Date : 26-06-2024   **STD 9 Maths**   Total Marks : 40

Time : 1 hour 30 Minute   **Chapter Based Test**

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section A

* **Choose the right answer from the given options. [1 Marks Each]**   **[6]**

1. When polynomial $x^2 + 3x^2 + 3x + 1$ is divided by $x + 1$, the remainder is:

   (A) 0   (B) -6   (C) 1   (D) 8

2. When $p(x) = x^3 + ax^2 + 2x + a$ is divided by $x + a$, the remainder is:

   (A) 1   (B) 0   (C) a   (D) -a

3. (104×96) = ?

   (A) 9894   (B) 9984   (C) 9684   (D) 9884

4. A polynomial of degree ____ is called a cubic polynomial.

   (A) 2   (B) 1   (C) 0   (D) 3.

5. The factorization of $9x^2 - 3x - 20$ is:

   (A) (3x - 4) (3x - 5)   (B) (3x + 4) (3x - 5)   (C) (3x + 4) (3x + 5)   (D) (3x - 4) (3x + 5)

6. Write the correct answer in the following:

   If $x + 1$ is a factor of the polynomial $2x^2 + kx$, then the value of k is.
   a. -3
   b. 4
   c. 2
   d. -2

* **A statement of Assertion (A) is followed by a statement of Reason (R).**   **[2]** Choose the correct option.

7. **Directions:** In the following questions, the Assertions (A) and Reason(s) (R) have been put forward. Read both the statements carefully and choose the correct alternative from the following:

   Assertion: The value of $10^2 - 9^2 = 19$.
   Reason: $10^2 - 9^2 = 100 - 81 = 19$.
   a. Both Assertion and Reason are correct and Reason is the correct explanation for Assertion.
   b. Both Assertion and Reason are correct and Reason is not the correct explanation for Assertion.
   c. Assertion is true but the reason is false.
   d. Both assertion and reason are false.

8.

Directions: In the following questions, the Assertions (A) and Reason(s) (R) have been put forward. Read both the statements carefully and choose the correct alternative from the following:

Assertion: The degree of zero polynomial is not defined.

Reason: Each term of polynomial has coefficient.

    a.   Both Assertion and Reason are correct and Reason is the correct explanation for Assertion.

    b.   Both Assertion and Reason are correct and Reason is not the correct explanation for Assertion.

    c.   Assertion is true but the reason is false.

    d.   Both assertion and reason are false.

*   **Answer the following questions in one sentence. [1 Marks Each]**   **[2]**

9.   Is the expression $4x^2 - 3x + 7$, polynomial in one variable or not? State the reason for your answer.

10.   Factorise:

    $x^2 + 9x + 18$

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section B

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*   **Answer the following short questions. [2 Marks Each]**   **[8]**

1.   Factorise : $8x^3 + y^3 + 27z^3 - 18xyz$

2.   Expand the following:

    $(4a - b + 2c)^2$

3.   Factorise the following:

    $9x^2 + 4y^2 + 16z^2 + 12xy - 16yz - 24xz$

4.   Find the value of a for which (x - 4) is a factor of $(2x^3 - 3x^2 - 18x + a)$.

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section C

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*   **Answer the following questions. [3 Marks Each]**   **[9]**

1.   If a + b + c = 5 and ab + bc + ca = 10, then prove that $a^3 + b^3 + c^3 - 3abc = -25$.

2.   If x + 1 is a factor of $ax^3 + x^2 - 2x + 4a - 9$, find the value of a.

3.   Check whether p(x) is a multiple of g(x) or not:

    $p(x) = 2x^3 - 11x^2 - 4x + 5$, $g(x) = 2x + 1$

*   **Questions with calculation. [4 Marks Each]**   **[8]**

4.   The polynomial $p(x) = x^4 - 2x^3 + 3x^2 - ax + 3a - 7$ when divided by x + 1 leaves the remainder 19. Find the values of a. Also find the remainder when p(x) is divided by x + 2.

5.   Prove that $(a + b + c)^3 - a^3 - b^3 - c^3 = 3(a + b)(b + c)(c + a)$.

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section D

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* Answer the following questions. [5 Marks Each]   **[5]**

1. If $f(t) = 4t^2 - 3t + 6$, find:
    - i. $f(0)$
    - ii. $f(4)$
    - iii. $f(-5)$

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