

5. FUNDAMENTALS OF ①

POLYNOMIALS (2025/26)

Class: VII, MATHEMATICS

FOUNDATION, SOLUTIONS

TEACHING TASK

JEE MAINS LEVEL

$$01. \frac{x^6 + x^7 - x^9}{x^3} = \frac{x^6}{x^3} + \frac{x^7}{x^3} - \frac{x^9}{x^3}$$

$$= x^3 + x^4 - x^6$$

$$\therefore \text{Degree} = 6$$

Ans: C

$$02. \frac{1}{f} = \frac{1}{2} + \frac{1}{3} = \frac{5}{6} \quad \therefore f = \frac{6}{5} = 1\frac{1}{5} \quad \text{Ans: B}$$

$$03. \frac{4^4}{4} + \frac{4^3}{2} + \frac{4^2}{4} = 64 + 32 + 4 = 100 \quad \text{Ans: A}$$

$$04. 1 + 7 = 8 \quad \text{Ans: A}$$

$$05. 1 + x^3 + 9 - x^2 = x^3 - x^2 + 10$$

$$\text{Degree} = 3$$

Ans: A

$$06. 2 \cdot 1 \cdot 2 (1+2) - 3 \cdot 1 \cdot 2 \cdot (1-2)$$

$$= 12 + 6$$

$$\geq 18$$

Ans: B



07 $S = \frac{1}{2}(60 + 40 + 30) = 65$

(2)

$$A = \sqrt{65 \times 5 \times 25 \times 35}$$

$$= \sqrt{5 \times 13 \times 5 \times 25 \times 35}$$

$$= 5 \times 5 \sqrt{13 \times 35}$$

$$= 25 \sqrt{455}$$

Ans: B

08 $\Delta = \frac{1}{2}(12.25 + 108.35) \times 3.5$

$$= \frac{1}{2} \times 120.6 \times 3.5$$

$$= 60.3 \times 3.5 = 211.05$$

Ans: C

69 $\frac{2(2)^2}{3} + \frac{3(-1)^2}{4} + \frac{4(-1)^2}{5} - 2$

$$= \frac{8}{3} + \frac{3}{4} + \frac{4}{5} - 2$$

$$= \frac{160 + 45 + 48 - 120}{60} = \frac{253 - 120}{60}$$

$$= \frac{133}{60}$$

Ans: A

10 $5x^3$

Ans: A

(11) NOTE! please discard this question, as it has insufficient data

12 4

Ans: D

13 Conceptual

Ans: D

JEE ADVANCED LEVEL (3)

01 $(25a^4b) \times (-2a^2b^2) \times (a^3b^3)$
 $= 50 \cdot a^9 \cdot b^6 = 50(1)^9 \cdot \left(\frac{1}{2}\right)^6 = \frac{50}{64} = \frac{25}{32}$
 Ans: D

02 Conceptual Ans: C, D

03 $2\left(x + \frac{1}{x}\right)$
 When $x=2 \Rightarrow 2\left(2 + \frac{1}{2}\right) = 5 \propto \frac{10}{2}$ Ans: A, C

04 Statement I: Conceptual (False)
Statement II: Conceptual (False) Ans: B

05 Statement I: Conceptual (False)
Statement II: Conceptual (True) Ans: D

06 Assertion: Conceptual (True)
Reason: Mathematically (True) Ans: A

07 Assertion: $f(1) = 3 \cdot 1^2 + 4 \cdot 1 - 1 = 6$ (False)
Reason: Conceptual (True) Ans: D

08 $(2x - x^4)^2 = 4x^2 - 4x^5 + x^8$
 Degree = 8 Ans: C

09.

$$\frac{3x^2}{x^2} - \frac{x^7}{x^2} + \frac{x^6}{x^2}$$

$$= 3 - x^5 + x^4 \rightarrow \text{Degree} = 5$$

(4)

