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MATHS-1998

1. All letters of the word 'CEASE' are arranged randomly in a row then the probability that two E are found together is :

(1) $\frac{7}{5}$ (2) $\frac{3}{5}$ (3) $\frac{2}{5}$ (4) $\frac{1}{5}$

2. Three numbers are selected randomly between 1 to 20. Then the probality that they are consecutive numbers will be :

(1) $\frac{7}{190}$ (2) $\frac{3}{190}$ (3) $\frac{5}{190}$ (4) $\frac{1}{3}$

3. If the four positive integers are selected randomly from the set of positive stegers then the probability that the number 1, 3 , 7, 9 are in the unit place in the product of 4 digitsosetected is :

(1) $\frac{7}{625}$ (2) $\frac{2}{5}$ (3) $\frac{5}{625}$ (4) $\frac{16}{625}$

4. If the position vectors of the vertices A, B, C are $6\hat{i}, 6\hat{j}, \hat{k}$ respectively w.r.t. origin O then the volume of the tetranedron OABC is :

(1) 6 (2) 3 (3) $\frac{1}{6}$ (4) $\frac{1}{3}$

5. If three vectors $2\hat{i} - \hat{j} - \hat{k}$, $\hat{i} + 2\hat{j} - 3\hat{k}$, $3\hat{i} + \lambda\hat{j} + 5\hat{k}$ are coplanar then the value of λ is :

(1) – 4 (2) – 2 (3) – 1 (4) 0

6. The vector perpendicular to the vectors $4\hat{i} - \hat{j} + 3\hat{k}$ and $-2\hat{i} + \hat{j} - 2\hat{k}$ whose magnitude is 9 :

(1) $3\hat{1} + 6\hat{j} - 6\hat{k}$ (2) $3\hat{1} - 6\hat{j} + 6\hat{k}$ (3) $-3\hat{i} + 6\hat{j} + 6\hat{k}$ (4) none of these

7. The area of the region bounded by the curves $x^2 + y^2 = 8$ and $y^2 = 2x$ is :

(1) $2\pi + \frac{1}{3}$ (2) $\pi + \frac{1}{3}$ (3) $2\pi + \frac{4}{3}$ (4) $\pi + \frac{4}{3}$

8. The value of $\int_0^{\pi} \log (1 + \cos x)\, dx$ is :

(1) $\frac{-\pi}{2} \log 2$ (2) $\pi \log \frac{1}{2}$ (3) $\pi \log 2$ (4) $\frac{\pi}{2} \log 2$

