INDIAN SCHOOL MUSCAT
SENIOR SECTION
DEPARTMENT OF MATHEMATICS
CLASS IX
WORKSHEET NO. 2
POLYNOMIALS

SECTION A: (1 MARK)

1. If $x - 1$ is one factor of the polynomial $2x^2 - x - 1$, then find the other factor. (CCE 2015) — $2x + 1$
2. Write the degree of $(x^2 + 1)(x^3 + 1)^2$ — 8
3. If $p(x) = 2x^3 - x^2 + 3x + 1$, then find the value of $p(-1) + p(2)$ (CCE 2013) — 14
4. If $x^{21} - 20$ is divided by $x + 1$, find the remainder. — -21
5. If $p(x) = 5x^3 - 2x^2 + 3x^5 - 12 + x$, then (i) find coefficient of x^2 and (ii) write in standard form — (i) -2 (ii) $3x^5 + 5x^3 - 2x^2 + x - 12$
6. Find the value of a, if $x - a$ is a factor of $2x^3 - 2ax^2 + 5x + a + 6$ — a= -1

SECTION B: (2 MARKS)

7. Factorise: $7x^2 + 2\sqrt{14}\,x + 2$ — $(\sqrt{(7)}x + \sqrt{2})(\sqrt{(7)}x + \sqrt{2})$
8. Evaluate using suitable identity: 74 X 68 — 5032
9. Evaluate using suitable identity: $(-12)^3 + 5^3 + 7^3$ — -1260
10. Give possible expression for the length and breadth of the rectangle, which has area= $a^2 - 6a + 8$ — (a-4)(a-2)
11. Evaluate using a suitable identity: $(97)^3$ — 912673
12. Expand: $(2x - \frac{1}{2}y - 3z)^2$ — $4x^2 - \frac{1}{4}y^2 + 9z^2 - 2xy + 3yz - 12xz$
13. Factorise: $(9x^2 - 1) - (1 + 3x)^2$ (NCERT EXEMPLAR) — $-2(3x + 1)$

SECTION C: (3 MARKS)

14. Factorise: $(ax + by)^2 + (ay - bx)^2$ (NCERT EXEMPLAR) $(a^2+b^2)(x^2+y^2)$

15. Find the value of $x^3 - 8y^3 - 36xy - 216$, when $x = 2y + 6$. Zero

16. If the polynomials $2x^3 + ax^2 + 3x - 5$ and $x^3 + x^2 + 4x + a$ leaves the same remainder when divided by $(x - 2)$, find the value of a. a=1

17. Factorise: (i) $x^4 + x$ (ii) $12x^2 - 17x + 6$ $X(x+1)(x^2-x+1)$ (ii) $(3x-2)(4x-3)$

18. Factorize: $(m + 2n)^2 + 101(m + 2n) + 100$ (CCE 2013) $(m+2n+100)(m+2n+1)$

19. Find the product $(5a - 3b)(25a^2 + 15ab + 9b^2)$ (CCE 2014) $125a^3 - 3b^3$

SECTION D: (4 MARKS)

20. Factorise: $x^3 + 4x^2 + x - 6$ $(x-1)(x+2)(x+3)$

21. Factorise: (i) $216a^3 - 2\sqrt{2}b^3$ **(i)**$(6a-\sqrt{2}b)(36a^2+6\sqrt{2}+2b^2)$

(ii) $\frac{64}{27}z^3 - 1 - \frac{16}{3}z^2 + 4z$ (ii) $(4/3\,z - 1)^3$

22. Find the value of p and q if $(x + 1)$ and $(x + 2)$ are the factors of $x^3 + 3x^2 - 2px + q$. P=1, q= -4

23. Factorise: $6x^3 - 7x^2 - 8x + 5$ (CCE 2015) **(x+1)**$(3x-5)(2x-1)$

24. If $a+b+c = 5$ and $ab + bc + ca = 10$ then prove that $a^3 + b^3 + c^3 - 3abc = -25$ (NCERT EXEMPLAR)

25. By long division, divide the polynomial $x^4 + x^3 - 2x^2 - x + 1$ by $x + 1$ and verify the remainder by using remainder theorem (CCE 2014) $Q(x)=x^3-2x+1$, $r(x)=0$