Mathematics Objective Questions Paper 22

Q-1 The distance of the point(x,y) from y-axis is

(a) x

(b) y

(c) |x|

(d) |y|

Q-2. The straight line 3x+y=9 divides the segment joining the points (1,3) and (2,7) in the ratio.

(a) 4:2

(b) 3:4

(c) 4:5

(d) 5:6

Q-3. If the angles of triangle ABC are in A.P., then

(a) $c^2 = a^2 + b^2 + ab$

(b) $a^2 + c^2 - ac = b^2$

(c) $c^2 = a^2 + b2$

(d) None of these

Q-4. The area of triangle is 80 cm^2 and its perimeter is 8 cm. The radius of its inscribed circle is

(a) 10 cm

(b) 20 cm

(c) 5 cm

(d) None of these

Q-5. The straight line 3x+4y=20 and the circle $x^2 + y^2 = 16$

(a) Touch each other

(b) Intersect in the two distinct point

(c) Neither touch nor intersect in two points

(d) None of these

Q-6. Slope of a line is not defined if the line is

(a) Parallel to x-axis

(b) Parallel to the line x-y=0

(c) Parallel to the line x+y=0

(d) Parallel to y-axis

Q-7. The number of values of θ which lie between 0 2π and satisfy the equation $\sin^4 \quad -2\sin^2 \quad \theta - 1 = 0$ is

(a) 1

(b) 2

(c) 3

(d) None of theses

Q-8. If $\cos \quad \left(2\sin^1 \quad x\right) = \frac{1}{9}, \textit{ then } x =$

(a) $\frac{2}{3}$

(b) $-\frac{2}{3}$

(c) $\pm\frac{2}{3}$

(d) None of these

Q-9. The image of the point(α, β) is the line $x + y = 0$ is

(a) $(-\alpha, \beta)$

(b) (β, α)

(c) $(-\beta, -\alpha)$

(d) None of these

Q-10. $\tan^{-1} \quad \frac{1}{7} + 2\tan^{-1} \quad \frac{1}{3} \quad =$

(a) $3\pi/4$

(b) $\pi/4$

(c) $\pi/2$

(d) None of these

Q-11. If a=4, b=3 and A=60^o, then c is a root of the equation

(a) $x^2 - 3x - 7 = 0$

(b) $x^2 + 3x + 7 = 0$

(c) $x^2 - 3x + 7 = 0$

(d) $x^2 + 3x - 7 = 0$

Q-12. The vertex od the parabola $y^2 = 4a(x + a)$ is

(a) (0,0)

(b) (-a,0)

(c) $(a, 0)$

(d) $(0, a)$

Q-13. slope of any line parallel to x-axis is

(a) 1

(b) -1

(c) 0

(d) Not defined

Q-14. bc $\cos^2 \frac{A}{2} + ca\cos^2 \frac{B}{2} + ab\cos^2$, is equal to

(a) $(s - a)^2$

(b) $(s - b)^2$

(c) $(s - c)^2$

(d) s^2

Q-15. If in a ΔABC, a cos A = bh cos B, then the triangle is a/an

(a) Equilibrium

(b) Right angled

(c) Isosceles

(d) Either isosceles or right angle

Q-16. The period of function f(x) $= \sin^2 \; + \tan \; x \, is$

(a) π

(b) 2π

(c) 3π

(d) None of these

Q-17. if x={49(n-1):n e N} and $y = \left\{2^{3n} - 7n- : n\,e\,N\right\}$, *then*

(a) $x = y$

(b) $x \subset y$

(c) $y \subset x$

(d) None of these

Q-18. If P=$\left\{n^3 + (n+1)^3 + (n+2)^3 : n\,e\,N\right\}$, and $Q = \{9N : n\,e\,N\}$, then

(a) P=Q

(b) P C Q

(c) Q C P

(d) None of these

Q-19. If $\left[\log_4 \left[\log_2 (x)\}\right]\right] = 1$, then the value of x is

