KNOWLEDGE HORIZON CLASSES

Test Series

Q1. A relation on a set A = {1, 2, 3} is R = {(1, 1), (2, 2), (3, 3)} is
(i) Only function
(ii) Not a function
(iii) Bijective function
(iv) Only one one function

Q2. If $f: Q \rightarrow Q$ is defined by $f(x) = x^2$, then find $f^{-1}(9)$.
(i) 3 (ii) -3
(iii) ± 3 (iv) 9

Q3. The range of $\cot^{-1} x$ is
(i) $[0, \pi]$ (ii) $(0, \pi)$ (iii) $\left[-\frac{\pi}{2}, \frac{\pi}{2}\right]$ (iv) $\left(-\frac{\pi}{2}, \frac{\pi}{2}\right)$

Q4. $\tan^{-1} \frac{1}{\sqrt{(x^2 - 1)}} =$
(i) $-\sec^{-1} x$ (ii) $\sec^{-1} x$
(iii) $\frac{\pi}{2} - \sec^{-1} x$ (iv) None of these

Q5. If $\begin{bmatrix} x+y & 3x-2y \\ 5x-z & 2y-1 \end{bmatrix} = \begin{bmatrix} 3 & -1 \\ 2 & 3 \end{bmatrix}$ Find x, y and z
(i) x = 0, y = 1, z = 2 (ii) x = 1, y = 1, z = 2
(iii) x = 1, y = 2, z = 2 (iv) x = 1, y = 2, z = 3

Q6. $\begin{vmatrix} 9 & 9 & 12 \\ 1 & 3 & -4 \\ 1 & 9 & 12 \end{vmatrix} =$
(i) 566
(ii) 576
(iii) 586
(iv) 556

Q7. If A is a non singular matrix then A^{-1}=

(i) $\frac{|A|}{adj(A)}$

(ii) $\frac{adj(A)}{|A|}$

(iii) $\frac{1}{adj(A).|A|}$

(iv) $|A.adj(A)|$

Q8. Examine the continuity of function f given by $f(x)=2x+5$ at $x=1$.

(i) Continuous at x = 1
(ii) Discontinuous at x = 1
(iii) Discontinuous at x = 2
(iv) Discontinuous at x = 3

Q9. Differentiate $e^{\sin x^2}$.

(i) $e^{\sin x^2}.\cos x^2.2x$ (ii) $e^{\sin x^2}.\sin x^2$
(iii) $e^{\sin x^2}.\sin x^2.2x$ (iv) $e^{\sin x^2}.\cos x^2$

Q10. If $f(x)=3x^2+4x+5$ then $f^{11}(x)$ =

(i) 2 (ii) 4
(iii) 6 (iv) 5

Q11. The rate of change of the area of a circle with respect to its radius r when r = 3 cm is

(i) 6π cm^2/s (ii) 8π cm^2 / s
(iii) 10πcm^2/s (iv) 12πcm^2/s

Q12. The slope of the tangent to the curve $y = 3x^4-4x$ at $x = 4$ is.

(i) 765
(ii) 763
(iii) 764
(iv) 766

Q13. The anti derivative of $\left(\sqrt{x}+\frac{1}{\sqrt{x}}\right)$ equals

(i) $\frac{1}{3}x^{\frac{1}{3}}+2x^{\frac{1}{2}}+C$ (ii) $\frac{2}{3}x^{\frac{2}{3}}+\frac{1}{2}x^2+C$
(iii) $\frac{2}{3}x^{\frac{3}{2}}+2x^{\frac{1}{2}}+C$ (iv) $\frac{3}{2}x^{\frac{3}{2}}+\frac{1}{2}x^{\frac{1}{2}}+C$

Q14. $\int\frac{x\,dx}{(x-1)(x-2)}$ equals

(a) $\log\left|\frac{(x-1)^2}{x-2}\right|+C$ (b) $\log\left|\frac{(x-2)^2}{x-1}\right|+C$

(c) $\log\left|\left(\frac{x-1}{x-2}\right)^2\right|+C$ (d) $\log|(x-1)(x-2)|+C$

Q15. $\int_1^{\sqrt{3}} \frac{dx}{1+x^2}$ equals

(i) $\frac{\pi}{3}$ (ii) $\frac{2\pi}{3}$ (iii) $\frac{\pi}{6}$ (iv) $\frac{\pi}{12}$

Q16. Area or the region bounded between the line $x = 4$ and the parabola $y^2 = 16x$ is

(i) $\frac{16}{3}$ (ii) $\frac{128}{3}$

(iii) $-\frac{16}{3}$ (iv) $-\frac{128}{3}$

Q17. The number of arbitrary constants in the general solution of a differential equation of forth order are:

(i) 0 (ii) 2

(iii) 3 (iv) 4

Q18. In triangle ABC fig., which of the following not true:

(i) $\overrightarrow{AB}+\overrightarrow{BC}+\overrightarrow{CA}=\vec{0}$ (ii) $\overrightarrow{AB}+\overrightarrow{BC}-\overrightarrow{AC}=\vec{0}$

(iii) $\overrightarrow{AB}+\overrightarrow{BC}-\overrightarrow{CA}=\vec{0}$ (iv) $\overrightarrow{AB}-\overrightarrow{CB}+\overrightarrow{CA}=\vec{0}$

Q19. Let $\vec{a}$ and $\vec{b}$ be two unit vectors and α be the angle between them then $\vec{a}+\vec{b}$ is a unit vector, if

(i) $\alpha=\frac{\pi}{4}$ (ii) $\alpha=\frac{\pi}{3}$

(iii) $\alpha=\frac{2\pi}{3}$ (iv) $\alpha=\frac{\pi}{2}$

Q20. The direction cosines of the ray from p (1, −2, 4) to Q (−1, 1, −2) are

(i) < −2, 3, −6 > (ii) < 2, −3, 6>

(iii) $<\frac{2}{7},-\frac{3}{7},\frac{6}{7}>$ (iv) $<-\frac{2}{7},\frac{3}{7},-\frac{6}{7}>$.