

SUMMATIVE ASSESSMENT – 1, JANUARY - 2022

MATHEMATICS PAPER – 1

(Modal Paper – 1)

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. Which of the following point lies on X- axis?
A) (0, -2) B) (-2, 0) C) (2, -2) D) All the above
2. The zero of the polynomial $2x - 3$ is _____
A) $\frac{3}{2}$ B) $-\frac{3}{2}$ C) $\frac{2}{3}$ D) $-\frac{2}{3}$
3. Which of the following is not rationalizing factor of $\sqrt{5}$?
A) $\sqrt{5}$ B) $-\sqrt{5}$ C) $\sqrt{-5}$ D) None of these
4. Choose the correct answer following.
Statement P: π is a rational number.
Statement Q: $\frac{22}{7}$ is a rational number.
A) P true, Q false B) P false, Q true C) Both P, Q are true D) Both P, Q are false
5. Father of Coordinate geometry is _____
6. If $x < 0$ and $y > 0$, then the point $(-x, y)$ lies in _____ quadrant.
7. Example to a rational number which is not an integer is _____
8. Match the following
A. (4, -2) () i) Q_2
B. (-9, 3) () ii) Q_4
C. (2, 3) () iii) Q_1
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 – ii, C – i

9. Degree of which of the following is zero?

- A) y B) 15 C) x D) $x + \frac{1}{x}$

10. Simplified value of $(125)^{\frac{-1}{3}}$ _____

- A) $\frac{1}{5}$ B) 5 C) 3 D) $\frac{1}{3}$

11. If $x + y + z = 0$, then $x^3 + y^3 + z^3 =$ _____

- A) 0 B) $3xyz$ C) $(x + y + z)^3$ D) $(xyz)^3$

12. The simplest form of $0.\overline{57}$ is _____

- A) $\frac{57}{99}$ B) $\frac{57}{100}$ C) $\frac{26}{45}$ D) None of these

13. The factor of $a - b - a^2 + b^2$ is _____

- A) $a - b$ B) $a^2 + b^2$ C) $2ab$ D) $4ab$

14. If $P(x)$ is divided by $ax + b$, then the remainder is _____

- A) $P(a)$ B) $P(b)$ C) $P\left(\frac{-b}{a}\right)$ D) $P\left(\frac{b}{a}\right)$

15. Point A on the number line represents _____

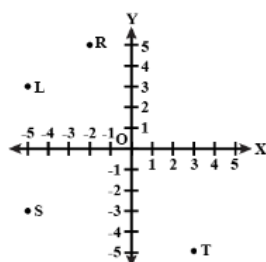


- A) $-\frac{2}{3}$ B) $-\frac{3}{4}$ C) $-\frac{1}{2}$ D) $\frac{1}{4}$

16. If $a + b = 8$ and $ab = 6$ then $a^2 + b^2 =$ _____

- A) 52 B) 58 C) 72 D) 78

17. The coordinates of the point 'R' based on the following graph



- A) (5, -2) B) (-2, 5) C) (-2, 0) D) (0, 5)

18. The degree of the polynomial $3x^2y^3 + 4xy^2 + 7$ is _____

- A) 3 B) 4 C) 5 D) 8

19. Base of a coloured flag which is in the shape of triangle is $2 + \sqrt{2}$ units and height is $2 - \sqrt{2}$ units. Then the area of the flag is _____

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

20. The distance of the point $(-3, -7)$ from X – axis is _____

- A) 3 units B) 7 units C) -3 units D) -7 units

Section – II

Note: 1. Answer all the questions

2. Each question carries 1 mark.

4 × 1 = 4 M

21. Check whether $(\sqrt{2} + \sqrt{3})^2$ is rational or irrational?
22. Find the area of the triangle formed by the points (0, 4), (3, 0) and (0, 0)?
23. Find the product of $\left(x - \frac{1}{x}\right)\left(x + \frac{1}{x}\right)\left(x^2 + \frac{1}{x^2}\right)$.
24. $x^2 + 1$ has no zeros. Why?

Section – III

Note: 1. Answer all the questions.

2. Each question carries 2 marks.

5 × 2 = 10 M

25. Find three rational numbers between $\frac{4}{7}$ and $\frac{3}{5}$.
26. Simplify; $\sqrt[4]{81} - 8 \cdot \sqrt[3]{343} + 15\sqrt[5]{32} + \sqrt{225}$.
27. If 3 is a zero of the polynomial $x^2 + 2x - 3a$, find the value of 'a'?
28. Give possible expressions for the dimensions of the cuboid whose volume is $12x^2 + 8x - 20$.
29. Read the following table and answer the following questions?

Point	A	B	C	D	E	F	G
Coordinates	(2, 1)	(0, 5)	(3, -2)	(-2, -2)	(1, 2)	(3, 0)	(0, 0)

- a) The point belongs to Q_3
- b) The point satisfies $x > 0$ and $y < 0$
- c) The point satisfies $x - y = 1$
- d) The position of the point B.

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 $\frac{1}{7-4\sqrt{3}} + \frac{1}{\sqrt{3}-2} = a + b\sqrt{3}$, then find the value of $a^2 + b^2$?

OR

Find $\sqrt{5}$ value up to three decimal places.

31. If both $(x - 2)$ and $\left(x - \frac{1}{2}\right)$ are factors of $px^2 + 5x + r$, then prove that $p = r$?

OR

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

32. Verify whether $2x^4 - 6x^3 + 3x^2 + 3x - 2$ is divisible by $x^2 - 3x + 2$ or not without actual division.

OR

Show that $c = 0$ or $a = b$ if $ax^2 + bx + c$ and $bx^2 + ax + c$ has a common factor.

33. Plot the points A(2, 2), B(6, 2), C(8, 5) and D(4, 5) in a graph sheet and join them to form a parallelogram. Find the area of the parallelogram?

OR

Visualize the representation of $3.5\overline{8}$ on the number line through successive magnification up to 3 decimal places.