9. The value of $\int_3^4 \sqrt{(4 - x)(x - 3)}\, dx$ is :

(1) $\frac{\pi}{16}$ (2) $\frac{\pi}{8}$ (3) $\frac{\pi}{4}$ (4) $\frac{\pi}{2}$

10. The value of $\int \frac{dx}{x(x^n + 1)}$ is :

(1) $\frac{1}{n} \log \left(\frac{x^n}{x^n + 1}\right) + c$

(2) $\log \left(\frac{x^n + 1}{x^n}\right) + c$

(3) $\frac{1}{n} \log \left(\frac{x^n + 1}{x^n}\right)$

(4) $\log \left(\frac{x^n}{x^n + 1}\right) + c$

11. The value of $\int \cos (\log x)\, dx$ is :

(1) $\frac{1}{2}[\sin(\log x) + \cos(\log x)] + c$

(2) $\frac{x}{2}[\sin(\log x)] + \cos(\log x)] + c$

(3) $\frac{x}{2}[\sin(\log x) - \cos(\log x)] + c$

(4) $\frac{1}{2}[\sin(\log x) - \cos(\log x)] + c$

12. The value of $\int e^x \left(\frac{(1 + \sin x)}{(1 + \cos x)}\right) dx$ is :

(1) $\frac{1}{2} e^x \sec \frac{x}{2} + c$

(2) $e^x \sec \frac{x}{2} + c$

(3) $\frac{1}{2} e^x \tan \frac{x}{2} + c$

(4) $e^x \tan \frac{x}{2} + c$

13. The value of $\int \frac{1}{3 \sin x - \cos x + 3}$ is dx :

(1) $\tan^{-1} \left(\tan \frac{x}{2} + 1\right) + c$

(2) $\frac{1}{2}\tan^{-1}\left(2\tan\frac{x}{2}+1\right)+c$

(3) $\tan^{-1}\left(2\tan\frac{x}{2}+1\right)+c$

(4) $2\tan^{-1}\left(2\ \text{tam}\ \frac{x}{2}+1\right)+c$

14. Divide 10 into two parts such that the sum of double of the first and the square of the second is minimum :

(1) 6,4 (2) 7,3 (3) 8, 2 (4) 9,1

15.. The value of $\displaystyle \frac{\sin 2x\,dx}{\sin^4 x+\cos^4 x}$ **is ;**

(1) $\tan^{-1}(\cot^2 x)+c$ (2) $\tan^{-1}(\cos^2 x)+c$

(3) $\tan^{-1}(\sin^2 x)+c$ (4) $\tan^{-1}(\tan^2 x)+c$

16. The value of $\sqrt{1+\sec x\,dx}$ **is :**

(1) 1 sin-1 ($\sqrt{2}$ sin x) +c

(2) – 2sin-1 ($\sqrt{2}$ sin x/2) + c

(3) 2sin-1 ($\sqrt{2}$ sin x) + c

(4) 2sin-1 ($\sqrt{2}$x/2) + c

17. The value of $\displaystyle \frac{(x^2+1)\,dx}{x^4+x^2+1}$ **is :**

(1) $\frac{1}{\sqrt{3}}\tan^{-1}\left\{\frac{x-1/x}{\sqrt{3}}\right\}+c$

(2) $\frac{1}{2\sqrt{3}}\log\left\{\frac{(x-1/x)-\sqrt{3}}{(x-1/x)+\sqrt{3}}\right\}+c$

$\left(\quad\right)$

(3) $\tan^{-1} \dfrac{x + 1/x}{\sqrt{3}} + c$

(4) $\tan^{-1} \left(\dfrac{x - 1/x}{\sqrt{3}}\right) + c$

18. The value of $\int_0^1 x^2 (1 - x^2)^{3/2}\, dx$ is :

(1) $\frac{1}{32}$ (2) $\frac{\pi}{8}$ (3) $\frac{\pi}{16}$ (4) $\frac{\pi}{32}$

19. The value of $\int_0^\infty \dfrac{x\,dx}{(1 + x)(x^2 + 1)}$ is :

(1) 2π (2) π (3) $\frac{\pi}{16}$ (4) $\frac{\pi}{32}$

20. $y^2 = 8x$ and $y = x$

(1) $\frac{64}{3}$ (2) $\frac{32}{3}$ (3) $\frac{16}{3}$ (4) $\frac{8}{3}$

21. If in a triangle ABC , O and O′ are the incentre and orthocenter respectively then (OA + OB + OC) is equal to :

(1) $\overrightarrow{20'0}$ (2) $\overrightarrow{O'0}$ (3) $\overrightarrow{OO'}$ (4) $\overrightarrow{200'}$

22. If $\vec{a} + \vec{b} + \vec{O} = \vec{a}$ and $|a| = 5$ $|b| = 3$, $|c| = 7$ then angle between $\vec{a}$ and $\vec{b}$ is :

(1) $\frac{\pi}{2}$ (2) $\frac{\pi}{3}$ (3) $\frac{\pi}{4}$ (4) $\frac{\pi}{6}$

23. i.(j k) + j.(k x i) + k.(j x i) is equal to :

(1) 3 (2) 2 (3) 1 (4) 0

24. One card is drawn at random from a pack of playing cards the probability that it is an ace or black king or the queen of the heart will be :

