

SECTION – I

I. Answer all the following questions

7×1=7

Each question carries 1 mark

1. Is $\log_{10} 2$ rational or irrational? Justify your answer?
2. $A = \{1, 3, 7, 8\}$ and $B = \{2, 4, 7, 3\}$ find $A \cup B$?
3. Find quadratic equation whose roots are 2, 6?
4. In Arithmetic progression (A.P) n^{th} term $t_n = a + (n - 1) d$. explain each term in it?
5. For what value of 'P' the following Pair of equations has a unique solution. $2x + py = -5$, $3x + 3y = -6$
6. Write the nature of the roots of the quadratic equation $2x^2 - 3x + 5 = 0$
7. Find the distance between two points A(4, 3) and B(8, 6)?

SECTION – II

I. Answer all the following questions

6 × 2 = 12

Each question carries 1 mark

1. Find the number of digits in 4^{2013} if $\log_{10} 2 = 0.3010$?
2. $A = \{1, 2, 3, 4, 5, 6\}$; $B = \{2, 4, 6, 8, 10\}$ find the intersection of A and B Represent venn diagram?
3. Find the zeros of the polynomial $x^2 - 5$ and verify the relationship between the zeros and the co-efficients?
4. Verify whether 1 and $\frac{3}{2}$ are the roots of the equation $2x^2 - 5x + 3 = 0$
5. How many two – digit number are divisible by 3?
6. Find the ratio in which the y-axis divides the line segment joining the point (5, - 6) and (- 1, -4)?

SECTION – 3

1. In this section, every question has internal choice
2. ...
3. Each question carries 4 marks.

14. Prove that $(2\sqrt{3} + \sqrt{5})$ is an irrational number. Also check whether $(2\sqrt{3} + \sqrt{5})(2\sqrt{3} - \sqrt{5})$ is rational or irrational?

(OR)

$A = \{x: x \text{ is natural number}\}$; $B = \{x: x, \text{ is even natural numbers}\}$

$C = \{x: x \text{ is odd natural numbers}\}$; $D = \{x: x \text{ is prime number}\}$ then find $A \cap B$, $A \cap C$, $A \cap D$, and $B \cap C$

15. Draw the graph for the polynomial $p(x) = x^2 - 6x + 9$ and find the zeros from graph?

(OR)

Draw the graph for the following pair of linear equations in two variables and find their solution from the graph $x + 2y = 30$, $2x + 4y = 66$.

16. If the sum of first 7 terms of an A.P is 49 and that of 17 terms is 289, find the sum of first 'n' terms?

(OR)

Find all the zeros of $2x^4 - 3x^3 - 3x^2 + 6x - 2$. If two of its zeros are $\sqrt{2}$ and $-\sqrt{2}$?

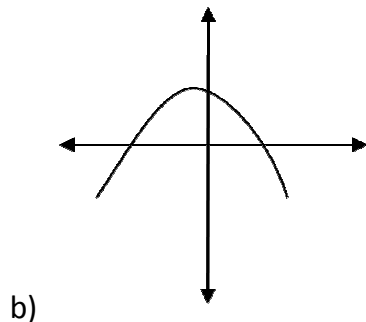
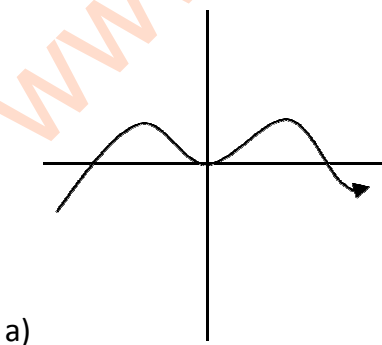
17. Find the area of the triangle, whose vertices are $(-5, 2)$ $(3, -4)$ and $(3, 2)$ by using heron's formula ?

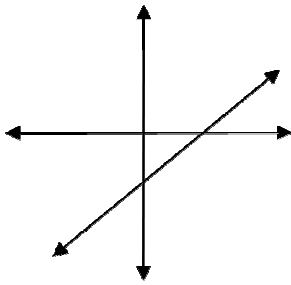
OR

The diagonal of a rectangular field is 60 meters more than the shorter side. If the longer side is 30 meters more than the shorter side. Find the sides of the field?

SECTION – IV

18. E end point of a diameter of circle is (5, 7) and center is (0, 0) then other end of diameter is ()
- a) (0, 7) b) (5, 7) c) (5, 0) d) (-5, 7)
19. Which of the following is singleton set ()
- a) Even prime set b) Vowels in alphabet
- c) Letters in MATHS d) whole number less than 5
20. Degree of polynomial $x^5 - x^4 + 3$ is ()
- a) 4 b) 3 c) 1 d) 5
21. Slope of line formed with (2, 6) (4, 1) is ()
- a) $\frac{2}{5}$ b) $\frac{-5}{2}$ c) $\frac{5}{2}$ d) $\frac{-2}{5}$
22. Graph of the following having 3 zero values is ()





d)

d) None

23. 4, 8, 12, 16is _____ series ()
a) Arithmetic b) Geometric c) Middle d) Harmonic
24. 'n' is a natural number , then 5th ends with ()
a) 5 b) 0 c) 5, 0 d) 4
25. {x:x is a prime}, which of the following have no elements in the given set is
a) {2, 3, 5, 7} b) {1, 2, 3, 5} c) {2, 13, 17} d) {11, 17, 13}
26. Zero value of polynomial $ax + b$ is ()
a) $\frac{a}{b}$ b) $\frac{-a}{b}$ c) $\frac{-b}{a}$ d) $\frac{x}{b}$