

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

[10]

1. The product  $(a + b)(a - b)(a^2 - ab + b^2)(a^2 + ab + b^2)$  is equal to:  
 (A)  $a^6 + b^6$  (B)  $a^6 - b^6$  (C)  $a^3 - b^3$  (D)  $a^3 + b^3$
2. The zeros of the polynomial  $p(x) = x^2 + x - 6$  are:  
 (A) 2, 3 (B) -2, 3 (C) 2, -3 (D) -2, -3
3. If  $x + y + z = 0$  then  $x^3 + y^3 + z^3$  is :  
 (A)  $3xyz$  (B)  $xyz$  (C)  $2xyz$  (D) 0
4. If  $(x + 5)$  is a factor of  $x^3 - 20x + 5k$  then  $k = ?$   
 (A) -5 (B) 5 (C) 3 (D) -3
5. Write the correct answer in the following :  
 If  $49x^2 - b = \left(7x + \frac{1}{2}\right)\left(7x - \frac{1}{2}\right)$ , the value of  $b$  is.  
 (A) 0 (B)  $\frac{1}{\sqrt{2}}$  (C)  $\frac{1}{4}$  (D)  $\frac{1}{2}$
6. Write the correct answer in the following :  
 Which of the following is a factor of  $(x + y)^3 - (x^3 + y^3)$ ?  
 (A)  $x^2 + y^2 + 2xy$  (B)  $x^2 + y^2 - xy$  (C)  $xy^2$  (D)  $3xy$
7. One of the factors of  $(25x^2 - 1) + (1 + 5x)^2$  is:  
 (A)  $5x - 1$  (B)  $5 - x$  (C)  $10x$  (D)  $5 + x$
8. If  $(x + y)^3 - (x - y)^3 - 6y(x^2 - y^2) = ky^2$ , then  $k =$   
 (A) 1 (B) 2 (C) 8 (D) 4
9. The value of  $\left(x - \frac{1}{x}\right)\left(x + \frac{1}{x}\right)\left(x^2 + \frac{1}{x^2}\right)$  is:  
 (A)  $x^4 - \frac{1}{x^4}$  (B)  $x^2 + \frac{1}{x^2} - 2$  (C)  $x^3 + \frac{1}{x^3} + 2$  (D)  $x^4 + \frac{1}{x^4}$
10. If  $x^4 + \frac{1}{x^4} = 194$ , then  $x^3 + \frac{1}{x^3} =$   
 (A) 64 (B) 52 (C) 76 (D) None of these.

► Answer the following short questions. [2 Marks Each]

[8]

11. Factorise:  
 $(5a - 7b)^3 + (7b - 9c)^3 + (9c - 5a)^3$
12. Factorise:  
 $7(x - 2y)^2 - 25(x - 2y) + 12$
13. Factorise:  
 $2\sqrt{2}a^3 + 3\sqrt{3}b^3 + c^3 - 3\sqrt{6}abc$
14. Factorise:  
 Prove that  $\frac{0.85 \times 0.85 \times 0.85 + 0.15 \times 0.15 \times 0.15}{0.85 \times 0.85 - 0.85 \times 0.15 + 0.15 \times 0.15} = 1$

► Answer the following questions. [3 Marks Each]

[12]

15. Prove that  $(a + b + c)^3 - a^3 - b^3 - c^3 = 3(a + b)(b + c)(c + a)$ .
16. Find the value of  $m$  so that  $2x - 1$  be a factor of  $8x^4 + 4x^3 - 16x^2 + 10x + m$ .
17. For the polynomial  $\frac{x^3 + 2x + 1}{5} - \frac{7}{2}x^2 - x^6$ , write.
  - i. The degree of the polynomial.
  - ii. The coefficient of  $x^3$ .
  - iii. The coefficient of  $x^6$ .
  - iv. The constant term.
18. Show that  $(x - 2)$ ,  $(x + 3)$  and  $(x - 4)$  are factors of  $x^3 - 3x^2 - 10x + 24$ .

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