(a) 23

(b) 43

(c) $2 \times 3 \times 4$

(d) None of these

Q-20. Derivative of $\cos\left(\sin x\right)$ with respect to sin x is

(a) $-\sin\left(sin X\right)\cos X$

(b) $-\sin\left(sin X\right)$

(c) $-\sin\left(sin X\right)/\cos X$

(d) None of these

Q-21. If x sin (a+y)=sin y, then dy/dx is equal to

(a) $\sin^2\left(a+y\right)/\sin a$

(b) $\sin^2 a/\sin^2\left(a+y\right)$

(c) $\sin (a+y)/\sin a$

(d) $\sin a/\sin\left(a+y\right)$

Q-22. The range of the function $f(x) = \cos [x]$, *where* $-\frac{\pi}{2} < x < \frac{\pi}{2}$, is

(a) {-1,1,0}

(b) {cos1,1,cos 2}

(c) {cos1,-cos 1,1}

(d) None of these

Q-23. The domain of the function $f\,(x) = \frac{1}{[x]} + \sqrt{2-x}\,x\,is$

(a) [0,2]

(b) [0,1]

(c) [1,2]

(d) [1,2]

Q-24. Let $f\,(x) + x^3,\ then f\,(x)$ has a

(a) Local maxima at x=0

(b) Local minima at x=0

(c) Point of inflexion at x=0

(d) None of these

Q-25. $\lim_{x \to \frac{\pi}{4}} \quad \frac{sec-\sqrt{2}}{X-\frac{\pi}{4}}$

(a) $\sqrt{2}$

(b) $-\sqrt{2}$

(c) 0

(d) None of these

Q-26. If I=$\int_1^2 \frac{dx}{\sqrt{1+x}}$ and J=$\int_1^2 \frac{dx}{x}$, then

(a) $I > J$

(b) $I < J$

(c) $I = J$

(d) None of these

Q-27. $\int \frac{secxcosecx}{logtanx}\,dx =$

(a) log(tan x)

(b) tan (log x)

(c) tan {log(log x)}

(d) log1log(tan x)

Q-28. If $f(x) = \frac{1}{3}x + 1$, then f(0) is equal to

(a) Vanishes

(b) is positive

(c) is negative

(d) does not exist

Q-29. If $y = \sin^{-1} \quad a\, and \cos^{-1} \quad \sqrt{1} - x^2,\ then\ dy/dx$ is equal to

(a) $\cos^{-1} \quad x$

(b) $\frac{1}{\sqrt{1}} - x^2$

(c) $\sqrt{1} - x^2$

(d) 1

Q-30. $\int_{-\pi}^{\pi} \left(\cos \quad px - \sin \quad q\,x\right)^2 dx$ is equal to

(a) 0

(b) $\frac{\pi}{2}$

(c) π

(d) 2π

Q-31. $\int \left(e^{a \log \ x} + e^{x \log \ a}\right)$ dx is equal to

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

(b) $\frac{1}{a}e^{alogx} + \frac{1}{\log \ a}e^{xloga}$

(c) $\frac{x^a}{loga} + \frac{a^x}{log\ x}$

(d) None of these

Q-32. The number of vectors of unit length perpendicular to vectors $\vec{u} = \vec{i} + \vec{j}\ and\ \vec{v} = \vec{j} + \vec{k}\ is$

(a) one

(b) Three

(c) Two

(d) Infinite

Q-33. Let $\vec{r} = 2\vec{i} + 2\vec{j} + 5\vec{k}$ and A, B be the points (1, 2, 5)and (-1, -2, -3) respectively. If B $\vec{A}\ x\ \vec{r} = 4\vec{i} + 6\vec{j}\ 2\lambda\hat{k},\ then\ \lambda =$

(a) 0

(b) 1

(c) 2

(d) -2

Q-34. $\int \frac{1}{a+x^{\frac{1}{2}}} dx =$

(a) $\left(\frac{x^{\frac{2}{2}}}{2} + x^{\frac{1}{3}} + \log\left(1 + x^{\frac{1}{3}}\right)\right)$

