1. If $A = \{(x, y) \mid x^2 + y^2 = 25\}$ and $B = \{(x, y) \mid x^2 + 9y^2 = 144\}$ then $A \cap B$ contains :

(A) One point (B) Two points

(C) Three points (D) Four points

2. The number of subsets of a set containing n elements is :

(A) n (B) $2^n - 1$

(C) n^2 (D) 2^n

3. 20 teachers of a school either teach Maths or Physics. 12 of them teach Maths while 4 teach both the subjects. The number of teachers teaching Physics only is :

(A) 12 (B) 8

(C) 16 (D) None of these

4. If a relation R is defined on the set Z of integers as follows : . Then Domain (R) =

(A) {3, 4, 5} (B) {0, 3, 4, 5}

(C) $\{0, \pm 3, \pm 4, \pm 5\}$ (D) None of these

5. If R is a relation on a finite set having n elements, then the number of relations on A is :

(A) 2^n (B)

(C) n^2 (D) n^n

6. R is a relation on the set Z of integers and it is given by Then R is :

$(x, y) \in R \Leftrightarrow$ ... $(a, b) \in R \Leftrightarrow$ ... $\bar{Z} + 5 = 0$

(A) Reflexive and Transitive (B) Reflexive and Symmetric

(C) Symmetric and Transitive (D) An equivalence relation

7. The equation represents a circle of radius :

(A) 5 (B) $2\sqrt{5}$

(C) $\frac{5}{2}$ (D) None of these

8. If Z_1, Z_2, Z_3 are complex numbers such that :

$|Z_1| = |Z_2| = |Z_3| = \left|\frac{1}{Z_1} + \frac{1}{Z_2} + \frac{1}{Z_3}\right| = 1$ then $|Z_1 + Z_2 + Z_3|$ is :

(A) Equal to 1 (B) Less than 1

(C) Greater than 1 (D) Equal to 3

9. The locus of point Z satisfying $Re(Z^2) = 0$ is :

(A) A pair of straight lines (B) A circle

(C) A rectangular hyperbola (D) None of these

10. If $Z_r = \cos\left(\frac{2r\pi}{5}\right) + i\sin\left(\frac{2r\pi}{5}\right), r = 0,1,2,3,4$ then $Z_0 \times Z_1 \times Z_2 \times Z_3 \times Z$

(A) -1
(B) 0
(C) 1
(D) None of these

11. If α, β, γ are the roots of the equation $x^3 + 4x + 1 = 0$. Then $(\alpha+\beta)^{-1} + (\beta+\gamma)^{-1} + (\gamma+\alpha)^{-1} =$

(A) 2
(B) 3
(C) 4
(D) 5

12. Let A, G and H be the Arithmetic mean, Geometric mean and Harmonic mean of two positive numbers a and b. The quadratic equation whose roots are A and H is :

(A) $Ax^2 - (A^2 + G^2)x + AG^2 = 0$
(B) $Ax^2 - (A^2 + H^2)x + AH^2 = 0$
(C) $Hx^2 - (H^2 + G^2)x + HG^2 = 0$
(D) None of these

13. G is a group under $\otimes_7$ where G = {1, 2, 3, 4, 5, 6}. If $5 \otimes_7 x = 4$ then x =

(A) 0.8
(B) 4
(C) 3
(D) 5

14. In the group G = {1, 3, 7, 9} under multiplication module 10, $(3\times7^{-1})^{-1}$ is equal to :

(A) 9
(B) 5
(C) 7
(D) 3

15. The identity element in the group $M = \left\{\begin{pmatrix} x & x \\ x & x \end{pmatrix} \middle| x \neq 0 \text{ and } x \text{ is real}\right\}$ with respect to matrix multiplication is :

(A) $\begin{pmatrix} 1 & 1 \\ 1 & 1 \end{pmatrix}$
(B) $\begin{pmatrix} \frac{1}{2} & \frac{1}{2} \\ \frac{1}{2} & \frac{1}{2} \end{pmatrix}$
(C) $\begin{pmatrix} 1 & 0 \\ 0 & 1 \end{pmatrix}$
(D) None of these