(1) $\frac{3}{52}$ (2) $\frac{7}{52}$ (3) $\frac{6}{52}$ (4) $\frac{1}{52}$

25. 15 coins are tossed then the probability of getting 10 heads tails will be :

(1) $\frac{511}{32768}$ (2) $\frac{1001}{32768}$ (3) $\frac{3003}{32768}$ (4) $\frac{3005}{32768}$

26. The odds against solving a problem by A and B are 3 : 2 and 2 : 1 respectively then the probability that the problem will be solved is :

(1) $\frac{3}{5}$ (2) $\frac{2}{15}$ (3) $\frac{2}{5}$ (4) $\frac{11}{15}$

27. The pole of the line ιx = my +n =0 w.r.t. the parabola y^2=4ax will be :

(1) $\left(\frac{-n}{1}, \frac{-2am}{1}\right)$ (2) $\left(\frac{-n}{1}, \frac{2am}{1}\right)$

(3) $\left(\frac{n}{1}, \frac{-2am}{1}\right)$ (4) $\left(\frac{n}{1}, \frac{2am}{1}\right)$

28. If 2x + y + λ = 0 is normal to the parabola y^2= 8x then λ is :

(1) -24 (2) ≠ 8 (3) -16 (4) 24

29. If the line ιx = my + n = 0 is tangent to the parabola y^2= 4ax then :

(1) mn= $a\iota^2$ (2) ιm=an^2 (3) ιn=am^2 (4) none of therse

30. f: R→ R, f(x) = x |x| will be :

(1) many one onto (2) one one onto

(3) many are into (4) one one into

31. $\lim_{x\to\pi/2}$ (sec x – tan x) is equal to :

(1) 2 (2) -1 (3) 1 (4) 0

32. If f(x) $\begin{cases} \dfrac{\log(1+2ax)-\log(1-bx)}{x}, & x\neq 0 \\ K, & x=0 \end{cases}$

Is continuous at x = 0 then value of K is :

(1) b + a (2) b – 2a (3) 2a – b (4) 2a + b

33. If f(x) = |x - 3| then f′ (3) is :

(1) -1 (2) 1 (3) 0 (4) does not exist

34. If tan x = $\frac{2t}{1-t^2}$ and sin y = $\frac{2t}{1+t^2}$ then the value of $\frac{dy}{dx}$ is :

(1) 1 (2) t (3) $\frac{1}{1-t}$ (4) $\frac{1}{1+t}$

35. If $x^p + y^q = (x + y)^{p+q}$ then $\frac{dy}{}$ is :

dx

(1) $-\frac{x}{y}$ (2) $\frac{x}{y}$ (3) $-\frac{y}{x}$ (4) $\frac{y}{x}$

36. All the points on the curve $y^2 = 4a[x + a \sin(\frac{x}{a})]$, where the stangent is parallel to the axis of x are lies on :

(1) circle (2) parabola (3) stright line (4) none of these

37. The length of normal at any point to the curve y = c cos h (x/c) is :

(1) fixed (2) $\frac{y^2}{c^2}$ (3) $\frac{y^2}{c}$ (4) $\frac{y}{c^2}$

38. The weight of right circular cylinder of maximum volume inscribed in a sphere of diameter 2a is:

(1) $2\sqrt{3a}$ (2) $\sqrt{3a}$ (3) $\frac{2a}{\sqrt{3}}$ (4) $\frac{a}{\sqrt{3}}$

39. The intercept of the latus rectum to the parabola $y^2= 4ax$ b and k then k is equal to :

(1) $\frac{ab}{a-b}$ (2) $\frac{a}{b-a}$ (3) $\frac{b}{b-a}$ (4) $\frac{ab}{b-a}$