(b) $\left(\frac{x^{\frac{2}{2}}}{2} - x^{\frac{1}{3}} + \log\left(1 + x^{\frac{1}{3}}\right)\right)$

(c) $\left(\frac{x^{\frac{2}{2}}}{2} - x^{\frac{1}{3}} - \log\left(1 + x^{\frac{1}{3}}\right)\right)$

(d) None of these

Q-35. The area $\{(x, y) : x^2 \leq y \leq \sqrt{x}\}$ is equal to

(a) $\frac{1}{6}$

(b) $\frac{1}{3}$

(c) $\frac{2}{3}$

(d) None of these

Q-36. If $\vec{A} = \vec{i} + 2\vec{j}\ 3\vec{k},\ \vec{B} = -\vec{i} + 2\vec{j} + \vec{k}\ C = 3\vec{i} + \vec{j}$, then t s.t. $\vec{A} + t\vec{B}$ is right angle to $\vec{C}$, will be equal to

(a) 5

(b) 4

(c) 6

(d) 2

Q-37. Area of the parallelogram whose adjacent sides are $\vec{a}$ *and* $\vec{b}$ is

(a) $\vec{a}\,.\,\vec{b}$

(b) $\vec{a}\ x\ \vec{b}$

(c) $\left|\vec{a}\ \vec{b}\right|$

(d) $\frac{1}{2}\left|\vec{a}\ x\ \vec{b}\right|$

Q-38. $\int(1 - cosx)cosec^2x\,dx$ is equal to

(a) $Tan\frac{x}{2} + c$

(b) $Cot\ \frac{x}{2} + c$

(c) ½ $tan\frac{x}{2} + c$

(d) $2\ tan\frac{x}{2} + c$

Q-39. $\left(3\ \vec{a}\ x\,2\,\vec{b}\right).\,\vec{c} + \left(3\,\vec{b}\ x\,2\,\vec{c}\right).\,\vec{a} + \left(4\,\vec{c}\,x3\,\vec{b}\right).\,\vec{a}$ is equal to

(a) 0

(b) 24$\left[\vec{a}\ \vec{b}\ \vec{c}\right]$

(c) 24$\left[\vec{b}\ \vec{a}\ \vec{c}\right]$

(d) None of these

Q-40. $\vec{a}\ \times\ \left(\vec{b} \times \vec{c}\right)$ is equal to

(a) $\left(\vec{a}\,.\,\vec{b}\right)\vec{c} - \left(\vec{a}\,.\,\vec{c}\right)\vec{b}$

(b) $\left(\vec{a}\,.\,\vec{b}\right)\vec{b} - \left(\vec{a}\,.\,\vec{b}\right)\vec{c}$

(c) $\left(\vec{b}\,.\,\vec{c}\right)\vec{a} - \left(\vec{b}\,.\,\vec{a}\right)$

(d) None of these

Q-41. If x, y, eR, xy rational, y irrational and x rational, then

(a) $x > 0$

(b) $x < 0$

(c) $x = 0$

(d) $x \neq 0$

Q-42. If $\alpha \, and \, \beta$ are two distinct complex numbers such that $|\alpha| = |\beta| and \; Re\,(\alpha) > 0,\; lm\,(\beta) < 0, then \; \alpha + \beta/\alpha - \beta$ may be

(a) Zero

(b) Purely imaginary

(c) Real and positive

(d) Real and Negative

Q-43. If a>0, then the equation $ax^2 + 1 = 0$ has

(a) Real roots

(b) Rational roots

(c) Irrational roots

(d) Non-real roots

Q-44. The roots of the equation $x^2 - cos\theta + 1 = 0$ are

(a) Real for all θ

(b) Real when $\theta = n\theta,\; n\, e$

(c) None-real for all θ

(d) Real when $\theta = (2n + 1)\pi/2,\; n\, e\, 1$

Q-45. The number $(1 + i)^n/(1 - i)^n - 2$ is equal is

(a) 4 in -2

(b) $2\; i^{n-4}$

(c) $2\; i^{n-1}$

(d) None of these