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STD : IX

SUBMISSION DATE : 07-09-2017

MARKS : 40

SUB : ALGEBRA

MODEL QUESTION PAPER CHP 1 - 4

TIME - 2 HRS

Q.1[A] Select the correct alternative and fill in the blanks.

[5]

- a) $P = \{ x \mid x \text{ is an odd natural number, } 1 < x \leq 5 \}$
How to write this set in roster form?
(A) $\{1, 3, 5\}$ (B) $\{1, 2, 3, 4, 5\}$ (C) $\{1, 3\}$ (D) $\{3, 5\}$
- b) Multiply $(x^2 - 3)(2x - 7x^3 + 4)$ and write the degree of the product.
(A) 5 (B) 3 (C) 2 (D) 0
- c) The value of $| 12 - (13 + 7) \times 4 |$ is
(A) - 68 (B) 68 (C) - 32 (D) 32
- d) What is the mean proportional of 4 and 25?
(A) 6 (B) 8 (C) 10 (D) 12
- e) Which one of the following is a polynomial?
(A) $\frac{x^2}{2} - \frac{2}{x^2}$ (B) $\sqrt{2x} - 1$ (C) $x^2 + \frac{3x^{3/2}}{\sqrt{x}}$ (D) $\frac{x-1}{x+1}$

[B] Attempt the following : (Any 5)

[5]

- 1) Write the following set using listing method: All months in the Indian solar year.
- 2) State which of the following are surd. Justify: $\sqrt{\frac{22}{7}}$
- 3) Use the given letter to write the answer: The tens and units place of a two digit number is m and n respectively. Write the polynomial which represent the two digit number.
- 4) Express the following percentage as ratio in the reduced form: 0.64%
- 5) Simplify: $(8m^2 + 3m - 6) - (9m - 7) + (3m^2 - 2m + 4)$
- 6) Write the following ratio in the reduced form: The ratio of perimeter to area of a square, having side 4 cm.

Q.2 Attempt the following : (Any 4)

[8]

- 1) If $\frac{a}{b} = \frac{7}{3}$ then find the values of the following ratio: $\frac{a^3 - b^3}{b^3}$
- 2) If $(x - 2)$ is a factor of $x^3 - mx^2 + 10x - 20$ then find the value of m.
- 3) If $n(A) = 20$, $n(B) = 28$ and $n(A \cup B) = 36$ then $n(A \cap B) = ?$

4) Represent the numbers $\sqrt{5}$ and $\sqrt{10}$ on a number line.

5) Multiply the following polynomials: $(m^3 - 2m + 3)(m^4 - 2m^2 + 3m + 2)$

6) If $\frac{x}{3x - y - z} = \frac{y}{3y - z - x} = \frac{z}{3z - x - y}$ and $x + y + z \neq 0$ then show that the value of each ratio is equal to 1.

Q.3 Attempt the following : (Any 3)

[9]

1) In a competitive exam 50 students passed in English. 60 students passed in Mathematics 40 students passed in both the subjects. Name of them fail in both the subjects. Find the number of students who passed at least in one of the subjects?

2) Rationalize the denominator: $\frac{\sqrt{5} - \sqrt{3}}{\sqrt{5} + \sqrt{3}}$

3) Divide the following polynomial by linear division method. Write the quotient and the remainder : $(2x^4 + 3x^3 + 4x - 2x^2) \div (x + 3)$

4) Present ages of Vatsala and Sara are 14 years and 10 years respectively. After how many years the ration of their ages will becomes 5 : 4?

5) Three numbers are in continued properties, whose mean proportional is 12 and the sum of the remaining two numbers is 26, then find these numbers.

Q.4 Attempt the following : (Any 2)

[8]

1) Solve . (i) $\frac{5y^2 + 40x - 12}{5y + 10y^2 - 4} = \frac{y + 8}{1 + 2y}$

2) Factorize the following polynomials: $(y + 2)(y - 3)(y + 8)(y + 3) + 56$

3) Write the following ratio in the reduced form

(i) Radius to the diameter of a circle.

(ii) The ratio of diagonal to the length of rectangle, having length 4 cm can breadth 3 cm.

(iii) The ratio of perimeter to area of a square, having side 4 cm.

Q.5 Attempt the following : (Any 1)

[5]

1) Divide each of the following polynomial by synthetic division method and also by linear division method. Write the quotient and the remainder. $(x^4 - 3x^2 - 8) \div (x + 4)$

2) If $\frac{y + z}{a} = \frac{z + x}{b} = \frac{x + y}{c}$ then show that $\frac{x}{b + c - a} = \frac{y}{c + a - b} = \frac{z}{a + b - c}$

*** BEST OF LUCK ***