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Paper prepared by

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Section A 1 mark each

- Q.1 In a polynomial, the exponents of a variable must be  
(a) integers (b) positive integers  
(c) Non-negative integers (d) real numbers.
- Q.2 Degree of the zero polynomial is  
(a) 0 (b) 1 (c) any natural number (d) Not defined
- Q.3  $\sqrt{5}$  is a polynomial of degree  
(a) 2 (b) 0 (c) 1 (d)  $\frac{1}{2}$
- Q.4 If  $p(x) = -x + 7$ , then  $p(x) + p(-x)$  is equal to  
(a) 3 (b)  $2x$  (c) 0 (d) 6
- Q.5 One of the factors of  $(49x^2 - 1) + (1 + 7x^2)$  is  
(a)  $5 + x$  (b)  $5 - x$  (c)  $5x - 1$  (d)  $10x$ .
- Q.6 If  $\frac{x}{y} + \frac{y}{x} = -1$  ( $x, y \neq 0$ ), then value of  $x^3 - y^3$  is  
(a) 1 (b)  $-1$  (c) 0 (d)  $\frac{1}{2}$

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Section B 2 marks each

Q.7 Given  $p(x) = 3x^2 - 1$ . Verify whether  $x = \frac{1}{\sqrt{3}}, \frac{2}{\sqrt{3}}$  are zeroes of the polynomial  $p(x)$ .

Q.8 Factorise :  $x^2 + 5\sqrt{2}x + 12$

Section C 3 marks each

Q.9 Factorise :  $16x^2 + 24xy + 9y^2 - 25x^2$

Q.10 Factorise  $(x - 2)^2 + p^2 + 2p(x + 2)$ .

Q.11 For what value of  $m$  is  $x^3 - 2mx^2 + 16$  divisible by  $x + 2$  ?

Q.12 Evaluate the following without actually calculating the cubes  $28^3 + (-15)^3 + (-13)^3$

Section D 4 marks each

Q.13 If  $a^3 + b^3 + c^3 = 3abc$  and  $a + b + c = 0$ , show that

$$\frac{(b+c)^2}{3bc} + \frac{(c+a)^2}{3ac} + \frac{(a+b)^2}{3ab} = 1.$$

Q.14 Prove that :  $x^3 + y^3 + z^3 - 3xyz = \frac{1}{2}(x+y+z)[(x-y)^2 + (y-z)^2 + (z-x)^2]$

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