Topics : Fundamentals of Mathematics, Circle, Quadratic Equation

Type of Questions		M.M., Min.
Single choice Objective (no negative marking) Q.1, 2, 3, 4, 5	(3 marks, 3 min.)	[15, 15]
Multiple choice objective (no negative marking) Q.6	(5 marks, 4 min.)	[5, 4]
Subjective Questions (no negative marking) Q.7	(4 marks, 5 min.)	[4, 5]
Fill in the Blanks (no negative marking) Q.8, 9	(4 marks, 4 min.)	[8, 8]
Match the Following (no negative marking) Q.10	(8 marks, 8 min.)	[8, 8]

1. If $f(x) = x^4 - 2x^3 + 3x^2 - ax + b$ is a polynomial such that when it is divided by $(x - 1)$ and $(x + 1)$ the remainders are 5 and 19 respectively. If $f(x)$ is divided by $(x - 2)$, then remainder is :

(A) 0   (B) 5   (C) 10   (D) 2

2. The figure shows a rectangle ABCD with a semi-circle and a circle inscribed inside it as shown. What is the ratio of the area of the circle to that of the semi-circle?

(A) $(\sqrt{2}-1)^2$

(B) $2(\sqrt{2} - 1)^2$

(C) $(\sqrt{2} - 1)^2/2$

(D) None of these
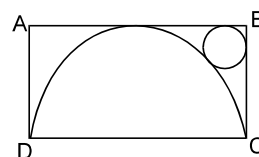
3. A 3-digit number has, from left to right, the digits a, b and c with a>c. When the number with the digits reversed is subtracted from the original number, the unit's digit in the difference is 4. The next two digits, from right to left, are

(A) 5 and 9   (B) 9 and 5   (C) 5 and 4   (D) 4 and 5

4. The cubic polynomial P(x) satisfies the condition that $(x - 1)^2$ is a factor of $P(x) + 2$, and $(x + 1)^2$ is a factor of $P(x) - 2$. Then $P(3)$ equals.

(A) 27   (B) 18   (C) 12   (D) 6

5. If $a + b + c = 0$ & $a^2 + b^2 + c^2 = 1$ then the value of $a^4 + b^4 + c^4$ is
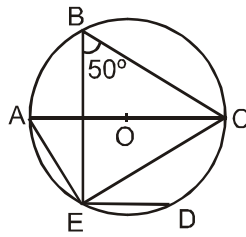
(A) 1   (B) 4   (C) $\dfrac{1}{2}$ (D) $\dfrac{1}{4}$

6. The equation $\dfrac{2x^3 - 3x^2 + x + 1}{2x^3 - 3x^2 - x - 1} = \dfrac{3x^3 - x^2 + 5x - 13}{3x^3 - x^2 - 5x + 13}$ has

(A) at least one real solution   (B) exactly three real solution

(C) exactly one irrational solution   (D) complex roots

7. If $x + y + z = 1$, $x^2 + y^2 + z^2 = 2$ and $x^3 + y^3 + z^3 = 3$. Find value of $x \cdot y \cdot z$.

8. In the given figure the chord ED is parallel to the diameter AC of the circle with centre O, then ∠CED is equal to ....

9. If the number A 3 6 4 0 5 4 8 9 8 1 2 7 0 6 4 4 B is divisible by 99 then the ordered pair of digits (A, B) is _____ .

10. Match the following

Column – I   **Column – II**

(A)   Even number   (p) $\dfrac{22}{7}$

(B)   Rational number   (q) π

(C)   Irrational number   (r)   0

(D)   Real number   (s) $\sqrt{2}$

                                                                           (t) $1.2\overline{34}$

Answers Key

1. (C)   **2.** (D)   **3.** (B)   **4.** (B)

5. (C)   **6.** (A, B, D)o **7.**   1/6

8. 40º   **9.** (9, 1)

10. (A)→(r), (B)→(p,r,t), (C)→(q, s), (D)→(p, q, r, s, t)