Ans: C

10. Degree $4+3=7$

Ans: B

11. $l = 3a - b, \quad b = 6b - a$

perimeter $= 2(l + b)$

$$= 2(2a + 5b) = 4a + 10b \quad \text{Ans: B}$$

12.

$$\text{perimeter} = (2y + 3z) + (z - y) + (4y - 2z)$$

$$= 3y + 2z$$

Ans: A

13. Sum of other three sides

$$= (16x^3 - 6x^2 + 12x + 4) - (8x^2 + 9x)$$

$$= 16x^3 - 14x^2 + 3x + 4$$

Ans: A

14. 0

Ans: 0

15. Zero of $2x - 2 = 1$

Zero of $6x + 12 = -2$

Sum $= 1 + (-2) = -1$

Ans: -1

16. 5

Ans: 5

- 17
- a) $3 + 2 = 5 (q)$
 - b) $3 (s)$
 - c) $4(1)^2(-1)^2 = 4 (p)$
 - d) $2 (r)$

Ans: q, s, p, r

- 18
- a) $-22xyz = (-22xyz) \times (-1)$
Coefficient = $22xyz (q)$
 - b) $-22xyz = (11xyz)(-2)$
Coefficient = $11xyz (s)$
 - c) $-33x^2y^2z^2 = (-11y^2z^2)(3x^2)$
Coefficient = $-11y^2z^2 (r)$
 - d) $33x^2y^2z^2 = (3x^2z^2)(11y^2)$
Coefficient = $3x^2z^2 (p)$

Ans: q, s, r, p

LEARNERS'S TASK / CUES

- | | | |
|-----|------------------------|--------|
| 01. | All are like terms = 4 | Ans: A |
| 02 | A) $8ab^2, ab^2$ | Ans: A |
| 03 | $7pq, r$ | Ans: A |
| 04 | $\sqrt{7}$ | Ans: C |

05 Conceptual

(6)
Ans: C

06. Conceptual

Ans: D

$$07 \quad 5(1)^{25} - 3(1)^{32} + 2(1)^{12} \\ = 5 - 3 + 2 = 4$$

Ans: C

08 Conceptual

Ans: C

09 Degree = 7

Ans: C

$$10 \quad \frac{-(0)^2}{3} = 0$$

Ans: A

$$11 \quad ax - b = 0 \Rightarrow x = \frac{b}{a}$$

Ans: C

$$12 \quad (1.5 - 1.7 + 0.2 + 2) x^3 \\ = 2x^3$$

Ans: C

JEE MAINS LEVEL

$$01. \quad d + 2008 > b + 2006 > a - 2005 > c - 2007.$$

$\therefore d + 2008$ is greater

Ans: D

$$02 \quad -5136abcx^2yz$$

Ans: D

$$03 \quad 3(-2)^2(-1) + 5(-2)(-1)^2 + 2(-2)(-1)(3) \\ = -12 - 10 + 12 = -10$$

Ans: A

(7)

04 $(-2)^2 + (-3)^2 - (-4)^2$

$$\begin{aligned} & (-2)(-3) + (-3)(-4) + (-4)(-2) \\ &= \frac{4+9+16}{6+12+8} = \frac{29}{26} \end{aligned}$$

Ans: C

05 $2y + 3z - 16x$

Ans: A

06 xyx

Ans: C

07 $6 + 3 + a = 17 \Rightarrow a = 8$

Ans: C

08 $2x^2 - 3x = 0 \quad \left| \quad x = 0 \text{ or } \frac{3}{2} \right.$
 $\Rightarrow x(2x - 3) = 0$

Ans: B

09 4

Ans: A

10 $1(x+d=0 \Rightarrow x = -\frac{d}{c})$

Ans: B

11 $2 + 2 \cdot 3 + 2 \cdot 3 \cdot 4 + 2 \cdot 3 \cdot 4 \cdot 5$
 $= 2 + 6 + 24 + 120 = 152$

