

SUMMATIVE ASSESSMENT – 1, JANUARY - 2022

MATHEMATICS PAPER – 1

(Modal Paper – 3)

Class: 9th

Max. Marks: 40

Time: 2hr 45 min

Instructions to students:

1. There are four sections and 33 questions in this paper.
2. Answers should be written in answer sheets.
3. There is an internal choice in Section – IV
4. Write all questions visible and legibly.
5. 15 Minutes are given for reading the question paper and 2hr 30 min given for writing answers.

Section – 1

Note: 1. Answer all questions

2. Each question carries $\frac{1}{2}$ mark.

20 \times $\frac{1}{2}$ = 10 M

1. The point which is at 5 units distance from X – axis and at 4 units distance from Y – axis is

A) (4, 5) B) (5, 4) C) (0, 5) D) (0, 4)

2. Zero of the polynomial $3x + 1$ is _____ -

A) $\frac{1}{3}$ B) $-\frac{1}{3}$ C) - 3 D) - 1

3. $(\sqrt{5} + \sqrt{2})^2 =$ _____

A) $10 + \sqrt{10}$ B) $7 + \sqrt{10}$ C) $7 + 2\sqrt{10}$ D) $10 + 2\sqrt{10}$

4. Choose the correct answer following.

Statement P: Sum of two rational numbers is always rational number.

Statement Q: Sum of two irrational numbers is always irrational number.

A) P true, Q false B) P false, Q true C) Both P, Q are true D) Both P, Q are false

5. The point (-3, 8) lies in _____ quadrant.

6. The intersecting point of X – axis and Y – axis is called _____

7. The radical form of the surd $\sqrt[4]{a^3}$ is _____.

8. Match the following

A. $(a + \sqrt{b})(a - \sqrt{b}) =$ () i) $a + b + 2\sqrt{ab}$

B. $(\sqrt{a} + \sqrt{b})^2 =$ () ii) $a^2 - b$

C. $(\sqrt{a} + \sqrt{b})(\sqrt{c} + \sqrt{d}) =$ () iii) $\sqrt{ac} + \sqrt{ad} + \sqrt{bc} + \sqrt{bd}$

A) A – i, B – ii, C – iii B) A – ii, B – iii, C – i C) A – ii, B – i, C – iii D) A – iii, B – i, C – ii

9. If $P(t) = (t - 1)(t + 1)$ then $P(1) =$ _____

10. The rational number between 'a' and 'b' is _____

- A) $\frac{ab}{2}$ B) $\frac{a-b}{2}$ C) $\frac{a+b}{2}$ D) \sqrt{ab}

11. $\sqrt{p} + \sqrt{q}$ is an irrational number, then which of the following is true?

- A) P and q are natural numbers C) p and q are composite numbers
B) P and q are real numbers D) None of these

12. $7^3 \times 7^{-3} =$ _____

- A) 7^{-9} B) 7^{-6} C) 0 D) 1

13. A binomial which is a cubic polynomial is

- A) $X^3 + 1$ B) $3x + 1$ C) Both A and B D) None of these.

14. The order of the surd $\sqrt[3]{x^2}$ is _____

- A) 3 B) 2 C) $\frac{2}{3}$ D) $\frac{3}{2}$

15. If $x = 1$ and $y = 2$, then $\left(\frac{x}{y}\right)^{x-y} + \left(\frac{y}{x}\right)^{y-x} =$ _____

- A) 2 B) 4 C) 8 D) 1

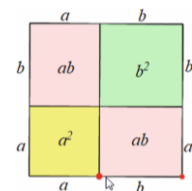
16. The value of the polynomial $3x^2 - x + 5$ at $x = -1$ is _____

- A) 7 B) 8 C) 9 D) -7

17. If $49x^2 - y = \left(7a + \frac{1}{2}\right)\left(7a - \frac{1}{2}\right)$ then 'y' = _____

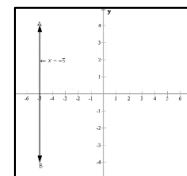
- A) $\frac{1}{2}$ B) $\frac{1}{4}$ C) $\frac{1}{\sqrt{2}}$ D) $\frac{1}{49}$

18. The adjacent figure represents the geometrical proof of _____



- A) $(a + b)^2 = a^2 + b^2 + 2ab$ C) $(a - b)^2 = a^2 + b^2 - 2ab$
B) $(a + b)(a - b) = a^2 - b^2$ D) $(x + a)(x + b) = x^2 + x(a + b) + ab$

19. A point on line in the adjacent graph is _____



- A) (5, 4) B) (-5, 4) C) (5, 0) D) (0, -5)
20. If $a + b + c = 0$, then $\frac{a^2}{bc} + \frac{b^2}{ca} + \frac{c^2}{ab} =$ _____
A) 1 B) 2 C) 3 D) 0

Section – II

Note: 1. Answer all the questions

2. Each question carries 1 mark.

4 × 1 = 4 M

21. Find the area of the triangle whose base and height are $(3 + \sqrt{3})$ and $(3 - \sqrt{3})$ respectively?
22. Write any two points which lie in the second quadrant?
23. Evaluate $50\frac{1}{2} \times 49\frac{1}{2}$ without actual multiplication.
24. Define remainder theorem?

Section – III

Note: 1. Answer all the questions.

2. Each question carries 2 marks.

5 × 2 = 10 M

25. Represent $\frac{8}{5}$ and $-\frac{8}{5}$ on a number line.
26. Subtract $5\sqrt{3} + 7\sqrt{5}$ from $3\sqrt{5} - 7\sqrt{3}$.
27. Find the remainder when $f(x) = x^3 - px^2 + 6x + p$ divided by $(x - p)$?
28. Factorize: $x^2 + 5x + 4$.
29. Draw a rough diagram of coordinate system and plot the following points .
A(-3, 5), B(0, 2), C(0, 0), D(4, -3)

Section – IV

Note: 1. Answer all the questions.

2. Each questions carries 4 marks.

3. There is internal choice for each question.

4 × 4 = 16 M

30. If $\frac{5+2\sqrt{3}}{7+4\sqrt{3}} = a + b\sqrt{3}$, then find the values of 'a' and 'b'?

OR

If $x = 2 + \sqrt{3}$ then find the value of $x + \frac{1}{x}$.

31. If $(x + 2)$ is a factor of the polynomial $x^3 + 13x^2 + 32x + 20$, then find the other two factors?

OR

If the polynomials $ax^3 + 3x^2 - 13$ and $2x^3 - 5x^2 + a$ are divided by $(x - 2)$ leave the same remainder, find the value of 'a'?

32. Show that $(x - 1)$ is a factor of $x^{10} - 1$ and also $x^{11} - 1$.

OR

Examine whether $(x + 2)$ is a factor of $x^3 + 2x^2 + 3x + 6$ by doing actual division.

33. Give geometrical proof of $(x - y)^2$.

OR

What can you say the position of the points $(5, 4)$, $(8, 4)$, $(0, 4)$, $(-4, 4)$, $(3, 4)$ and $(-2, 4)$.

Locate the points on a graph sheet and justify your answer.