

SAI TUTORIALS

Std.: 9 (English)

Maths - I

Marks: 40

Date: 05-Mar-2022

XAVIERS SEMESTER EXAM

Time: 2 hour

Chapter:

Q.1 (A) For every subquestion 4 alternative answers are given. Choose the correct answer and write the alphabet of it : (4)

- 1) $p(m) = 2m^4 - 3m^3 + 5m - 4$, then the value of $p(-2)$ will be.
 a. -42 b. 42 c. 24 d. -24
- 2) For $(2, -1, 0, 6, 5)$ write equation in index form.
 a. $2X^3 + 1X^2 + 0X + 6X + 5$ b. $2X^4 - X^3 + 0X^2 + 6X + 5$
 c. $2X^4 - X^3 + 6X + 5$ d. None of the above
- 3) If a, b, c are in continued proportion then b is known as
 a. Geometric mean b. Mean proportional
 c. Both a and b d. None of the above
- 4) Standard form of cubic polynomial is
 a. $ax^2 + bx$ b. $ax^3 + bx^2 + cx + d$ c. $ax + b$ d. None of the above

(B) Solve the following subquestions. (4)

- 1) Classify the following as linear, quadratic and cubic polynomials:
 i. $x^2 + x$
 ii. $x - x^3$
- 2) Classify following information as primary or secondary data :
 i. Collecting information regarding preference of clothes from the customers in a mall.
 ii. Information from reference book for project.
- 3) Find the following ratios.
 The ratio of radius to circumference of the circle.
- 4) State whether the given algebraic Expressions are polynomial?
 i. $3x^2 + 5x - 4$
 ii. $2\sqrt{x} - 5$

Q.2 (A) Complete and write any two activities from the following : (4)

- 1) The ratio of diagonal of a square to its side, if the length of side is 7 cm.

Solution:

Diagonal of square = _____

$$= 7 \times \sqrt{2}$$

= _____

\therefore The ratio of diagonal of a square to its side = _____

= _____

2) Find the factors of the polynomials given below. $12x^2 + 61x + 77$

$$12x^2 + 61x + 77$$

$$= \underline{\hspace{2cm}}$$

$$= \underline{\hspace{2cm}}$$

$$= (3x + 7) (4x + 11)$$

3)

Using the property $\frac{a}{b} = \frac{ak}{bk}$, fill in the blanks substituting proper numbers in the following.

$$\frac{5}{7} = \frac{\dots}{28} = \frac{35}{\dots} = \frac{\dots}{3.5}$$

(B) Solve any four subquestions from the following :

(8)

1) If the polynomial $y^3 - 5y^2 + 7y + m$ is divided by $y + 2$ and remainder is 50 then find the value of m

2) Factorize the following polynomials. $(x^2 - 2x + 3) (x^2 - 2x + 5) - 35$

3) If the value of the polynomial:

$$3x^2 + 2ax - 3 \text{ is } 0 \text{ for } x = \frac{-1}{2}, \text{ then find the value of "a".}$$

4)

$$\frac{a}{3} = \frac{b}{4} = \frac{c}{7} = \frac{\dots}{6-8+14}$$

5) Subtract the second polynomial from first :

a. $x^4 + 2x^2 + 3x - 1$; $x^4 - x^3 - x^2 + 11$

b. $7n^3 - 5n^2 + 7$; $4n^3 - 8n + 6$

Q.3 (A) Complete and write any one activity from the following :

(3)

1)

Solve the following equations : $\frac{\sqrt{4x+1} + \sqrt{x+3}}{\sqrt{4x+1} - \sqrt{x+3}} = \frac{4}{1}$

$$\frac{\sqrt{4x+1} + \sqrt{x+3}}{\sqrt{4x+1} - \sqrt{x+3}} = \frac{4}{1}$$

Using _____

$$\therefore \underline{\hspace{2cm}}$$

$$\therefore \frac{2\sqrt{4x+1}}{2\sqrt{x+3}} = \frac{5}{3}$$

$$\therefore \underline{\hspace{2cm}}$$

Taking square on both sides

$$\therefore \frac{4x+1}{x+3} = \frac{25}{9}$$

$$\therefore \underline{\hspace{2cm}}$$

$$\therefore \underline{\hspace{2cm}}$$

$$\therefore x = \underline{\hspace{2cm}}$$

- 2) The ratio of present ages of Albert and Salim is 5 : 9. Five years hence ratio of their ages will be 3 : 5. Find their present ages.

Let the common multiple be x

$$\therefore \text{Albert : Salim} = \underline{\hspace{2cm}}$$

As per given condition,

$\underline{\hspace{2cm}}$

$$\therefore \underline{\hspace{2cm}}$$

$$\therefore 2x = 10$$

$$\therefore x = \underline{\hspace{2cm}}$$

$$\therefore \text{Albert's age} = 5x$$

$$= 5 \times 5$$

$$= \underline{\hspace{2cm}} \text{ years}$$

$$\therefore \text{Salim's age} = 9x$$

$$= 9 \times 5$$

$$= \underline{\hspace{2cm}} \text{ years}$$

(B) Attempt any two subquestions from the following :

(6)

- 1) If $a(y+z) = b(z+x) = c(x+y)$ and out of a, b, c no two of them are equal then show that,

$$\frac{y-z}{a(b-c)} = \frac{z-x}{b(c-a)} = \frac{x-y}{c(a-b)}$$

- 2) If $(a+b+c)(a-b+c) = a^2 + b^2 + c^2$ show that a, b, c is in continued proportion.

- 3) Divide polynomial by using synthetic division method write in the form:

"Dividend = Divisor \times Quotient + Remainder

$$(2x^3 + 3x^2 - 9x - 10) \div (x + 1)$$

4)

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.4 Attempt any two subquestions from the following :

(8)

1)

Solve the following equations : $\frac{10x^2+15x+63}{5x^2-25x+12} = \frac{2x+3}{x-5}$

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

3)

Solve the following equations : $\frac{(2x+1)^2+(2x-1)^2}{(2x+1)^2-(2x-1)^2} = \frac{17}{8}$

Q.5 Attempt any one subquestions from the following :

(3)

1) The ratio of ages of Abha and her mother is 2:5. At the time of Abha's birth her mother's age was 27 year. Find the present ages of Abha and her mother.

2) Factorize the following polynomials. $(x - 5)^2 - (5x - 25) - 24$