16. If $a * b = a^2 + b^2$, then the value of $(4*5)*3$ is :

(A) $(4^2 + 5^2) + 3^2$
(B) $(4 + 5)^2 + 3^2$
(C) $41^2 + 3^2$
(D) $(4 + 5 + 3)^2$

17. In Z, the set of all integers, the inverse of -7 with respect to defined by for all $a, b \in Z$ is :

(A) -14 (B) 7

(C) -7 (D) None of these

18. The units of the field F = {0, 2, 4, 6, 8} under are :

(A) {0} (B) {2, 4, 6, 8}

(C) F (D) None of these

19. $(Z_n, \oplus_n, \otimes_n)$ is a field if and only if n is :

(A) Even (B) Odd

(C) Prime (D) None of these

20. The ideals of a field F are :

(A) Only {0} (B) Only F

(C) Both {0} and F (D) None of these

21. Every finite integral domain is :

(A) Not a field (B) Field

(C) Vector space (D) None of these

22. The order of i in the multiplicative group of fourth roots of unity is :

(A) 4 (B) 3

(C) 2 (D) 1

$a * b = a + b + 7$, $\oplus_{10}$ and $\otimes_{10}$, $a.b \neq 0$

23. The non–zero elements a, b of a ring (R, + , .) are called zero divisors if :

(A) $a.b = 0$ (B)

(C) (D)

24. If the ring R is an integral domain then :

(A) R[x] is a field (B) R[x] is an integral domain

(C) R[x] is not an integral domain (D) None of these

25. The product of an even permutation and an odd permutation is :

(A) Even (B) Odd

(C) Neither ever nor odd (D) None of these

26. If :

(A) $\begin{bmatrix} 0 & i \\ i & 0 \end{bmatrix}$

(B) $\begin{bmatrix} 0 & 0 \\ 0 & 0 \end{bmatrix}$

(C) $\begin{bmatrix} 1 & 0 \\ 0 & 1 \end{bmatrix}$

(D) None of the above

27. If AB = A and BA = B where A and B are square matrices then :

(A) $A^2 = A$ and $B^2 = B$

(B) $A^2 \neq A$ and $B^2 = B$

(C) $A^2 = A$ and $B^2 \neq B$

(D) $A^2 \neq A$ and $B^2 \neq B$

28. If $A = \begin{bmatrix} a & 0 & 0 \\ 0 & a & 0 \\ 0 & 0 & a \end{bmatrix}$, then the value of |adj A| is :

(A) a^{27}

(B) a^9

(C) a^6

(D) a^2

29. If $A = \begin{bmatrix} 1 & 2 & -1 \\ -1 & 1 & 2 \\ 2 & -1 & 1 \end{bmatrix}$, then |adj (adj A)| is :

(A) 14^4

(B) 14^3

(C) 14^2

(D) 14

30. If $A = \begin{bmatrix} \cos\theta & -\sin\theta \\ \sin\theta & \cos\theta \end{bmatrix}$, and $A^T + A = I_2$ where A^T is the transpose of A and I_2 is the 2×2 Unit matrix.

Then :

(A) $\theta = n\pi, n \in Z$

(B)

(C) $\theta = 2n\pi + \frac{\pi}{3}, n \in Z$

(D) None of these

31. The matrix $A = \begin{bmatrix} 1 & -3 & -4 \\ -1 & 3 & 4 \\ 1 & -3 & -4 \end{bmatrix}$ is nilpotent of index :

(A) 2
(B) 3
(C) 4
(D) None of these

32. The rank of the matrix $A = \begin{bmatrix} 2 & 3 & 1 & 4 \\ 0 & 1 & 2 & -1 \\ 0 & -2 & -4 & 2 \end{bmatrix}$ is :

(A) 2
(B) 3
(C) 1
(D) Indeterminate

33. For what value of λ, the system of equations
$x + y + z = 6$
$x + 2y + 3z = 10$
$x + 2y + \lambda z = 12$ is Inconsistent ?

(A) $\lambda = 1$
(B) $\lambda = 2$
(C) $\lambda = -2$
(D) $\lambda = 3$

34. If A is a 3×3 matrix and B is its adjoint such that |B| = 64, then |A| =
(A) 64
(B) ± 64
(C) ± 8
(D) 18

35. If $A^3 = 0$, then $1 + A + A^2$ equals :
(A) $1 - A$
(B) $(1 - A)^{-1}$
(C) $(1 + A)^{-1}$
(D) None of these

36. If $A = \begin{bmatrix} 1 & 2 \\ 3 & 4 \end{bmatrix}$, then $(I + A + A^2 + A^3 + ...\infty)$ equals to :

(A) $\begin{bmatrix} 1 & 0 \\ 0 & 1 \end{bmatrix}$
(B) $\begin{bmatrix} -1 & -2 \\ -3 & -4 \end{bmatrix}$