Ans: B

JEE ADVANCED

01 A) Degree = 3 B) Degree = $2 + 1 = 3$
C) Degree = $1 + 1 = 2$ D) Degree = 4 Ans: A, B, D

02 A) $2x + 3$ C) $4m^2 - 5n$ Ans: A, C

03 A) $A + B = 2(x^2 + 1)$
D) $A - B = 2x$

Ans: A, D

04 Statement I: The given expression is not a polynomial (False) ⑧

Statement II: Conceptual (False)

Ans: B

05 Statement I:

$$3x^2 + x + a = 8$$

$$\Rightarrow 3(1)^2 + (1) + a = 8$$

$$\Rightarrow a = 4 \text{ (True)}$$

Statement II:

$$x^2 - 2xy + y^2 + x^2 + 2xy + y^2 + 4xy - 4y^2$$
$$= x^2 + 4xy - 2y^2 \text{ (False)}$$

Ans: C

06 Statement I: $\frac{8m^2 - 6mn}{2m}$

$$= \frac{2m(4m - 3n)}{2m} = 4m - 3n = 4m - kn$$
$$\Rightarrow k = 3 \text{ (True)}$$

Statement II: Degree = 8 (False)

Ans: C

07 Assertion(A): Conceptual (True)

Reason: Conceptual (True)

Ans: A

08 Assertion(A) Conceptual (False)

Reason: Conceptual (False)

Ans: B

09. d) $2pq - 3pr + 5q^2$

All are degree 2 terms

Ans: A, B, C

10 $(3x^2 - 2y) \times 2x = 6x^3 - 4xy$

Ans: A

11. 3

Ans: A

12 $3x^2 + 2x + 1 = 3(4)^2 + 2(4) + 1$
 $= 48 + 8 + 1 = 57$

Ans: A

13 2

Ans: B

14 $ax^2 + bx^4 + \boxed{C} \rightarrow \text{degree} = 0$

Ans: 0

~~15~~ two

Ans: 2

15 $4(x+2) - 3 = 5x$

$\Rightarrow 4x + 8 - 3 = 5x$

$\Rightarrow x = 5$

Ans: 5

16 $7 + 4 + 6 + a^2 = 42$

$\Rightarrow a^2 = 25 \Rightarrow a = \pm 5$

Ans: ± 5

18 a) $a^3 - 2a^2 + 4a - 5 + a^3 - 2a^2 + 8a - 5$

$= 2a^3 - 4a^2 + 12a - 10 \cdot (P)$

Ans.

b) $b^3 - \cancel{b^2} + b - 1 + b^3 + \cancel{b^2} + b - 1$

$= 2b^3 + 2b - 2 \cdot (q)$

c) $c^3 + 2c^2 - 3c - 4 + 4c^3 + 3c^2 - 2c - 1$

$= 5c^3 + 5c^2 - 5c - 5 = 5(c^3 + c^2 - c - 1) \cdot (t)$

$$d) d^4 - 3d^3 - 4d^2 - 5 + 2d^4 + 5d^3 + 3d^2 + 4 \quad (10)$$

$$= 3d^4 + 2d^3 - d^2 - 1 (s)$$

Ans: P, v, t, s

~~19~~ a) Polynomial (c)

19 a) multinomial (p)

b) Trinomial (q)

c) Binomial (s)

d) monomial (r)

ADDITIONAL PRACTICE QUESTIONS

01. n

02. Option: D

03. 4

04. $4\left(\frac{5}{4}\right) - \pi = 5 - \pi$

05. ~~ep~~ $x^2 + 2x + 1$

06.
$$\frac{(x^2 + x + 1)(\cancel{x+1})}{(\cancel{x+1})} = x^2 + x + 1$$

07. $a^2 + 2ab + b^2 = (a+b)^2 = (-5+2)^2 = 9$

$\Rightarrow$ THE END $\Leftarrow$