

Set – F

- (1) The latus vectum of the parabola $x^2 - 4x - 2y - 8 = 0$ is _____
 (a) 8 (b) 4 (c) 2 (d) 1
- (2) For a 3×3 matrix A, if $\det A = 4$, then $|\text{Adj} A|$ equals _____
 (a) -4 (b) 4 (c) 16 (d) 64
- (3) If two vectors \vec{a} and \vec{b} be such that $|\vec{a} + \vec{b}| = |\vec{a} - \vec{b}|$, then the angle between \vec{a} and \vec{b} is _____
 (a) 60° (b) 180° (c) 90° (d) 0°
- (4) If $\cos \alpha, \cos \beta, \cos \gamma$ are the direction cosines of a line, then the value of $\sin^2 \alpha + \sin^2 \beta + \sin^2 \gamma$ is _____
 (a) 1 (b) 2 (c) 3 (d) 4
- (5) The maximum number of points of intersection of 8 circles is _____
 (a) 16 (b) 24 (c) 28 (d) 56
- (6) $\lim_{x \rightarrow 0} \frac{a^x - 1}{\sqrt{1 - x^2} - 1}$ is equal to _____
 (a) $2 \log_e a$ (b) $\frac{1}{2} \log_e a$ (c) $a \log_e 2$ (d) None of these
- (7) The smallest positive integer n for which $\frac{1 + i^n}{1 - i^n} = 1$ is _____
 (a) 1 (b) 2 (c) 3 (d) 4
- (8) If $\sin \left[\sin^{-1} \frac{1}{5} + \cos^{-1} x \right] = 1$, then x is equal to _____
 (a) 1 (b) 0 (c) $\frac{4}{5}$ (d) $\frac{1}{5}$
- (9) The minimum value of the function $y = 2x^3 - 21x^2 + 36x - 20$ is _____
 (a) -128 (b) -126 (c) -120 (d) None of these

(10) The number of different matrices that can be formed with elements 0, 1, 2, or 3 each having 4 elements is

- (a) 3×2^4 (b) 2×4^4 (c) 3×4^4 (d) 4^4

(11) The number of terms in the expansion of $(1+x)^n$ is _____

- (a) $n+1$ (b) $n+3$ (c) $\frac{n+1}{2}$ (d) None of these

(12) Let $n(A) = 700$, $n(B) = 200$, $n(C) = 300$ and $n(A \cap B) =$ _____

- (a) 400 (b) 600 (c) 300 (d) 200

(13) Let $E = \{1, 2, 3, 4\}$ and $F = \{1, 2\}$ then the number of onto functions from E to F is _____

- (a) 14 (b) 16 (c) 12 (d) 8

(14) The image of the point $(4, 13)$ in the line $5x - y - 6 = 0$ is _____

- (a) $(1, 14)$ (b) $(3, 4)$ (c) $(1, 2)$ (d) $(4, 13)$

(15) $\int \sec 3x \, dx$ is equal to _____

- (a) $\frac{1}{2} \tan x \sec x$ (b) $\frac{1}{2} \log |\sec x + \tan x|$
(b) $\frac{1}{2} \sec x \tan x - \frac{1}{2} \log |\sec x + \tan x|$ (d) None of these.

(16) The number of ways in which four left terms of the word MATHEMATICS can be arranged is given by _____

- (a) 136 (b) 192 (c) 1680 (d) 2454

(17) The line $3x + 4y = \lambda$ touches the circle $x^2 + y^2 - 4x + 8y - 5 = 0$ if the value of λ is

- (a) 20 (b) 15 (c) 10 (d) 5

(18) $\int_0^{\pi/2} \sin 2x \, dx$ equals _____

- (a) $\frac{1}{6}$ (b) $\frac{3}{2}$ (c) $\frac{8}{15}$ (d) $\frac{5}{6}$
 $\frac{1}{5}$ $\frac{1}{5}$

(19) The value of λ for which the equation $x^2 + \lambda xy + 2y^2 + 3x + 5y + 2 = 0$ may represent a pair of straight lines is _____

- (a) 2 (b) 3 (c) 4 (d) 1

(20) If the sum of two unit vectors is a unit vector, then the magnitude of their difference is _____

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

ANSWERS:

1. (c), 2. (c), 3. (c), 4. (b), 5. (d), 6. (a), 7. (b), 8. (d), 9. (a), 10. (d), 11. (c), 12. (c), 13. (a),
14. (a), 15. (c), 16. (d), 17. (b), 18. (a), 19. (b), 20. (b).