(C) $\begin{bmatrix} \frac{1}{2} & -\frac{1}{3} \\ -\frac{1}{2} & 0 \end{bmatrix}$
(D) $\begin{bmatrix} -\frac{1}{4} & \frac{1}{3} \\ \frac{1}{2} & 0 \end{bmatrix}$

37. If s = a + b + c then the value of $\Delta = \begin{vmatrix} s+c & a & b \\ c & s+a & b \\ c & a & s+b \end{vmatrix}$ is :

(A) $2s^2$ (B) $2s^3$

(C) s^3 (D) $3s^3$

38. $\lim\limits_{n \to \infty} \left[\dfrac{4^{\frac{1}{n}} - 1}{3^{\frac{1}{n}} - 1} \right]$ is equal to :

(A) $\log_4 3$ (B) $\log_3 4$

(C) 1 (D) None of these

39. The value of $\lim\limits_{n \to \infty} \left[\dfrac{1}{1.3} + \dfrac{1}{3.5} + \dfrac{1}{5.7} + ... + \dfrac{1}{(2n+1)(2n+3)} \right]$ is :

(A) 1 (B) $\dfrac{1}{2}$

(C) $-\dfrac{1}{2}$ (D) None of these

40. $\lim\limits_{x \to \infty} \left[\dfrac{\int_0^{2x} x e^{x^2} \, dx}{e^{4x^2}} \right] =$

(A) 0 (B) ∞

(C) 2 (D)

41. The function $f(x) = \begin{cases} 1 - 2x + 3x^2 - 4x^3 + ... + \infty & \text{if } x \neq -1 \\ 1 & \text{if } x = -1 \end{cases}$ is :

(A) Continuous and differentiable at x = –1

(B) Neither continuous nor differentiable at x = –1

(C) Continuous but not differentiable at x = –1

(D) None of the above

42. Let $f(x) = \begin{cases} \dfrac{\sin \pi x}{5x} & , \ x \neq 0 \\ K & , \ x = 0. \end{cases}$

If f(x) is continuous at x = 0, then the value of K is :

(A) $\frac{\pi}{5}$ (B)

(C) 1 (D) 0

43. If f(x) is differentiable and strictly increasing function, then the value of $\lim_{x \to 0} \left[\frac{f(x^2) - f(x)}{f(x) - f(0)} \right]$ is :

(A) 1 (B) 0

(C) –1 (D) 2

44. The number of points at which the function f(x) = | x – 3 | + | x + 1 | does not have a derivative in the interval [– 4, 4] is :

(A) 1 (B) 2

(C) 3 (D) None of these

45. If f(x) satisfies the conditions of Rolle's theorem in [1, 2] and f(x) is continuous in [1, 2], then $\int_1^2 f'(x)\, dx$ is equal to :

$\frac{5}{\pi}$

(A) 3 (B) 0

(C) 1 (D) 2

46. Let $f(x) = e^x$, $x \in [0,1]$, then a number 'c' of the Lagrange's mean value theorem is :

(A) $\log_e (e - 1)$ (B) $\log_e (e + 1)$

(C) 1 (D) None of these

47. The maximum value of xy subject to x + y = 8 is :

(A) 8 (B) 16

(C) 20 (D) 24

48. The series $n - \frac{n^2}{2} + \frac{n^3}{3} - \frac{n^4}{4} + - + ... -1 < n \leq 1$ represents the function :

(A) sin n (B) cos n

(C) $(1 + n)^n$ (D) log (1 + n)

49. Expansion of sin x in powers of $\left(x-\frac{\pi}{2}\right)$ is :

(A) $\left(x-\frac{\pi}{2}\right)-\frac{\left(x-\frac{\pi}{2}\right)^3}{\lfloor 3}+\frac{\left(x-\frac{\pi}{2}\right)^5}{\lfloor 5}-+....$

(B) $\left(x-\frac{\pi}{2}\right)+\frac{\left(x-\frac{\pi}{2}\right)^3}{\lfloor 3}+\frac{\left(x-\frac{\pi}{2}\right)^5}{\lfloor 5}+....$

(C) $1-\frac{\left(x-\frac{\pi}{2}\right)^2}{\lfloor 2}+\frac{\left(x-\frac{\pi}{2}\right)^4}{\lfloor 4}-+....$

