

## POLYNOMIALS

Q1. Factorise

(a)  $6\sqrt{3}x^2 - 47x + 5\sqrt{3}$

(c)  $5\sqrt{5}x^2 + 20x + 3\sqrt{5}$

[Ans: (a)  $(3\sqrt{3}x-1)(2x-5\sqrt{3})$   
(b)  $(\sqrt{5}x+1)(5x+3\sqrt{5})$ ]

Q2. Factorise

(a)  $\frac{1}{2}x^2 + 4x + 6$

(b)  $21x^2 - 2x + \frac{1}{21}$

[Ans: (a)  $(x+6)(\frac{x}{2}+1)$   
(b)  $(21x-1)(x-\frac{1}{21})$ ]

Q3. Factorise

(a)  $16a^4 + 54a$

(b)  $216a^3 - 125$

[Ans (a)  $2a(2a+3)(4a^2-6a+9)$   
(b)  $(6a-5)(36a^2+30a+25)$ ]

Q4. Factorise

(a)  $x^3 - \frac{1}{x^3} - 2x + \frac{2}{x}$

(b)  $27x^3 + 5\sqrt{5}y^3$

[Ans (a)  $(x-\frac{1}{x})(x^2+\frac{1}{x^2}-1)$   
(b)  $(3x+\sqrt{5}y)(9x^2-3\sqrt{5}xy+5y^2)$ ]

Q5 Simplify 
$$\frac{991 \times 991 \times 991 + 9 \times 9 \times 9}{991 \times 991 - 991 \times 9 + 9 \times 9}$$

[Ans: 1000]

Q6. Factorise  $8a^3 + 27b^3 + 64c^3 - 72abc$

[Ans:  $(2a + 3b + 4c)(4a^2 + 9b^2 + 16c^2 - 6ab - 12bc - 8ac)$ ]

Q7. Factorise  $x^3 - 2\sqrt{2}y^3 + 3\sqrt{3}z^3 + 3\sqrt{6}xyz$

[Ans:  $(x - \sqrt{2}y + \sqrt{3}z)(x^2 + 2y^2 + 3z^2 + \sqrt{2}xy - \sqrt{3}xz + \sqrt{6}yz)$ ]

Q8 Factorise  $(p-q)^3 + (q-r)^3 + (r-p)^3$

[Ans  $3(p-q)(q-r)(r-p)$ ]

Q9. Without actual calculating, find  $(28)^3 + (-15)^3 + (-13)^3$

[Ans: 16380]

Q10. Evaluate by using suitable identity

(a)  $(102)^3$

(b)  $(998)^3$

[Ans (a) 1061208  
(b) 994011992]