40. The equation of directris to the parabola $4x^2 - 4x - 2y + 3 = 0$ will be :

(1) 8y= 9 (2) 8x= 9 (3) 8y=7 (4) 8x= 7

41. If $f(x) = \frac{2^x + 2^x}{2}$ then f(x + y). f(x-y) is :

(1) $\frac{1}{4}[f(2x) - f(2y)]$ (2) $\frac{1}{2}[f(2x) - f(2y)]$

(3) $\frac{1}{4}[f(2x) + f(2y)]$ (4) $\frac{1}{2}[f(2x) + f(2y)]$

42. The period of $|\cos x|$ will be :

(1) $\frac{\pi}{4}$ (2) $\frac{\pi}{2}$ (3) π (4) 2π

43. $\lim_{x\to} \left(\frac{3^x - 1}{x}\right)$ is equal to :

(1) 2 log 3 (2) 3 log 3 (3) log 3 (4) none of these

44. If $f(x) = \begin{cases} x \sin(1/x), & x \neq 0 \\ 0, & x=0 \end{cases}$

at then at x = 0 the function f(x) is :

(1) differentiable (2) differentiable (3) continuous but not differentiable (4) none of these

45. Differential coefficient of $e^{\sin^{-1}x}$ w.r.t. $\sin^{-1} x$ is:
(1) $\sin^{-1}x$ (2) $e\sin^{-1}x$ (3) $e\cos^{-1}$ (4) $\cos^{-1}x$

46. If $y = \tan^{-1}\left\{\frac{3a^2 x - x^3}{a(a^2 - 3x^2)}\right\}$ then $\frac{dy}{dx}$ is :

(1) $\frac{3a^2}{a^2 + x^2}$ (2) $\frac{3a}{a^2 + x^2}$

(3) $\frac{a}{a^2 + x^2}$ (4) $\frac{3}{a^2 + x^2}$

47. The angle of intersection between $xy = a^2$, $x^2 + y^2 = 2a^2$ is :
(1) 90^0 (2) 45^0 (3) 30^0 (4) 0^0

48. The length of the subtangent to the curve $x^m y^n = a^{m+n}$ is propoteional to :
(1) $\frac{x^2}{y}$ (2) $\frac{y^2}{x}$ (3) y (4) x

49. The st. line $\frac{x}{a} + \frac{y}{b} = 2$ is tangent to the curve $\left(\frac{x}{a}\right)^n + \left(\frac{y}{b}\right)^n = 2$ at the point (a,b) then n is :
(1) any real number (2) 3 (3) 2 (4) 1

50. If α, β are the roots of the equation $x^2 - 2x \cos \theta + 1 = 0$ then equation whose roots are $\alpha_{n/2}$, $\beta_{n/2}$ will be :
(1) $x^2 - 2x \cos (n\theta) + 1 = 0$
(2) $x^2 - 2nx \cos(n\theta) +1 = 0$
(3) $x^2 - 2x \cos(2n\theta) +1 = 0$

(4) $x^2 - 2x \cos\left(\frac{n\theta}{2}\right) + 1 = 0$

51. 33th exponents of the eleventh roots of unity will be :
(1) 1 (2) -11 (3) 0 (4) 11

52. If $\sin \alpha + \sin \beta + \sin \gamma = 0$ $\cos \alpha + \cos \beta + \cos \gamma$ then $\sin^2 \alpha + \sin^2 \beta + \sin^2 \gamma$ is equal to :
(1) $\frac{2}{3}$ (2) $-\frac{3}{2}$ (3) $\frac{3}{2}$ (4) 0

53. sec h-1 (1/2) is :

(1) $\log(\sqrt{3} \pm \sqrt{2})$ (2) $\log(\sqrt{3} \pm 1)$ (3) $\log(2 \pm \sqrt{3})$ (4) none of these

54. The imaginary part of (x + iy) is :
(1) $\frac{1}{2}$ cos h 2x cos 2y (2) $\frac{1}{2}$ cos 2x cosh h 2y
(3) $\underline{1}$ sin h 2x sin 2y (4) $\underline{1}$ sin 2x sin h 2y

