Set-B

(1) The two ends of latus rectum of a parabola are the points (3, 6) and (-5, 6). The focus is _____

(a) (1, 6) (b) (-1, 6) (c) 1, -6) (d) (-1, -6)

(2) If $\frac{1}{a}+\frac{1}{b}+\frac{1}{c}=0$, then $\begin{vmatrix} 1+b & 1 & 1 \\ 1 & 1+b & 1 \\ 1 & 1 & 1+c \end{vmatrix}$ is equal to _____

(a) 0 (b) abc (c) - abc (d) None of these

(3) If $\vec{a}=\hat{i}-2\hat{j}+3\hat{k}$, $\vec{b}=3\hat{i}+\hat{j}+2\hat{k}$, then the unit vector perpendicular to both $\vec{a}$ and $\vec{b}$ is _____

(a) $\frac{\hat{i}+\hat{j}+\hat{k}}{\sqrt{3}}$ (b) $\frac{\hat{i}-\hat{j}+\hat{k}}{\sqrt{3}}$ (c) $\frac{-\hat{i}+\hat{j}+\hat{k}}{\sqrt{3}}$ (d) $\frac{\hat{i}-\hat{j}+\hat{k}}{\sqrt{3}}$

(4) The distance of the point (2, 3, 4) from the plane 3x-2y+2z+11=0 is _____

(a) 9 (b) 20 (c) 2 (d) 1

(5) The number of ways in which a mixed double tennis game be arranged between 10 players consisting of 6 men and 4 women?

(a) 180 (b) 90 (c) 48 (d) 12

(6) $\lim_{x\to 0} \frac{(1-x)^n-1}{x}$ is _____

(a) $\lfloor n$ (b) $\lfloor n-1$ (c) $-n$ (d) n

(7) If ω is a complex cube root of unity, then the product $(1-\omega+\omega^2)(1-\omega^2+\omega^4)(1-\omega^4+\omega^8)\ldots$ to 2n factors is equal to _____

(a) 4^n (b) 4^{2n} (c) $(4\omega)^n$ (d) $\left(\frac{4}{\omega}\right)^n$

(8) The value of $\cot^{-1}\left(\frac{\sqrt{1-\sin x}+\sqrt{1+\sin x}}{\sqrt{1-\sin x}-\sqrt{1+\sin x}}\right)$ is _____

(a) $\pi-x$ (b) $2\pi-x$ (c) $\frac{\pi}{2}$ (d) $\pi-\frac{x}{2}$

(9) If $x+y=k$ is normal to $y^2=12x$ then k is

(a) 3 (b) 9 (c) -9 (d) -3

(10) Four boys picked up 30 mangoes. The number of ways in which they can divide them if all mangoes are identical is _____

(a) 2728 (b) 5456 (c) 5400 (d) None of these

(11) The coefficient of x^4 is $\left(\frac{x}{2}-\frac{3}{x^2}\right)^{10}$ is _____

(a) $\frac{405}{256}$ (b) $\frac{504}{259}$ (c) $\frac{450}{263}$ (d) None of these.

(12) The number of paper subsets of the set $\{1,2,3\}$ is

(a) 8 (b) 7 (c) 6 (d) 5

(13) Let A and B be two finite sets having m and n elements respectively. Then the total number of mappings from A to B is _____

(a) mn (b) 2^{mn} (c) m^n (d) n^m

(14) The distance between the parallel lines $2x+3y-2=0$ and $2x+3y-4=0$ is _____

(a) $\sqrt{13}$ (b) $\frac{1}{\sqrt{13}}$ (c) $\frac{2}{\sqrt{13}}$ (d) $\frac{3}{\sqrt{13}}$

(15) $\int e^{\log x}dx$ is equal to _____

(a) $a\log x\ e^x$ (b) e^x (c) $\frac{x^2}{2}+\log x$ (d) $\frac{x^2}{2}$

(16) The degree of differential equation $\left[1+\left(\frac{dy}{dx}\right)^2\right]^{3/2}=\frac{d^2y}{dx^2}$ is _____

(a) 1 (b) 2 (c) 3 (d) 4

(17) If $\left|\vec{\alpha}+\vec{\beta}\right|=\left|\vec{\alpha}-\vec{\beta}\right|$ then

(a) $\vec{\alpha}$ is parallel to $\vec{\beta}$ (b) $\vec{\alpha}$ is perpendicular to $\vec{\beta}$ (c) $\left|\vec{\alpha}\right|=\left|\vec{\beta}\right|$ (d)None of these.

(18) If $A=\begin{bmatrix}1 & 2 & -1\\ -1 & 1 & 2\\ 2 & -1 & 1\end{bmatrix}$ then det $(\text{adj}(\text{adj}A))$ is _____

(a) $(14)^1$ (b) $(14)^2$ (c) $(14)^3$ (d) $(14)^4$

(19) If $A=\sin^2\theta+\cos^4\theta$, then for all values of θ, we have _____

(a) $1\le A\le 2$ (b) $\frac{3}{4}\le A\le 1$ (c) $0\le A\le 1$ (d) $\frac{1}{4}\le A\le\frac{1}{2}$

(20) $\lim_{n\to\infty}\left[\frac{1}{1-n^2}+\frac{2}{1-n^2}+\ldots+\frac{n}{1-n^2}\right]$ is equal to _____

(a) 0 (b) $\frac{-1}{2}$ (c) $\frac{1}{2}$ (d) None of these.