

KNOWLEDGE HORIZON CLASSES

Test Series

- Q1.** A relation on a set $A = \{1, 2, 3\}$ is $R = \{(1, 1), (2, 1), (1, 3)\}$ is
 (i) Function
 (ii) Not a function
 (iii) Onto function
 (iv) One one function
- Q2.** A relation on a set $A = \{1, 2, 3\}$ is $R = \{(1, 2), (2, 1)\}$ is
 (i) Function
 (ii) Not a function
 (iii) Onto function
 (iv) One function
- Q3.** If $f = \{(3,1), (2,3), (1,2)\}$ then f^{-1} is?
 (i) $\{(1,3), (2,3), (2,1)\}$ (ii) $\{(3,1), (3,2), (2,1)\}$
 (iii) $\{(1,3), (3,2), (2,1)\}$ (iv) $\{(3,1), (2,3), (1,2)\}$
- Q4.** The range of $\sin^{-1} x$ is
 (i) $\left(-\frac{\pi}{2}, \frac{\pi}{2}\right)$ (ii) $\left[-\frac{\pi}{2}, \frac{\pi}{2}\right]$ (iii) $[0, \pi]$ (iv) $(0, \pi)$
- Q5.** The value of $\cos^{-1}\left(\cos \frac{13\pi}{6}\right)$ is
 (i) $\frac{\pi}{2}$ (ii) $\frac{\pi}{3}$ (iii) $\frac{\pi}{4}$ (iv) $\frac{\pi}{6}$
- Q6.** If $A = \begin{bmatrix} a & 0 \\ 0 & -a \end{bmatrix}$ and $B = \begin{bmatrix} 0 & a \\ a & 0 \end{bmatrix}$ find the value of $A(B)$
 (i) $\begin{bmatrix} 0 & a^2 \\ a^2 & 0 \end{bmatrix}$ (ii) $\begin{bmatrix} 0 & a^2 \\ -a^2 & 0 \end{bmatrix}$
 (iii) $\begin{bmatrix} 0 & -a^2 \\ -a^2 & 0 \end{bmatrix}$ (iv) $\begin{bmatrix} 0 & -a^2 \\ a^2 & 0 \end{bmatrix}$
- Q7.** If $A = \begin{bmatrix} 1 & 0 \\ 0 & -1 \end{bmatrix}$ and $B = \begin{bmatrix} a & 0 \\ 0 & -a \end{bmatrix}$ satisfying $2A + B = 0$ then find the value of a .

(iii) Maximum Value = 11

(iv) Maximum Value = 10

Q15. $\int \frac{e^x(1+x)}{\cos^2(xe^x)} dx =$

(i) $2 \log_e \cos(xe^x) + C$

(ii) $\sec(xe^x) + C$

(iii) $\tan(xe^x) + C$

(iv) $\tan(x + e^x) + C$

Q16. Integration of $\frac{1}{1+(\log x)^2}$ with respect to $\log x$ is

(a) $\frac{\tan^{-1}(\log x)}{x} + C$

(b) $\tan^{-1}(\log x) + C$

(c) $\frac{\tan^{-1} x}{x} + C$

(d) none of these

Q17. $\int_0^1 \frac{1}{(5+2x-2x^2)(1+e^{2-4x})} dx$ is equal to

(i) $\frac{1}{2\sqrt{11}} \log \frac{(\sqrt{11}+1)^2}{10}$

(ii) $\frac{1}{\sqrt{11}} \log \frac{(\sqrt{11}+1)^2}{10}$

(iii) $\frac{1}{2\sqrt{11}} \log \frac{(\sqrt{11}-1)^2}{10}$

(iv) none of these

Q18. The area bounded by the parabola $y^2 = 4ax$ and $x^2 = 4ay$ is

(i) $\frac{8a^3}{3}$

(ii) $\frac{16a^2}{3}$

(iii) $\frac{32a^2}{3}$

(iv) $\frac{64a^2}{3}$

Q19. The general solution of the differential equation $e^x dy + (ye^x + 2x) dx = 0$ is

(i) $xe^y + x^2 = C$

(ii) $xe^y + y^2 = C$

(iii) $ye^x + x^2 = C$

(iv) $ye^y + x^2 = C$

Q20. If $\vec{a} = 3\hat{i} - \hat{j} - 4\hat{k}$, $\vec{b} = -2\hat{i} + 4\hat{j} - 3\hat{k}$, $\vec{c} = \hat{i} + 2\hat{j} - \hat{k}$, find $|3\vec{a} - 2\vec{b} + 4\vec{c}|$.

(i) 20

(ii) $\sqrt{400}$

(iii) $\sqrt{398}$

(iv) 0