TOPIC – UNIT 03

DETERMINANTS

GROUP – 03

One marks questions

1. If $\begin{vmatrix} x & 5 \\ x & x \end{vmatrix} = 24$ then find the value of x 1

(a) $x = 8$ *or* $x = -3$ (b) $x = 5$ *or* $x = 4$ (c) $x = 6$ *or* $x = 7$ (d) $x = 9$ *or* $x = 0$

2. Find the value of $\begin{vmatrix} 9 & 3 \\ 12 & 4 \end{vmatrix}$ 1

(a) 0 (b) 4 (c) 6 (d) 12

3. Find the value of x, when : $\begin{vmatrix} x & 1 \\ x & x \end{vmatrix} = 20$ 1

(a) $x = (5- 4)$ (b) $x = (3, 2)$ (c) $x = (4, 9)$ (d) $x = (7, 9)$

4. Find the value of x and y, when : $\begin{vmatrix} 3 & 4 \\ y & x \end{vmatrix} = 10$ *and* $\begin{vmatrix} 4 & -3 \\ y & x \end{vmatrix} = 5$ 1

(a) $x = 2, y = -1$

5. Find the value of x if : $\begin{vmatrix} 4x & 16 \\ x & x \end{vmatrix} = -15$ 1

(a) $x = \frac{5}{2}, \frac{3}{2}$ (b) $x = \frac{1}{2}, \frac{1}{3}$ (c) $x = \frac{5}{6}, \frac{6}{10}$ (d) $x = \frac{6}{4}, \frac{7}{9}$

6. Find the value of : $\begin{vmatrix} 4 & 9 & 7 \\ 3 & 5 & 7 \\ 5 & 4 & 5 \end{vmatrix}$ 1

(a) 77 (b) 90 (c) 70 (d) 85

7. Find the value of : $\begin{vmatrix} 1 & 2 & 4 \\ 1 & 3 & 6 \\ 1 & 4 & 7 \end{vmatrix}$ 1

(a) -1 (b) 5 (c) 9 (d) 7

8. Find the value of : $\begin{vmatrix} a & h & g \\ h & b & f \\ g & f & c \end{vmatrix}$ 1

(a) $abc + 2fgh - bg^2 - ch^2$ (b) $abc + fgh$ (c) $fgh + abc$ (d) $abc + g^2 + h^2$

Eight marks questions

9. Find the value of : $\begin{vmatrix} 1 & a^2 & a^3 \\ 1 & b^2 & b^3 \\ 1 & c^2 & c^3 \end{vmatrix}$ 8

10. Find the value of : $\begin{vmatrix} 1 & 1 & 1 \\ a & b & c \\ a^2 & b^2 & c^2 \end{vmatrix}$ 8

11. Find the value of : $\begin{vmatrix} 1 & a & a^2 - bc \\ 1 & b & b^2 - ca \\ 1 & c & c^2 - ab \end{vmatrix}$ 8

12. Find the value of : $\begin{vmatrix} 1 & bc & bc(b+c) \\ 1 & ca & ca(\mathrm{c}+\mathrm{a}) \\ 1 & ab & ab(a+b) \end{vmatrix}$ 8

13. Prove that : $\begin{vmatrix} 1 & a & b+c \\ 1 & b & \mathrm{c}+\mathrm{a} \\ 1 & c & a+b \end{vmatrix} = 0$ 8

14. Prove that : $\begin{vmatrix} 1 & a & bc \\ 1 & b & \mathrm{ca} \\ 1 & c & ab \end{vmatrix} = (a-b)(b-c)(c-a)$ 8

15. Prove that : $\begin{vmatrix} a & a+b & a+2b \\ a+2b & a & a+b \\ a+b & a+2b & a \end{vmatrix} = ab^2(a+b)$ 8

16. Prove that : $\begin{vmatrix} x+a & x+b & x+c \\ y+a & y+b & y+c \\ z+a & z+b & z+c \end{vmatrix} = 0$ 8

17. Prove that : $\begin{vmatrix} a-b-c & 2a & 2a \\ 2b & b-c-a & 2b \\ 2c & 2c & c-a-b \end{vmatrix} = (a+b+c)^3$ 8

18 Prove that : $\Delta = \begin{vmatrix} 1+a_1 & a_2 & a_3 \\ a_1 & 1+a_2 & a_3 \\ a_1 & a_2 & 1+a_3 \end{vmatrix}$ 8

19. Solve : $\begin{vmatrix} a & a & x \\ a & a & a \\ b & x & b \end{vmatrix} = 0$ 8

20. Solve : $\begin{vmatrix} x+a & b & c \\ a & x+b & c \\ a & b & x+c \end{vmatrix} = 0$ 8

21. Solve : $\begin{vmatrix} a & a & y \\ a & a & a \\ b & y & b \end{vmatrix} = 0$ 8

22. Solve : $\begin{vmatrix} x & 2 & 3 \\ 4 & x & 1 \\ x & 2 & 5 \end{vmatrix} = 0$ 8

23. Solve : $\begin{vmatrix} 3+x & 5 & 2 \\ 1 & 7+x & 6 \\ 2 & 5 & 3+x \end{vmatrix} = 0$ 8

24. Evaluate : $\begin{vmatrix} 5 & 10 & 8 \\ 4 & 3 & 2 \\ 7 & 9 & 8 \end{vmatrix}$ 8

25. Prove that : $\begin{vmatrix} 0 & ab^2 & ac^2 \\ a^2b & 0 & bc^2 \\ a^2c & b^2c & 0 \end{vmatrix} = 2a^3b^3c^3$ 8

26. Show without expanding at any stage that : $\begin{vmatrix} (a-1)^2 & a^2+1 & a \\ (b-1)^2 & b^2+1 & b \\ (c-1)^2 & c^2+1 & c \end{vmatrix} = 0$ 8

27. Show without expanding at any stage that : $\begin{vmatrix} 1 & a & bc \\ 1 & b & ca \\ 1 & c & ab \end{vmatrix} = \begin{vmatrix} 1 & a & a^2 \\ 1 & b & b^2 \\ 1 & c & c^2 \end{vmatrix}$ 8

28. Evaluate : $\begin{vmatrix} b+c & a & a \\ b & c+a & b \\ c & c & a+b \end{vmatrix}$ 8

29. Evaluate : $\begin{vmatrix} b+c & a+b & a \\ c+a & b+c & b \\ a+b & c+a & c \end{vmatrix}$ 8

30. Find the value of Determinant : $\begin{vmatrix} 265 & 240 & 219 \\ 240 & 225 & 198 \\ 219 & 198 & 181 \end{vmatrix}$ 8

END