

Bhavan's Tripura Vidyamandir
1st Periodic Assessment: (2024 –2025)

Class: 10

Time: - 2 hours

Subject: Mathematics

Total: - 50 Marks

Name of the student: _____

Roll: _____

Section: _____

General Instruction:

- Section A contains 10 questions of 1 mark each.
- Section B contains 5 questions of 2 marks each.
- Section C contains 4 questions of 3 marks each.
- Section D contains 5 questions of 2 marks each.
- Section E contains 2 questions (CASE STUDY) of 4 marks each.

SECTION-A

1. One end of a line of length 17 units is at point (3,4). If the abscissa of the other end is 11, then its ordinate will be
a) 11 or -19 (b) -11 or -19 (c) -11 or 19 (d) 11 or 19
2. The value of k for which (-4) is a zero of the polynomial $x^2 - x - (2k + 2)$ is
a) 3 (b) 9 (c) 6 (d) -1
3. The LCM of smallest prime and smallest odd composite natural number is
a) 6 (b) 12 (c) 18 (d) 24
4. In $\triangle ABC$, $DE \parallel BC$ and $AD = 4\text{cm}$, $AB = 9\text{cm}$. $AC = 13.5\text{ cm}$ then the value of EC is
a) 6 cm (b) 7.5 cm (c) 9 cm (d) none of these
5. If $P(-1, 1)$ is the middle point of the line segment joining $A(-3, b)$ and $B(1, b + 4)$ then the value of b is
a) 1 (b) -1 (c) 2 (d) 0
6. If one zero of $p(x) = ax^2 + bx + c$ is zero, then the value of c is
a) 1 (b) 2 (c) 3 (d) 0
7. If $x = -2$ is a root of the equation $x^2 - 2x + k = 0$, then the value of k is
a) 4 (b) 8 (c) -4 (d) -8
8. If the difference of the roots of the equation $x^2 - bx + c = 0$ be 1, then
a) $b^2 - 4c + 1 = 0$ (b) $b^2 - 4c = 0$ (c) $b^2 + 4c = 0$ (d) $b^2 - 4c - 1 = 0$
9. The distance of a point $(-6, 8)$ from the origin is
a) 6 (b) -6 (c) 8 (d) 10
10. If two positive integers p and q can be expressed as $p = ab^2$ and $q = a^3b$; a, b being prime numbers, then LCM (p, q) is
a) ab (b) a^2b^2 (c) a^3b^2 (d) a^3b^3

SECTION-B

11. If the product of zeroes of the polynomial $ax^2 - 6x - 6$ is 4, find the value of 'a'.
12. Find the value of k for the given quadratic equation $kx(x - 2) + 6 = 0$, so that it have two equal roots.
13. Why the number 4^n , where n is a natural number, cannot end with 0?

14. In the given figure-1, if $LM \parallel CB$ and $LN \parallel CD$. Prove that

$$\frac{AM}{AB} = \frac{AN}{AD}$$

15. Find the point on y-axis, each of which is at a distance of 13 units from the point $(-5, 7)$.

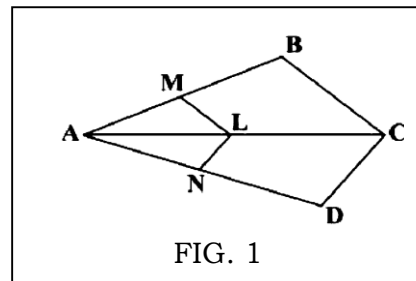


FIG. 1

SECTION-C

16. ABD is a triangle in which $\angle DAB = 90^\circ$ and $AC \perp BD$. Prove that $AB^2 = BC \times BD$.
17. Given that $\sqrt{2}$ is irrational, prove that $(5 + 3\sqrt{2})$ is irrational number.
18. If α and β are the zeroes of the quadratic polynomial $p(x) = 2x^2 - 4x + 5$, then find the value of $\alpha^2 + \beta^2$.
19. Two points $A(1, 0)$ and $B(-1, 0)$ with a variable point $P(x, y)$ satisfy the relation $AP - BP = 1$. Show that $12x^2 - 4y^2 = 3$

SECTION-D

20. Some students planned a picnic. The total budget for hiring a bus was Rs. 1440. Later on, eight of these refused to go and instead paid their total share of money towards the fee of one economically weaker student of their class and thus, the cost of each member, who went for picnic increased by Rs. 30.
- How many students attended the picnic?
 - How much money in total was paid towards the fee?
 - Which value is reflected in this question?
21. CD and GH are respectively the bisectors of $\angle ACB$ and $\angle EGF$ such that D and H lie on sides AB and FE of $\triangle ABC$ and $\triangle EFG$ respectively. If $\triangle ABC \sim \triangle EFG$, show that:
- $\frac{CD}{GH} = \frac{AC}{FG}$ and
 - $\triangle DCB \sim \triangle HGE$

SECTION-E

CASE-BASED QUESTIONS:

22. In Maths activity period, Ranu's Maths teacher told her to draw the graph of a polynomial having at most two zeroes. She draws the graph (FIG.2) as shown below:
- Name the shape drawn by Renu.
 - Find the zeroes of $p(x) = x^2 - 49$.
 - If 1 is a zero of polynomial $p(x) = mx^2 - 3(m-1)x + 4$, then find the value of m .

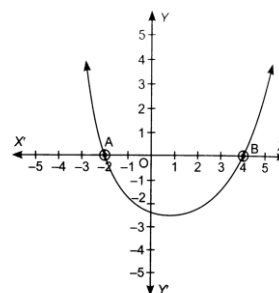


FIG.2

23. Students of a school are standing in rows and columns in their school playground to celebrate their annual sports day. A, B, C and D are the positions of four students as show in the FIG-3.

Based on the given information, answer the following questions:

- Find the distance between A and C.
- What are the coordinates of B and D?
- Find the coordinates of the mid-point of the line segment AC.

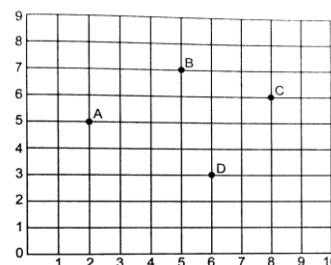


FIG.3