(D) None of these

50. The equation of tangent to the curve $x = t^3 - 4$, $y = 2t^2 + 1$ at the point where $t = 2$ is :

(A) $2x - 3y - 19 = 0$
(B) $2x - 3y + 19 = 0$
(C) $2x + 3y - 19 = 0$
(D) $3x + 2y + 6 = 0$

51. If the normal to the curve $y^2 = 5x - 1$ at the point (1, –2) is of the form $ax - 5y + b = 0$. Then 'a' and 'b' are :

(A) 4, –14
(B) 4, 14
(C) –4, 14
(D) –4, –14

52. The least value of $f(x) = 2x + \frac{8}{x^2}$, $x > 0$ is :

(A) 4
(B) 6
(C) 8
(D) None of these

53. The radius of curvature for the curve $\frac{1}{p^2}=\frac{1}{a^2}+\frac{1}{b^2}-\frac{r^2}{a^2b^2}$ is :

(A) $\frac{p^2}{a^2b^2}$
(B) $\frac{a^2p^2}{b^2}$
(C) $\frac{a^2b^2}{p^3}$
(D) $a^2 b^2 p^2$

54. The centre of curvature of the curve $y = x^2$ at (0,0) is :

(A) $\left(0, \frac{1}{2}\right)$ (B) $\left(\frac{1}{2}, \frac{1}{2}\right)$

(C) $\left(\frac{1}{2}, 0\right)$ (D) None of these

55. The radius of curvature of the curve $r = a \sin n\theta$ at origin is :

(A) na (B)

(C) 2an (D) $\frac{2na}{3}$

56. The asymptote parallel to co-ordinate axes of the curve $(x^2 + y^2)\,x - ay^2 = 0$ is :

(A) $y - a = 0$ (B) $y + a = 0$

(C) $x - a = 0$ (D) $x + a = 0$

57. The asymptote of the curve $y = e^x$ is given by :

(A) $y = 0$ (B) $x = 0$

(C) $y = e$ (D) $x = e$

58. For the curve $y^2 (1 + x) = x^2 (1 - x)$, the origin is a :

(A) Node (B) Cusp

$\frac{na}{2}$

(C) Conjugate point (D) None of these

59. The curve $y = x^3 - 3x^2 - 9x + 9$ has a point of inflexion at :

(A) $x = -1$ (B) $x = 1$

(C) $x = -3$ (D) $x = 3$

60. The curve $y = \log x$ is :

(A) Concave upwards in $(0, \infty)$ (B) Concave downwards in $(0, \infty)$

(C) Concave upwards in $(-\infty, \infty)$ (D) Concave downwards in $(-\infty, \infty)$

61. The points of inflexion on the curve $x = (\log y)^3$ are :

(A) $(0, 1)$ and $(8, e^2)$ (B) $(1, 0)$ and $(8, e^2)$

(C) $(0, 1)$ and $(e^2, 8)$ (D) $(1, 0)$ and $(e^2, 8)$

62. The graph of $x = \frac{1 - t^2}{1 + t^2}$, $y = \frac{2t}{1 + t^2}$ is a :

(A) Circle (B) Ellipse

(C) Cycloid (D) None of these

63. The number of leaves in the curve $r = a \sin 5\theta$ are :

(A) Two (B) Five

(C) Ten (D) None of these

64. If $u = f(y+ax) + \phi(y-ax)$ then $\frac{\partial^2 u}{\partial x^2} =$

(A) $\frac{\partial^2 u}{\partial y^2}$ (B) $a^2 \frac{\partial^2 u}{\partial y^2}$

(C) $-a^2 \frac{\partial^2 u}{\partial y^2}$ (D) $a \frac{\partial^2 u}{\partial y^2}$

