

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) $\lim_{x \rightarrow 0} \frac{(1-x)^n - 1}{x}$ is _____
 (a) $\lfloor n \rfloor$ (b) $\lfloor n-1 \rfloor$ (c) -n (d) n
- (7) If ω is a complex cube root of unity, then the product $(1 - \omega + \omega^2)(1 - \omega^2 + \omega^4)(1 - \omega^4 + \omega^8) \dots$ 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 in $\left(\frac{x}{2} - \frac{3}{x^2}\right)^{10}$ is _____
- (a) $\frac{405}{256}$ (b) $\frac{504}{259}$ (c) $\frac{450}{263}$ (d) None of these.
- (12) The number of proper 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) $a \log x \cdot e^x$ (b) e^x (c) $\frac{x^2}{2} + \log x$ (d) $\frac{x^2}{2}$
- (16) The degree of differential equation $\left[1 + \left(\frac{dy}{dx}\right)^2\right]^{\frac{3}{2}} = \frac{d^2y}{dx^2}$ is _____
- (a) 1 (b) 2 (c) 3 (d) 4
- (17) If $|\vec{\alpha} + \vec{\beta}| = |\vec{\alpha} - \vec{\beta}|$ then
- (a) $\vec{\alpha}$ is parallel to $\vec{\beta}$ (b) $\vec{\alpha}$ is perpendicular to $\vec{\beta}$ (c) $|\vec{\alpha}| = |\vec{\beta}|$ (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) $1 \leq A \leq 2$ (b) $\frac{3}{4} \leq A \leq 1$ (c) $0 \leq A \leq 1$ (d) $\frac{1}{4} \leq A \leq \frac{1}{2}$
- (20) $\lim_{n \rightarrow \infty} \left[\frac{1}{1-n^2} + \frac{2}{1-n^2} + \dots + \frac{n}{1-n^2} \right]$ is equal to _____

(a) 0

(b) $\frac{-1}{2}$

(c) $\frac{1}{2}$

(d) None of these.

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