Set – D

(1) The eccentricity of the ellipse $9x^2 + 5y^2 - 30y = 0$ is _____

(a) $\frac{1}{3}$ (b) $\frac{2}{3}$ (c) $\frac{3}{4}$ (d) None of these

(2) If A is a square matrix such that $|A| = 2$, then for any positive integer n, $|A^n|$ is equal to _____

(a) 0 (b) 2n (c) 2^n (d) n^2

(3) Value of a fox which $2\hat{i} - \hat{j} + \hat{k}$, $\hat{i} + 2\hat{j} - 3\hat{k}$ and $3\hat{i} + a\hat{j} + 5\hat{x}$ are coplanar is _____

(a) 2 (b) 4 (c) – 4 (d) 3

(4) The direction cosines of the normal to the plane $6x - 3y - 2z = 1$ are _____

(a) $\left(\frac{6}{7}, 3, \frac{-2}{7}\right)$, (b) $(6,-3,-2)$ (c) $\frac{1}{7}(6,-3,-2)$ (d) $\frac{1}{7}(6,3,2)$

(5) If p(n,5) = 60 p(n-1,3), then n is _____

(a) 6 (b) 15 c) 10 (d) 12

(6) $\lim_{x \to 0} \frac{\sin x - x}{x^3}$ is _____

(a) $\frac{1}{3}$ (b) $\frac{-1}{3}$ (c) $\frac{1}{6}$ (d) $\frac{-1}{6}$

(7) If α, β are two different complex numbers such that $|\alpha| = 1$, $|\beta| = 1$, then the expression $\left|\frac{\beta - \alpha}{1 - \bar{\alpha}\beta}\right|$ equals

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

(8) If $\sin^{-1} x + \sin^{-1} y = \frac{2\pi}{3}$, then $\cos^{-1} x + \cos^{-1} y$ is equal to _____

(a) $\frac{2\pi}{3}$ (b) $\frac{\pi}{3}$ (c) $\frac{\pi}{6}$ (d) π

(9) Let x, y two variables and x>0, x y =1, then minimum value of x + y is _____

(a) 1 (b) 2 (c) $2\frac{1}{2}$ (d) $3\frac{1}{3}$

(10) The number of ways in which 200 things can be divided into 100 sets, each of 2 things is _____

(a) $\frac{(200)!}{2^{100}(100)!}$ (b) $\frac{(200)!}{2^{100}}$ (c) $\frac{(200)!}{(100)!}$ (d) $\frac{(200)!}{(100)!(100)!}$

(11) The term independent of x in $\left(\frac{3x^2}{2}-\frac{1}{3x}\right)^9$ is _____

(a) $\frac{7}{18}$ (b) $\frac{5}{18}$ (c) $\frac{11}{18}$ (d) $\frac{13}{18}$

(12) Sets A and B have 3 and 6 elements respectively what can be the minimum number of elements in $A \cup B$?

(a) 3 (b) 6 (c) 9 (d) 18

(13) Set A has 3 elements and set B has 4 elements. The total number of injections (one one mappings) that can be defined from A to B is _____

(a) 144 (b) 12 (c) 24 (d) none of these.

(14) Area of the triangle formed by $(1,-4)$, $(3,-2)$ and $(-3,16)$ is _____

(a) 40 (b) 48 (c) 24 (d) none of these.

(15) $\int \frac{(1+\log x)^2}{x} dx$ is equal to _____

(a) $1+\log x$ (b) $3(1+\log x)^3$ (c) $\frac{1}{3}(1+\log x)^3$ (d) None of these

(16) If the third term of an A-P is 12 and the seventh term is 24, then the 10^{th} term is _____

(a) 36 (b) 39 (c) 30 (d) 33

(17) The lines $2x-3y=5$ and $3x-4y=7$ are the diameters of a circle of area 154 square units. Then the equation of the circle is _____

(a) $x^2 + y^2 + 2x - 2y = 62$ (b) $x^2 + y^2 + 2x - 2y = 47$

(c) $x^2 + y^2 - 2x + 2y = 47$ (d) $x^2 + y^2 - 2x + 2y = 62$

(18) The sum of the digits in the unit place of all the numbers formed with the help of 3, 4, 5, 6 taken all at a time is _____

(a) 18 (b) 108 (c) 432 (d) 144

(19) The coefficient of x^4 in $\left(\frac{x}{2} - \frac{3}{x^2}\right)^{10}$ is _____

(a) $\frac{405}{256}$ (b) $\frac{504}{259}$ (c) $\frac{450}{260}$ (d) None of these

(20) A unit vector perpendicular to each of the vectors, $-6\hat{i} + 8\hat{k}$, $8\hat{i} + 6\hat{k}$ form a right handed system is _____

(a) $-\hat{j}$ (b) $\hat{j}$ (c) $\frac{1}{10}\left(6\hat{i} + 8\hat{k}\right)$ (d) $\frac{1}{10}\left(-6\hat{i} + 8\hat{k}\right)$

ANSWERS:

1. (b), 2. (c), 3. (c). 4. (c), 5. (c), 6. (a), 7. (b), 8. (b), 9. (c), 10. (a), 11. (a), 12. (b), 13. (c), 14. (c)

15. (c), 16. (d), 17. (c), 18. (b), 19. (a), 20. (b)