

Set-A

- (1) If one end of a diameter of the circle $2x^2 + 2y^2 - 4x - 8y + 2 = 0$ is (3, 2), then the other end is _____
(a) (2,3) (b) (4,-2) (c) (2,-1) (d) (-1,2)
- (2) If the entries in a 3×3 determinant are either 0 or 1, then the greatest value of this determinant is _____
(a) 1 (b) 2 (c) 3 (d) 9
- (3) The area of the parallelogram whose diagonal are given by the vectors $3\hat{i} + \hat{j} - 2\hat{k}$ and $\hat{i} - 3\hat{j} + 4\hat{k}$ is _____
(a) $10\sqrt{3}$ (b) $5\sqrt{3}$ (c) 8 (d) 4
- (4) The angle between the planes $2x - y + z = 6$ and $x + y + 2z = 7$ is _____
(a) π (b) $2\frac{\pi}{3}$ (c) $\frac{\pi}{2}$ (d) $\frac{\pi}{3}$
- (5) Twelve students complete a race. The number of ways in which first three places can be taken as _____
(a) $3!$ (b) $12 \times 11 \times 10$ (c) $\frac{12!}{3!}$ (d) $12! - 3!$
- (6) $\lim_{x \rightarrow 0} \frac{2(1 - \cos x)}{x^2}$ is _____
(a) $\frac{1}{2}$ (b) $\frac{1}{4}$ (c) 0 (d) 1
- (7) If $z(2 - i) = 3 + i$ then $z^{20} =$ _____
(a) $1 - i$ (b) -1024 (c) 1024 (d) $1 + i$
- (8) The principal value of $\sin^{-1}\left(\sin \frac{5\pi}{3}\right)$ is _____
(a) $\frac{5\pi}{3}$ (b) $-\frac{5\pi}{3}$ (c) $-\frac{\pi}{3}$ (d) $\frac{4\pi}{3}$
- (9) If $x + y = 60$, $x, y > 0$, then maximum value of xy^3 is _____
(a) 30 (b) 60 (c) $15(45)^3$ (d) $45(15)^3$
- (10) The sum of divisors of $2^5 \cdot 3^7 \cdot 5^3 \cdot 7^2$ is _____
(a) $2^6 \cdot 3^8 \cdot 5^4 \cdot 7^3$ (b) $2^6 \cdot 3^6 \cdot 5^4 \cdot 7^3 - 2 \cdot 3 \cdot 5 \cdot 7$ (c) $2^6 \cdot 3^8 \cdot 5^4 \cdot 7^3 - 1$ (d) None of these

- (11) Constant term in the expansion of $\left(x - \frac{1}{x}\right)^{10}$ is _____
 (a) -252 (b) 152 (c) 252 (d) -152
- (12) The number of nonempty subsets of the set $\{1, 2, 3, 4\}$ is _____
 (a) 15 (b) 14 (c) 16 (d) 17
- (13) The x - axis divides the line joining the points (5, 7) and (-1, 3) in the ratio _____
 (a) 7 : 3 (b) 7 : -3 (c) 6 : 5 (d) 6 : -5
- (14) The number of bijective function (one one onto) form set A to itself when A contains 106 elements is _____
 (a) 106 (b) $(106)^3$ (c) $(206)!$ (d) 2^{106}
- (15) $\int \frac{\sin(\log x) dx}{x}$ is _____
 (a) $\cos(\log x)$ (b) $\sin(\log x)$ (c) $-\cos(\log x)$ (d) $-\sin(\log x)$
- (16) Sum of the n terms of the series $\sqrt{2} + \sqrt{8} + \sqrt{18} + \sqrt{32} + \dots$ is _____
 (a) $\frac{n(n+1)}{2}$ (b) $zn(n+1)$ (c) $\frac{n(n+1)}{\sqrt{2}}$ (d) 1
- (17) The value of $\cos \frac{2\pi}{5} \cos \frac{6\pi}{15} \cos \frac{8\pi}{15} \cos \frac{14\pi}{15}$ is _____
 (a) $\frac{1}{16}$ (b) $\frac{1}{8}$ (c) $\frac{3}{4}$ (d) $\frac{1}{12}$
- (18) $y^2 - 2x - 2y + 5 = 0$ is _____
 (a) A circle with centre (1, 1)
 (b) A parabola with vertices (1, 2)
 (c) A parabola with directrix $x = \frac{3}{2}$
 (d) A parabola with axis $x = \frac{-1}{2}$
- (19) Which one of the following measures of marks is the most suitable one of central location for computing intelligence of students?
 (a) Mode (b) Arithmetic (c) Geometric mean (d) Median
- (20) The domain of the function $f(x) = \sqrt{x-1} + \sqrt{6-x}$ is _____
 (a) $(1, \infty)$ (b) $(-\infty, 6)$ (c) $(1, 6)$ (d) None of these