2 2

55. The image of the point (- 1, 2) in the st. line x – 2y = 3 is :

(1) $\left(\frac{9}{5}, -\frac{23}{5}\right)$ (2) $\left(\frac{11}{5}, -\frac{22}{5}\right)$ (3) $\left(\frac{13}{5}, -\frac{21}{5}\right)$ (4) (3, -4)

56. The locus of the middle point of the intercept made by x cos α + y sin α = p on axes is :

(1) $x^2 + y^2 = p^2$ (2) $x^2+y^2=4p^{-2}$ (3) $x^2+y^2= p^2$ (4) $x^2+y^2=4p^{-2}$

57. The locus of the middle point of the chord of length 2ι to the curve $x^2 + y^2 = a^2$ will be:

(1) $x^2+y^2=a^2\iota^2$

(2) $2x^2+2y^2=\iota+a^2$

(3) $x^2+y^2 = \iota^2+a^2$

(4) $2x^2+2y^2 = a^2-\iota^2$

58. The equation of the circle whose diameter is common chord to the circles $x^2+y^2+2ax+c= 0$ and $x^2+y^2+2by+c= 0$ is:

(1) $x^2+y^2- \frac{2ab^2}{a^2+b^2}x + \frac{2a^2by}{a^2+b^2} + c = 0$

(2) $x^2+y^2 - \frac{2ab^2}{a^2+b^2} x - \frac{2a^2by}{a^2+b^2} + c = 0$

(3) $x^2+y^2 + \frac{2ab^2}{a^2+b^2} x + \frac{2a^2by}{a^2+b^2} + c = 0$

(4) $x^2+y^2 + \frac{2ab^2}{a^2+b^2} x - \frac{2a^2by}{a^2+b^2} + c = 0$

59. If (3, λ) and 5,6) are the conjugate points to the curve $x^2+y^2= 3$ then λ is :

(1) -1 (2) 1 (3) -2 (4) 2

60. The equation of the pair of tangents at (0,1) to the circle $x^2+ y^2 – 2x -6y +6 = 0$ is:

(1) $3(x^2-y^2)+4xy-4x-6y+3=0$

(2) $3y^2+4xy-4x-6y+3=0$

(3) $3x^2+4xy-4x-6y+3=0$

(4) $3(x^2+y^2)+4xy-4x-6y+3=0$

61. The amplitude of $\left(\frac{1+\cos\theta + i \sin\theta}{1+\cos\theta - i\sin\theta}\right)^2$ is :

(1) $- n\theta$ (2) $\frac{- n\theta}{2}$ (3) $\frac{n\theta}{2}$ (4) $n\theta$

62. The product of all roots of $\left(\frac{1}{2} + i\frac{\sqrt{3}}{2}\right)^{3/8}$ is:

(1) 2 (2) -1 (3) 0 (4) 1

63. If coshα = sec x then $\tan^2$ x/2 is :

(1) cos2 (α/2) (2) sin2 α/2 (3) cot2 (α/2) (4) tan h2 α/2

64. The real part of the principle value of 2^{-i} is :

(1) sin (log 2) (2) cos (1/log2) (3) cos [log (1/2)] (4) cos (log2)

65. The two vertices of triangle are (2, - 1), (3, 2) and the third vertex lies on x + y = 5. The area of the triangle is 4 units then the third vertex is :

(1) (0,5) or (1,4) (2) (5, 0) or (4, 1) (3) (5, 0) or (1, 4) (4) (0, 5) or (4, 1)

66. If 2 a+ b + 3c = 0 than the line ax + by + c = 0 passes through the fixed point that is:

(1) $\left(\frac{2}{3}, \frac{1}{3}\right)$ (2) $\left(0, \frac{1}{3}\right)$ (3) $\left(\frac{2}{3}, 0\right)$ (4) none of these

67. Straight lines ax ± by ± c = 0 represent a :

(1) Rhombus (2) Square (3) Rectangle (4) None of these

68. The equation of the circle passing through (2a, 0) and whose radical axis w.r.t. the circle $x^2 + y^2 = a^2$ is $x = \frac{a}{2}$ will be :

