



An Eye on Talent

Olympiad Aptitude Test Mathematics Class XII

Q-1. The tangents to the circle $x^2 + y^2 = 169$ at the points $(5, 12)$ and $(-5, -12)$ are

- (a) Parallel
- (b) At right angles
- (c) Inclined at an angle of 45°
- (d) Inclined at an angle of 60°

Q-2. Angle between the straight line

$$\frac{x-1}{2} = \frac{y+3}{-1} = \frac{z-5}{2}$$

And the plane $4x-2y+4z=9$ is

- (a) 60°
- (b) 90°
- (c) 45°
- (d) 30°

Q-3. Radius of the sphere through the points $(4,3,0)$, $(0,4,3)$, $(0,5,0)$ and $(4,0,3)$ is

- (a) 7
- (b) 5
- (c) $\frac{7}{5}$
- (d) none of these

Q-4. If the two variables X and Y have a perfect correlation (direction indirect), then they may be connected by a relation of the type

- (a) $xy = a^2$
- (b) $\frac{a}{x} + \frac{b}{y} = 1$
- (c) $\frac{x}{a} + \frac{y}{b} = 1$
- (d) none of these

Q-5. 25% of the items of a data are less than 35 and 25% of the items are more than 75. Q. D of the data is

- (a) 55
- (b) 20
- (c) 35
- (d) 75

Q-6. Two forces P and Q act at a point along perpendicular directions; the magnitude of their resultant is

- (a) $\sqrt{P^2 + Q^2}$
- (b) $P + Q$
- (c) $|P - Q|$
- (d) $P - Q$

Q-7. A particle starts from rest with uniform acceleration and acquires a velocity of 40 m/sec in 10 seconds. The displacement of the particle at the end of 10 seconds is

- (a) 4m
- (b) 200 m
- (c) 20 m
- (d) none of these

Q-8. Which of the following statement is correct?

- (a) Every L.P.P has at least on optimal solution
- (b) Every L.P.P has a unique optimal solution
- (c) If an L.P.P has a unique optimal solution
- (d) None of these

Q-9. The number of significant digits in 0.0001 is

- (a) 5
- (b) 4
- (c) 1
- (d) None of these

Q-10. If $3\sin\theta + 4\cos\theta = 5$ then the value of $3\cos\theta - 4\sin\theta$ is equal to

- (a) 0
- (b) -5
- (c) 5
- (d) None of these

Q-11. If $f(x) = ax + b$ and $g(x) = cx + d$, then $f(g(x)) = g(f(x))$ if and only if

- (a) $f(a) = g(c)$
- (b) $f(b) = g(b)$
- (c) $f(a) = g(b)$
- (d) $f(c) = g(a)$

Q-12. If a function F is such that $F(0)=2, F(1)=3, F(n+2)=2F(n)-F(n-1)$ for $n \geq 0$ then $F(5)$ is equal to

- (a) -7
- (b) -3
- (c) 7
- (d) 13

Q-13. Circle measure of an angle of 1 radian is

- (a) 90
- (b) $\frac{\pi}{2}$
- (c) 1
- (d) none

Q-14.

$$\int_0^x \sqrt{1 - \cos x}$$

Is equal to

- (a) 2
- (b) 1
- (c) $2\sqrt{2}$
- (d) $\sqrt{2}$

Q-15. The function $f(x) =$

$$\sum_{k=1}^5 (x - k)^2$$

Assumes minimum value of x given by

- (a) 5
- (b) 3
- (c) $\frac{5}{2}$
- (d) 2

