



General Instructions:

1. The question paper consists of 21 questions divided into two parts A and B.
2. Part B has internal choices.

Part A

1. Question 1 to 12 are Multiple Choice Questions of 1 mark each.
2. Question no. 1 to 10 Consists of MCQ based on Case Study.
3. Question no.11 to 12 Consists of Assertion and Reason.

Part B

1. Question no. 13 to 15 are Very Short Answer Type questions of 2 marks each.
2. Question no. 16 to 19 are Short Answer Type questions of 3 marks each.
3. Question no. 20 to 21 are Long Answer Type questions of 5 marks each.
4. Internal Choice is provided in one question of 2 marks, one question of 3 marks and one question of 5 marks.

PART-A

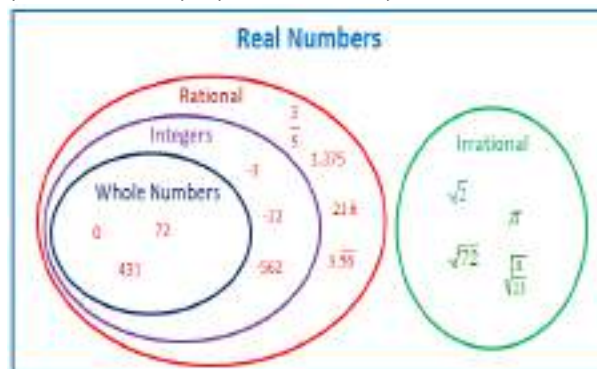
Case Study Based-1

FORMING NUMBERS

Sam and Samaira were trying to form irrational numbers. They came up with the numbers as follows:

Sam's number = $\frac{1}{2\sqrt{3}-3}$ and

Samaira's number = $(\sqrt{11} - \sqrt{7})(\sqrt{11} + \sqrt{7})$



Based on the information given, answer the following questions:


1. Which of the following is the correct statement?
 - (a) Only Sam's number is irrational.
 - (b) Only Samaira's number is irrational.
 - (c) Both Sam and Samaira's numbers are irrational.
 - (d) Both Sam and Samaira's numbers are rational.

1

2. The rationalizing factor of Sam's number is:

(a) $2\sqrt{3} - 3$ (b) $2\sqrt{3} + 3$ (c) $\frac{1}{2\sqrt{3}-3}$ (d) $\frac{1}{2\sqrt{3}+3}$

1

	<p>3. The identity used to simplify Samaira's number is (a) $a^2 - b^2 = (a + b)(a - b)$ (b) $a^2 + 2ab + b^2 = (a + b)^2$ (c) $a^2 - 2ab + b^2 = (a - b)^2$ (d) $x^2 + (a + b)x + ab = (x + a)$</p> <p>4. Samaira's number is equivalent to the number (a) $18 + 2\sqrt{77}$ (b) $18 + 2\sqrt{77}$ (c) 4 (d) 18</p> <p>5. Sum of two irrational numbers is (a) a rational number (b) an irrational number (c) an integer (d) a whole number</p>	<p>1</p> <p>1</p> <p>1</p>
	<p>Case Study Based-2 POLYNOMIALS IN COTTAGE INDUSRY</p> <p>Manav and Sanvi run a cottage industry where they produce beautiful handicraft products. On a particular day, the production of number of articles produced is given in the form of a polynomial shown as: $p(x) = x^2 - 5x + 6$. Based on your understanding of polynomials, answer the questions that follow:</p>  <p>6. The degree of the given polynomial is (a) 0 (b) 2 (c) 3 (d) not defined</p> <p>7. The given polynomial is a (a) zero polynomial (b) quadratic binomial (c) Quadratic trinomial (d) cubic binomial</p> <p>8. The coefficient of x is (a) 5 (b) 1 (c) -5 (d) 6</p> <p>9. The value of p(2) is (a) 0 (b) -2 (c) 4 (d) 20</p> <p>10. One of the zeroes of p(x) is (a) 0 (b) -2 (c) -3 (d) 3</p>	<p>1</p> <p>1</p> <p>1</p> <p>1</p> <p>1</p>
	<p>Assertion – Reason Questions The following questions consist of two statements- Assertion (A) and Reason (R). Answer these questions selecting the appropriate option given below: (a) Both A and R are true and R is the correct explanation for A. (b) Both A and R are true and R is not the correct explanation for A. (c) A is true but R is false. (d) A is false but R is true.</p> <p>11. Assertion(A) : $\sqrt{121}$ is a Rational Number. Reason (R): The number 11 is a rational number. So, the square root of 121 is a rational number.</p>	<p>1</p>

	<p>12. Assertion(A) : The degree of the polynomial $(x - 2)(x - 3)(x + 4)$ is 4. Reason (R): The number of zeroes of a polynomial is the degree of that polynomial.</p>	1
	<p>PART-B</p> <p>All questions are compulsory. In case of internal choices, attempt any one.</p>	
13	Express $1.\overline{02}$ in the form of $\frac{p}{q}$, where p and q are integers, $q \neq 0$.	2
14	Without plotting the points $(-5, -7)$, $(3, -1)$, $(-4, 0)$ and $(2, 3)$ in a cartesian plane, write the quadrant or the axis in which they lie.	2
15	<p>How many zeroes can a polynomial have? Find the zero(es) of a polynomial $p(x) = 5x$ if there is/are any.</p> <p style="text-align: center;">OR</p> <p>Using suitable identity, evaluate</p> <p>a) 103×97 b) $(999)^3$</p>	2
16	Plot the points A $(1, 4)$, B $(-2, 1)$ and C $(4, 1)$ in a cartesian plane and join them in order. Find the area of the figure so obtained.	3
17	<p>Simplify: $\frac{9^{\frac{1}{6}} \times 27^{-\frac{1}{2}}}{3^{\frac{1}{2}} \times 3^{-\frac{1}{3}}}$</p> <p style="text-align: center;">OR</p> <p>Locate $\sqrt{5}$ on number line.</p>	3
18	Plot the point A $(3, -7)$ in the cartesian plane. Draw altitudes (perpendiculars) from this point to the axes. Also write the coordinates of the foot of altitudes drawn.	3
19	If $x = -1$ is a zero of the polynomial $p(x) = ax^3 - 2x^2 - x + 2$, then find the value of a. Hence verify that $x = 1$ and $x = 2$ are also the zeroes of $p(x)$.	3
20	<p>Evaluate: $\frac{1}{\sqrt{2}+1} + \frac{1}{\sqrt{3}+\sqrt{2}} + \frac{1}{\sqrt{4}+\sqrt{3}} + \dots + \frac{1}{\sqrt{9}+\sqrt{8}}$.</p> <p style="text-align: center;">OR</p> <p>Find the value of a and b, if $\frac{7+3\sqrt{5}}{3+\sqrt{5}} - \frac{7-3\sqrt{5}}{3-\sqrt{5}} = a + \sqrt{5} b$, for some rational numbers a and b.</p>	5
21	<p>Factorize:</p> <p>a) $1 - 2ab - (a^2 + b^2)$ b) $x^3 - 3x^2 - x + 3$.</p>	5