(1) $x^2+y^2+2ay=0$
(2) $x^2+y^2+2ax=0$
(3) $x^2+y^2-2ay=0$
(4) $x^2+y^2-2ax=0$

69. The circles $x^2+y^2+2ax+c=0$ and $x^2+y^2+2by+c=0$ touches each other then:

(1) $a^2+b^2=c2$ (2) $\frac{1}{a^2}+\frac{1}{b^2}=\frac{1}{c^2}$ (3) $\frac{1}{a^2}+\frac{a}{b^2}=\frac{1}{c}$ (4) $\frac{1}{a^2}-\frac{1}{b^2}=\frac{1}{c}$

70. The pole of the polar w.r.t. the circle $x^2+y^2 = c^2$ lies on $x^2+y^2 = 9c^2$ then this polar is tangent to concentric circle whose equation will be :

(1) $x^2+y^2= 4c^2$ (2) $x^2+y^2= \frac{c^2}{9}$ (3) $x^2+y^2 = \frac{9c^2}{4}$ (4) none of these

71. In a G.P. $(m + n)^{th}$ the term is a and $(m-n)^{th}$ term is 4 then mth term will be :

(1) -6 (2) 1/6 (3) 6 (4) none of these

72. The sum of n terms of $\frac{1}{} + \frac{3}{} + \frac{7}{} + \frac{15}{} + \ldots$ is :

2 4 8 16

(1) $2n-2+2^n$ (2) $1-n+2^n$ (3) n^2-n (4) $n^{-1}+2-n$

73. If 10 points lie on a plane out of which 5 are on a st-line, then total number of triangles formed by them are :

(1) 120 (2) 110 (3) 150 (4) 100

74. If $(1+x)^n = C_0 + C_1x + C_2x^2 + \ldots + C_nx^n$ then value of $\frac{C_0}{2} + \frac{C_1}{3} + \frac{C_2}{4} + \ldots + \frac{C_n}{n+2}$ is :

(1) $\frac{2^n+1}{(n+1)(n+2)}$ (2) $\frac{n2^{n+1}}{(n+1)(n+2)}$

(3) $\frac{n2^{n+1}}{(n+1)(n+2)}$ (4) $\frac{n2^{n+1}}{(n+1)(n+2)}$

75. The square roots of $1 + 2x + 3x^2 + 4x^3 + \ldots$ is :

(1) $(1-x)^{-1}$ (2) (1+x) (3) 1+x) (1-x)

76. If $(1+x)^n = C_0 + C_1x + C_2x^2 + \ldots$ then $C_0 + \frac{C_1}{2} + \frac{C_2}{3} + \ldots$:

(1) $\frac{2^{n+1}+1}{n+1}$ (2) $\frac{2^{n-1}}{n-1}$

(3) $\frac{2^{n+1}+1}{n+1}$ (4) $\frac{2n+1}{n+1}$

77. $$\begin{vmatrix} 2ac - b^2 & a^2 & c^2 \\ ac^2 & 2ab - c^2 & b^2 \\ c^2 & b^2 \quad 2bc & - \quad a^2 \end{vmatrix}$$

(1) $(a^3 + b^3 + c^3 - 3abc)^2$

(2) $(a^2 + b^2 + c^2)^3$

(3) $(ab + bc + ca)^3$

(4) $(a + b + c)^6$

78. If for any two square materscies A and B, AB= A, BA= B than A^2 :

(1) B^2 (2) adj A (3) B (4) A

79. If A $\begin{pmatrix} 1 & 3 & 6 \\ 3 & 5 & 1 \\ 5 & 1 & 3 \end{pmatrix}$ **then adj. A is :**

(1) $\begin{pmatrix} 14 & 4 & -22 \\ 4 & -22 & 14 \\ 22 & -14 & 4 \end{pmatrix}$

(2) $\begin{pmatrix} 14 & 4 & -22 \\ 4 & -22 & 14 \\ -22 & 14 & 4 \end{pmatrix}$

(3) $\begin{pmatrix} -14 & 4 & 22 \\ 4 & 22 & -14 \\ 22 & -14 & 4 \end{pmatrix}$

(4) $\begin{pmatrix} 14 & -4 & -22 \\ -4 & -22 & 14 \\ -22 & 14 & -4 \end{pmatrix}$

