th Standard Midterm Examination : 2024-25

Duration : 3 hrs 15 mts

Mathematics

Maximum Marks : 80

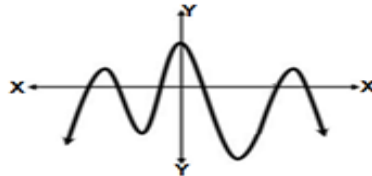
1) H.C.F(a,b) \times L.C.M(a,b) = 1 \times 8=8

- A) $a+b$ B) $a - b$ C) $a \times b$ D) $a \div b$

2) Which of the following is a prime number ?

- A) 39 B) 61 C) 81 D) 93

3) The graph of $p(x)$ is given below. The number of zeroes of $p(x)$ is :



- A) 3 B) 4 C) 6 D) 7

4) (5 , 3) is a solution for this equation

- A) $x + y = 2$ B) $3x + y = 17$ C) $x - y = 2$ D) $x + 2y = 10$

5) The roots of the equation $x^2 - x = 6$ are

- A) +1,-6 B) +3,-2 C) -3,-2 D) -1,+6

6) If $l^2 = r^2 + h^2$ then value of h is =

- A) $\pm (l^2 - r^2)$ B) $\pm \sqrt{l^2 - r^2}$ C) $\pm (r^2 - l^2)$ D) $\pm \sqrt{r^2 - l^2}$

7) The suitable formula to find the sum of first n terms of the A.P. $1+3+5+7+.$ is :

- A) $2n^2$ B) $n(n+1)$ C) n^2 D) $n(n-1)$

8) Which of the following forms a right angle triangle ?

- A) 12 , 8 , 13 B) 8 , 7 , 12 C) 8 , 15 , 17 D) 5 , 4 , 9

9) Write the fundamental theorem of arithmetics. 1 \times 8=8

10) Write degree of the polynomial : $5x^3 + 4x^2 + 7x$

11) 'Length is 4 more than the breadth' Represent this in the form of an equation.

12) If $(2x-1)(x+3) = 0$ then what is the positive root of the equation ?

13) If in an A.P. , $S_5 = 35$ and $S_4 = 22$ find the 5th term.

14) A square is not similar to a rectangle. Why ?

15) Write the formula to find the distance of a point (x , y) from the point of origin.

16) Write an example of a polynomial whose graph is parallel to x-axis.

17) Solve : $3x + 2y = 11$ and $2x - 3y = 3$ 2 \times 8=16

18) If the n^{th} term of an A.P. is $a_n = 3n-1$, find the A.P.

19) Do the lines of equations $2x + y + 4 = 0$ and $x + 2y - 5 = 0$ intersect ? Justify.

20) Find the quadratic polynomial whose zeroes are 5 and 3.

21) Find the smallest number which when divided by 6 and 8 gives a remainder 3 in each case.

OR

Find the greatest number that divides 39 and 51 leaving 3 as the remainder in each case?

- 22) Find the coordinates of the mid-point of the line segment joining the points (2,1) and (4,7).
- 23) In $\triangle ABC$, D and E are points on the sides AB and AC respectively such that $DE \parallel BC$.
If $AB=15\text{cm}$, $AD=6\text{cm}$, $AC=20\text{cm}$. Find the length of AE.
- 24) Find the HCF of 224 and 288. OR Find the L.C.M of 15, 30 and 45.
- 25) Prove that $\sqrt{3}$ is an irrational number. 3×6=18
- 26) Find the coordinates of the point dividing the line joining (-1,-3) and (4,7) in the ratio 2:3.

OR

Show that the points (1,-1), (5,2) and (9, 5) are collinear.

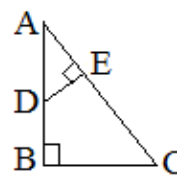
- 27) Solve the quadratic equation : $x^2 + x - 20 = 0$.

OR

Find the discriminant of the following equation: $4x^2 + 19x - 5 = 0$. Then state how many roots it has and whether they are real or imaginary.

- 28) Find the sum and product of the zeroes of the quadratic polynomial : $3x^2 + 10x - 5$
- 29) Prove that A(3,1), B(0,-2), C(1,1), and D(4,4) are the vertices of a parallelogram ABCD.
- 30) In $\triangle ABC$, $\angle B = 90^\circ$. D is any point on AB and $DE \perp AC$.

If $AC = 25\text{cm}$, $BC = 20\text{cm}$ and $DE = 4\text{cm}$, find AD.



OR

ABCD is a trapezium in which $AB \parallel CD$ and the diagonals intersect at O.

Prove that $AO \cdot OD = BO \cdot OC$.

- 31) 5 pens and 1 book together cost Rs. 225. Cost of 10 pens is equal to the cost of 1 book. Find the total cost of 3 pens and 2 books.
- 32) State and prove Basic Proportionality (Thales) Theorem.
- 33) Find the sum of first 20 terms of the A.P: $2 + 5 + 8 + \dots$

OR

Find the 50th term of the A.P: $0, 4, 8, 12, \dots$

- 34) Solve graphically : $x + y = 10$ and $x - y = 4$ 4×4=16
- 35) Prove that “If two triangles are equiangular, then they are similar”.
- 36) A shopkeeper buys some books for ₹80. If he had bought 4 more books for the same amount, each book would have cost ₹1 less. Find the number of books he bought.

OR

Sum of the areas of two squares is 400 cm^2 . If the difference of their perimeters is 16 cm, find the sides of the two squares.

- 37) The 4th and 7th term of an A.P. are 17 and 23 respectively. Find a_{15} .
- 38) A man starting from the point P walks 6 km towards North to reach the point Q. Then turns to East and walks 5 km to reach the point R. Again turns to North and walks 6 km to reach the point S. 5×1=5
- (i) Trace its map on a graph sheet.
- (ii) Write the coordinates of the points P, Q, R and S.
- (iii) Find how far is he from the starting point ?

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