41. If A = $\begin{pmatrix} 4 & x+2 \\ 2x-3 & x+1 \end{pmatrix}$ is a symmetric matrix, then x is

1) 1   2) 5   3) -5   4)4

42. If A = $\begin{pmatrix} 200 & 201 \\ 202 & 203 \end{pmatrix}$ B = $\begin{pmatrix} 111 & 111 \\ 112 & 113 \end{pmatrix}$ then |AB| is

1) 0   2) 220   3) 222   4) -222

43. If $A = \begin{bmatrix} \sin\theta & \cos\theta \\ \cos\theta & \sin\theta \end{bmatrix}$ is a singular matrix than $\theta =$

1) $\dfrac{n\pi}{2} \pm \dfrac{\pi}{2}$ 2) $n\pi \pm \dfrac{\pi}{4}$ 3) $2n\pi$ 4) None

44. If $A(x) = \begin{pmatrix} \cos x & \sin x & 0 \\ -\sin x & \cos x & 0 \\ 0 & 0 & 1 \end{pmatrix}$ then $[A(x)]^{-1} =$

1) A(x)   2) –A(x)   3) A(-x)   4) –A(-x)

45) $\begin{vmatrix} 1 & 373 & 1893 \\ 1 & 372 & 1892 \\ 1 & 371 & 1891 \end{vmatrix}$ =

1) 0   2) 1   3) -1   4) -6

46) $\begin{vmatrix} X^2 & 5 & y^2+z^2 \\ Y^2 & 5 & z^2+x^2 \\ Z^2 & 5 & x^2+y^2 \end{vmatrix}$ =

1) $5+x^2+y^2+z^2$　　2) $x^2+y^2+z^2$　　3) 0　　　4) None

47) $\begin{vmatrix} -a^2 & ab & ac \\ ab & -b^2 & bc \\ ac & bc & -c^2 \end{vmatrix}$ = $\lambda a^2 b^2 c^2$ then λ is

1) 1   2) 2   3) 3   4) 4

48) In any $\triangle ABC$ $\begin{vmatrix} 1 & a & b \\ 1 & b & c \\ 1 & c & a \end{vmatrix} = 0$

then $\sin^2 A + \sin^2 B + \sin^2 C$ is   1) 9/4 2) 4/9   3) 3 4) 1

49) The value of $\begin{vmatrix} x+y & y+z & z+x \\ x & y & z \\ x-y & y-z & z-x \end{vmatrix}$ =

1) $2(x+y+z)^3$ 2) $2(x+y+z)^2$ 3) 0   4) $(x+y+z)^3$

50) If ω is the cube root of unity, then $\begin{vmatrix} 1 & \omega^3 & \omega^2 \\ \omega^3 & 1 & \omega \\ \omega^2 & \omega & 1 \end{vmatrix}$

1) 0   2) -3   3) 3   4) 1

51) The roots of the equation $\begin{vmatrix} x-1 & 1 & 1 \\ 1 & x-1 & 1 \\ 1 & 1 & x-1 \end{vmatrix} = 0$, then

1) (1,2)   2) (-1,2)   3) (1, -2)   4) (-1, -2)

52) If A = $\begin{pmatrix} 2 & 3 \\ 1 & 2 \end{pmatrix}$ then inverse of adjA is

1) A itself   2) $\begin{pmatrix} 2 & -3 \\ -1 & 2 \end{pmatrix}$ 3) $\begin{pmatrix} -2 & 1 \\ 3 & -2 \end{pmatrix}$ 4) $\begin{pmatrix} -2 & -1 \\ -3 & -2 \end{pmatrix}$

53) If A = $\begin{pmatrix} x & 2 \\ 2 & x \end{pmatrix}$ & $|A^3| = 125$, then x is

1) ±1   2) ±2   3) ±3   4) ±5

54) If $A = \begin{pmatrix} 2 & -1 \\ 3 & -2 \end{pmatrix}$ then $A^4 + A^3 - A^2 =$

1) 0   2) I   3) A   4) None

55) If the matrix $\begin{pmatrix} a & 2 & -3 \\ b & c & 5 \\ d & e & f \end{pmatrix}$ is skew symmetric matrix

then a+b+c+d+e+f =

1) 4   2) 0   3) -4   4)10

56) If A is symmetric matrix and B is a skew symmetric matrix of same order, then $A^2 + B^2$ is

1) symmetric matrix   2) skew symmetric matrix

3) unit matrix   4) None

57) If $\begin{pmatrix} x-1 & 2 & 1 \\ -1 & x+2 & 1 \\ -1 & 2 & x+1 \end{pmatrix}$ is a singular matrix, then x =

1) 1 or 0   2) -1 or 0   3) 1 or -2   4) 0 or -2

58) If A+2B = $\begin{pmatrix} 2 & 0 \\ 1 & 2 \end{pmatrix}$ & 2A+3B = $\begin{pmatrix} 1 & -1 \\ 2 & 0 \end{pmatrix}$ then A is

1) $\begin{pmatrix} 3 & 1 \\ 0 & 3 \end{pmatrix}$
2) $\begin{pmatrix} 4 & 2 \\ 1 & -4 \end{pmatrix}$
3) $\begin{pmatrix} -4 & -2 \\ -1 & -4 \end{pmatrix}$
4) $\begin{pmatrix} -4 & -2 \\ 1 & -6 \end{pmatrix}$

59) If $A = \begin{pmatrix} x & 1 & 1 \\ 1 & x & 1 \\ 1 & 1 & x \end{pmatrix}$ & $B = \begin{pmatrix} x & 1 \\ 1 & x \end{pmatrix}$ then

1) $\dfrac{dA}{dx} = 3B+1$ 2) $\dfrac{dA}{dx} = 3B$ 3) $\dfrac{dA}{dx} = -3B$ 4) None

60) The value of
$$\begin{vmatrix} 1 & 1 & 1 \\ 1 & 1+x & 1 \\ 1 & 1 & 1+y \end{vmatrix} =$$

1) xy   2) 1+x+y   3) 2+x+y   4) 3+x+y