65. If $Z = \log(x^2 + y^2)$ then $x \frac{\partial z}{\partial x} + y \frac{\partial z}{\partial y} =$

(A) 0 (B) 1

(C) 2 (D) 3

66. If $y = \sqrt{\sin x + \sqrt{\sin x + \sqrt{\sin x + ... + \infty}}}$ then $(2y-1)\frac{dy}{dx}$ is given by :

(A) sin x (B) cos x

(C) tan x (D) cot x

67. The series $1 - \frac{1}{2} + \frac{1}{4} - \frac{1}{8} + \frac{1}{16} - + ...$ is :

(A) Conditionally Convergent (B) Absolutely Convergent

(C) Divergent (D) None of the above

68. The series $1 - \frac{1}{\sqrt{2}} + \frac{1}{\sqrt{3}} - \frac{1}{\sqrt{4}} + ...$ is :

(A) Conditionally Convergent (B) Absolutely Convergent

(C) Oscillatory (D) None of the above

69. The series $\sum_{n=1}^{\infty} \frac{(n - 2\log n)^n}{2^n \, n^n}$ is :

(A) Convergent (B) Divergent

(C) Oscillatory (D) None of these

70. The series $\sum_{n=1}^{\infty} \frac{\lfloor n \, 2^n}{n^n}$ is :

(A) Convergent (B) Divergent
(C) Oscillatory (D) None of these

71. The series $\sum_{n=1}^{\infty} \frac{4 \cdot 7 \cdot .....(3x+1)}{1 \cdot 2 \cdot .. \; .... \quad x} x^n$ is Convergent if :

(A) $|x|<1$ (B)

(C) $|x|<\frac{1}{4}$ (D) $|x|<\frac{1}{2}$

72. $\int^{2} \frac{\sqrt{x}}{\sqrt{3-x}+\sqrt{x}} dx =$

(A) 0 (B) $\frac{1}{2}$

(C) 1 (D) None of these

73. $\int_0^{\frac{\pi}{2}} \frac{2^{\sin x}}{2^{\sin x}+2^{\cos x}} dx =$

$\lim_{n\to\infty}\left[\frac{1}{n+1}+\frac{1}{n+2}+\frac{1}{n+3}+....+\frac{1}{2n}\right] =$

(A) $\frac{\pi}{4}$ (B)

(C) (D)

74.

(A) $\log_e 2$ (B) $\log_e 3$

(C) $\log_e 6$ (D) None of these

75. The entire length of the curve $x^{2/3}+y^{2/3}=a^{2/3}$ is :

(A) 8a (B) $4\sqrt{3}a$

(C) 6a (D) $\sqrt{8a}$

76. The perimeter of $r = a\,(1 + \cos\theta)$ is :

(A) a (B) 2a

(C) 4a (D) 8a

77. The length of one arch of Cycloid $n = a(\theta + \sin\theta)$ $y = a(1 - \cos\theta)$ is :

(A) a (B) 4a

(C) 8a (D) 32a

78. The area bounded by the curve $y = 2x$, $\dot{x}$ – axis and the ordinates $x = -2$, $x = 3$ is equal to :

(A) 2 (B) 13

(C) 4 (D) 8

79. The area of the ellipse $\frac{x^2}{a^2} + \frac{y^2}{b^2} = 1$ is :

(A) $2\pi ab$ (B) πab

(C) $\frac{\pi ab}{2}$ (D) None of these

80. The area bounded by the curve $y^2 = x$ and $x^2 = y$ is given by :

(A) 0 (B)

(C) $\frac{2}{3}$ (D) 1

81. The whole area of the curve $r = a\cos 2\theta$ is :

(A) $\frac{\pi a^2}{2}$ (B) πa^2

(C) $2\pi a^2$ (D) $\frac{2\pi a^2}{3}$

82. The line $y = x + 1$ is revolved about x-axis. The volume of solid of revolution formed by revolving the area covered by the given curve, x-axis and the lines $x = 0$, $x = 2$ is :

(A) $\frac{19\pi}{3}$ (B) $\frac{17\pi}{3}$

(C) $\frac{13\pi}{3}$ (D)

83. The volume generated by revolution of the ellipse about major axis is [assume that a > b] :

(A) $\frac{4\pi ab^2}{3}$ (B) $\frac{4\pi a^2 b}{3}$

(C) $\frac{4\pi a^2 b^2}{3}$ (D) None of these

84. The surface of the solid of revolution about x-axis of the area bounded by the curve y = x, x-axis and the ordinates x = 0 and x = 3 is equal to :

(A) $4\sqrt{2}\,\pi$ (B) $9\sqrt{2}\,\pi$

(C) $11\sqrt{2}\,\pi$ (D) $8\sqrt{2}\,\pi$

85. The value of $\int_0^{\frac{\pi}{2}} \sin^6 x\, dx =$:

(A) $\frac{5\pi}{8}$ (B)

(C) (D)