80. The A.M. of any two numbers is 16 and their H.M. = $\frac{63}{4}$ then their G.M. will be :

(1) $\sqrt{3}$ (2) $6\sqrt{3}$ (3) $\sqrt{7}$ (4) $6\sqrt{7}$

81. The sum of n terms of 1.2.3 + 2.3.4 will be :

(1) $\frac{n(n+1)(n+2)(n+3)}{4}$

(2) $\frac{2n(n+1)(n+2)(n+3)}{3}$

(3) $\frac{(n+)(n+2)(n+3)}{4}$

(4) $\frac{n(n-1)(n-2)(n-3)}{4}$

82.Out of 14 players there are 5 bowlers. Then the total number of ways of selecting a team of 11 players of which at least 4 are bowlers are :

(1) 275 (2) 264 (3) 263 (4) 265

83. If $(1 + x)^n = C_0 + c_1x + C_2x^2 + \ldots + C_n x^n$ then the value of $C_1 + 2C_2 + 3C_3 + 4C_4 + \ldots + nC_n$ will be :

(1) 2^{n-1} (2) $n \cdot 2^{n-1}$ (3) 2^n (4) 0

84. If the coefficients of the second third and fourth terms in the expansion of $(1 + x)^{2n}$ are in A.P. then $2n^2 - 9n$ is :

(1) - 14 (2) 14 (3) -7 (4) 7

85. If $\begin{vmatrix} a & -b & -c \\ -a & b & -c \\ -a & -b & c \end{vmatrix}$ **+ λ abc = 0 then λ is :**

(1) -2 (2) 2 (3) 4 (4) -4

86. If A = $\begin{pmatrix} 2 & 3 \\ 1 & 2 \end{pmatrix}$ **and B =** $\begin{pmatrix} 1 & 2 \\ 3 & 3 \\ 2 & 4 \end{pmatrix}$ **then :**

(1) BA= $\begin{pmatrix} 4 & 7 \\ 9 & 15 \\ 8 & 14 \end{pmatrix}$ (2) BA= $\begin{pmatrix} 4 & 9 & 8 \\ 7 & 15 & 14 \end{pmatrix}$

(3) AB= $\begin{pmatrix} 8 & 15 & 12 \\ 4 & 9 & 10 \end{pmatrix}$ (4) AB= $\begin{pmatrix} 8 & 4 \\ 15 & 9 \\ 12 & 10 \end{pmatrix}$

87. If A = $\begin{pmatrix} 1 & k \\ 0 & 1 \end{pmatrix}$ **then** A^n **=**

(1) $\begin{pmatrix} n & nk \\ 0 & n \end{pmatrix}$ (2) $\begin{pmatrix} n & k^n \\ 0 & n \end{pmatrix}$

(3) $\begin{pmatrix} 1 & nk \\ 0 & 1 \end{pmatrix}$ (4) $\begin{pmatrix} 1 & k^n \\ 0 & 1 \end{pmatrix}$

88. $|(1 - i)(1 + 2i)(2 - 3i)| =$

(1) $\sqrt{130}$ (2) $\sqrt{13}$ (3) 130 (4) 13

89. $(a + b)(a\omega + b\omega^2)(a\omega^2 + b\omega) =$

(1) $6(a^2+b^3)$ (2) $3(a^3+b^3)$ (3) a^3+b^3 (4) 0

90 If $|z - 2| > |z - 4|$ then the correct statement is :

(1) $x > 3$ (2) $x > -3$ (3) x . 1 (4) $x > -1$

91. If α, β are the roots of the equation $x2 - 5x - 3 = 0$ then the equation whose roots are $\frac{1}{2\theta - 3}$, $\frac{1}{2\beta - 3}$ will be :

