ST. LAWRENCE HIGH SCHOOL

A JESUIT CHRISTIAN MINORITY INSTITUTION

FOR GOD AND COUNTRY

SOLUTIONS OF WORKSHEET-5

SUBJECT – MATHEMATICS

Pre-test

Chapter: MATRICES AND DETERMINANTS **Class: XII**

Topic: DETERMINANTS 2 **Date: 07.05.2020**

I] Choose the correct option $(1 \times 15 = 15)$

1. $\begin{vmatrix} a-b & b-c & c-a \\ x-y & y-z & z-x \\ p-q & q-r & r-p \end{vmatrix}$ is equal to :

(a) $a(x+y+z)+b(p+q+r)+c$

(b) 0

(c) $abc + xyz + pqr$

(d) none of the above

5. b

2. $\begin{vmatrix} 1 & a & a^2-bc \\ 1 & b & b^2-ac \\ 1 & c & c^2-ab \end{vmatrix}$ is equal to :

(a) 0 (b) $a^3+b^3+c^3-3abc$

(c) $3abc$ (d) $(a+b+c)^3$

4. a

3. The system of equations $3x - 2y + z = 0$, $\lambda x - 14y + 15z = 0, x + 2y - 3z = 0$ has a solution other than $x = y = z = 0$ for λ equal to :

(a) 1 (b) 2

(c) 3 (d) 5

3. d

4. The roots of the equation $\begin{vmatrix} 1 & 4 & 20 \\ 1 & -2 & 5 \\ 1 & 2x & 5x^2 \end{vmatrix} = 0$ are :

(a) $-1, -2$ (b) $-1, 2$

(c) $1, -2$ (d) $1, 2$

2. b

5. $\begin{vmatrix} 1 & 5 & \pi \\ \log_e e & 5 & \sqrt{5} \\ \log_{10} 10 & 5 & e \end{vmatrix}$ is equal to :

(a) $\sqrt{\pi}$ (b) e

(c) 1 (d) 0

1. d

6. If $a \neq b \neq c$, the value of x which satisfies the equation $\begin{vmatrix} 0 & x-a & x-b \\ x+a & 0 & x-c \\ x+b & x+c & 0 \end{vmatrix} = 0$ is :

(a) $x = 0$ (b) $x = a$

(c) $x = b$ (d) $x = c$

7. a

7. If ω is the cube root of unity, then $\begin{vmatrix} 1 & \omega & \omega^2 \\ \omega & \omega^2 & 1 \\ \omega^2 & 1 & \omega \end{vmatrix}$ is equal to :

(a) 1 (b) 0

(c) ω (d) ω^2

6. b

8. The value of $\cos\theta \begin{bmatrix} \cos\theta & \sin\theta \\ -\sin\theta & \cos\theta \end{bmatrix} + \sin\theta \begin{bmatrix} \sin\theta & -\cos\theta \\ \cos\theta & \sin\theta \end{bmatrix} = ?$

a) $\begin{bmatrix} 0 & 1 \\ 1 & 0 \end{bmatrix}$; b) $\begin{bmatrix} 1 & 0 \\ 1 & 1 \end{bmatrix}$; c) $\begin{bmatrix} 0 & 0 \\ 1 & 0 \end{bmatrix}$; d) $\begin{bmatrix} 1 & 0 \\ 0 & 1 \end{bmatrix}$

8. d

9. If the system of equations $2x + 3y + 5 = 0$, $x + ky + 5 = 0$, $kx - 12y - 14 = 0$ be consistent, then value of k is :

(a) $-2, \frac{12}{5}$ (b) $-1, \frac{1}{5}$

(c) $-6, \frac{17}{5}$ (d) $6, -\frac{12}{5}$

12.c

10. If $\Delta = \begin{vmatrix} 1 & 2 & 3 \\ 2 & 5 & 7 \\ 3 & 9 & 13 \end{vmatrix}$ and $\Delta' = \begin{vmatrix} 7 & 20 & 29 \\ 2 & 5 & 7 \\ 3 & 9 & 13 \end{vmatrix}$ then :

(a) $\Delta' = 3\Delta$ (b) $\Delta' = \frac{3}{\Delta}$

(c) $\Delta' = \Delta$ (d) $\Delta' = 2\Delta$

11. c

11. The value of determinant $\begin{vmatrix} a+b & a+2b & a+3b \\ a+2b & a+3b & a+4b \\ a+4b & a+5b & a+6b \end{vmatrix}$ is :

(a) $a^2 + b^2 + c^2 - 3abc$ (b) $3ab$

(c) $3a + 5b$ (d) 0

10. d

12. The value of determinant $\begin{vmatrix} b+c & a & a \\ b & c+a & b \\ c & c & a+b \end{vmatrix}$ is :

(a) abc (b) $2abc$

(c) $3abc$ (d) $4abc$

9. d

13. In the determinant $\begin{vmatrix} 0 & 1 & -2 \\ -1 & 0 & 3 \\ 2 & -3 & 0 \end{vmatrix}$, the value of co-factor to its minor of the element -3 is :

(a) -1 (b) 0

(c) 1 (d) 2

14. The value of determinant $\begin{vmatrix} b+c & a+b & a \\ c+a & b+c & b \\ a+b & c+a & c \end{vmatrix}$ is equal to :

(a) $a^3 + b^3 + c^3 - 3abc$ (b) $2abc\,(a + b + c)$

(c) 0 (d) none of these

15. $x + ky - z = 0, 3x - ky - z = 0$ and $x - 3y + z = 0$ has non-zero solution for k is equal to :

(a) -1 (b) 0

(c) 1 (d) 2

15. a

14.a

13. 1

- **Prepared by**

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