$\frac{5\pi}{32}$ $\frac{x^2}{3^2}+\frac{y^2}{3^2}=1$ $\int_{\frac{-\pi}{2}}^{\frac{\pi}{2}} \sin bx\, dx$

86. =

(A) 0 (B) $\cos\pi^3$

(C) $2\cos^3\pi$ (D) Does not exist

87. Order and degree of the differential equation $\sqrt{2\left(\frac{dy}{dx}\right)^3 + 4} = \left(\frac{d^2y}{dx^2}\right)^{3/2}$ are respectively :

(A) order 2, degree 3 (B) order 1, degree 3

(C) order 3, degree 2 (D) order 3, degree 1

88. If P, Q are functions of x, then solution of differential equation $\frac{dy}{dx} + Py = Q$ is :

(A) $y e^{\int P dx} = \int Q e^{\int P dx} dx + c$

(B) $y = e^{\int P dx} \int Q e^{\int P dx} dx + C$

(C) $y = \int Q e^{\int P dx} dx + C$

(D) None of these

89. The differential equation of the form $\frac{dy}{dx} + Py = Qy^n$ where P and Q are functions of x, is called :

(A) Auxiliary equation

(B) Bessel's equation

(C) Clairaut's equation

(D) Bernoulli's equation

90. The solution of $(y \cos x + 1)\, dx + \sin x\, dy = 0$ is :

(A) $x - y \sin x = cx$

(B) $y + x \sin x = c$

(C) $y - x \sin x = c$

(D) $x + y \sin x = c$

91. If at every point of a certain curve the slope of the tangent equals $\frac{-2x}{y}$, the curve is :

(A) A straight line

(B) A parabola

(C) A circle

(D) An ellipse

92. The integrating factor for the differential equation $(x^2y - 2xy^2)\, dx - (x^3 - 3x^2y)\, dy$ is given by :

(A)

(B) xy

(C) x^2y^2

(D) $\frac{1}{x^2y^2}$

93. The general solution of $P = \log (px - y)$ is :

(A) $y = cx - e^c$

(B) $y + cx = e^c$

(C) $y + x = \log c$

(D) $y + c = e^x$

94. The general solution of a differential equation of first order represents :

(A) A family of surfaces

(B) A pair of curves in xy plane

(C) A family of curves in xy plane

(D) None of these

95. The singular solution of the differential equation $P^3 + Px - y = 0$ is $\left[\text{where } P = \frac{dy}{dx}\right]$:

(A) $27y^2 + 4x^3 = 0$
(B) $y^2 = 4ax$
(C) $x^2 + y^2 = a^2$
(D) None of these

96. The orthogonal trajectory of the family of curves $ay^2 = x^3$ is :

(A) $3y^2 - 2x^2 = \text{constant}$
(B) $2x^2 + y^2 = \text{constant}$
(C) $3x^2 + y^2 = \text{constant}$
(D) $2x^2 + 3y^2 = \text{constant}$

97. Solution of $\frac{d^2y}{dx^2} - 3\frac{dy}{dx} + 2y = 0$ is :

(A) $c_1e^{-2x} + c_2e^x$
(B) $c_1e^{2x} + c_2e^x$
(C) $c_1e^{2x} + c_2e^{-2x}$
(D) None of these

98. The general solution of the differential equation $D^2(D + 1)^2 y = e^x$ is :

(A) $y = c_1 + c_2x + (c_3 + c_4x)e^x$
(B) $y = c_1 + c_2x + (c_3 + c_4x)e^{-x} + \frac{e^x}{4}$
(C) $y = c_1 + c_2e^{-x} + (c_3 + c_4x)e^{-x} + \frac{e^x}{4}$
(D) None of these

99. The particular integral of the differential equation $(D + 2)(D - 1)^3y = e^x$ is :

(A) $\frac{x^3e^x}{18}$
(B) x^3e^x
(C) $\frac{x^3e^x}{3}$
(D) None of these

100. The equation of the cylinder whose generators are parallel to the line $\frac{x}{1} = \frac{y}{-2} = \frac{z}{3}$ and whose guiding curve is $x^2 + 2y^2 = 1, z = 0$ is given by :

(A) $(3z - x)^2 + 2(2z + 3y)^2 = 9$
(B) $(3x + z)^2 + 2(3y - 2z)^2 = 9$
(C) $(3x - z)^2 + 2(3y + 2z)^2 = 9$
(D) $(2z + 3x)^2 + 2(3y - x)^2 = 9$