(1) $33x^2 + 4x + 1 = 0$ (2) $33x^2 - 4x - 1 = 0$

(3) $33x^2+4x + 1 = 0$ (4) $33x^2 + 4x - 1 = 0$

92. If x is real then the values of

$\frac{x^2 + 14x + 9}{x2 + 2x + 3}$ is :

(1) $(-\infty, -5) \cup (4, \infty)$ (2) $[-5, 4]$ (3) $[-4, 5]$ (4) $[4, 5]$

93. The sun of numbers divisible by 7 and lies between 100 to 300 will be :

(1) 5486 (2) 8588 (3) 5086 (4) 5586

94. The area of the triangle represent by z, iz, and z – iz will be :

(1) $2z^2$ (2) z^2 (3) $\frac{z^2}{2}$ (4) 0

95. If $z = x + iy$ then $\bar{z}z + 2(x + \bar{z}) + c = 0$ will represent :

(1) a point (2) parabola (3) st-line (4) circle

96. If $x = 2\sqrt{3i}$ then $x^4 + 4x^2 - 8x + 39$ is equal to :

(1) -20 (2) -52 (3) $-20 + 16i\sqrt{3}$ (4) $20+16i\sqrt{\ }$

97. If one root of the equation $2x^2 - bx + c = 0$ is square of the other then :

(1) $b^2 - 4ac = \theta$ (2) $ac(a + c + 3b) = b^3$

(3) $ac = b^3$ (4) none of these

98. $(a - b)^2$, $(b - c)^2$, $(c - a)^2$ are in A.P. the $\frac{1}{a-b}$, $\frac{1}{b-c}$, $\frac{1}{c-a}$ will be :

(1) in H.P. (2) in G.P. (3) in A.P. (4) none of these

99. If the first term of an infinite G.P. scries is 1 and its every term is the sum of the next successive terms then fourth term will be :

(1) $\frac{1}{16}$ (2) $\frac{1}{8}$ (3) $\frac{1}{4}$ (4) $\frac{1}{2}$

100. Correct statement is :

(1) $(AB)^{-1} = B^{-1}A^{-1}$ (2) $(AB)^T = A^TB^T$ (3) $(AB)^{-1} = A^{-1}B^{-1}$ (4) none of these

ANSWER SHEET

1.(3)	2.(2)	3.(4)	4.(1)	5.(1)	6.(3)	7.(3)	8.(2)	9.(2)	10.(1)	11.(2)
12.(2)	13.(3)	14.(4)	15.(4)	16.(4)	17.(1)	18.(4)	19.(4)	20.(2)	21.(3)	22.(2)
23.(1)	24.(2)	25.(3)	26.(1)	27.(1)	28.(1)	29.(3)	30.(4)	31.(4)	32.(4)	33.(4)
34.(1)	35.(4)	36.(3)	37.(3)	38.(3)	39.(4)	40.(3)	41.(2)	42.(3)	43.(3)	44.(2)
45.(2)	46.(1)	47.(4)	48.(3)	49.(1)	50.(1)	51.(4)	52.(3)	53.(3)	54.(4)	55.(2)
56.(4)	57.(1)	58.(3)	59.(3)	60.(2)	61.(4)	62.(4)	63.(4)	64.(4)	65.(3)	66.(1)
67.(1)	68.(3)	69.(4)	70.(2)	71.(3)	72.(4)	73.(3)	74.(4)	75.(1)	76.(3)	77.(1)
78.(4)	79.(4)	80.(4)	81.(3)	82.(2)	83.(2)	84.(3)	85.(3)	86.(1)	87.(3)	88.(1)
89.(3)	90.(1)	91.(4)	92.(2)	93.(4)	94.(3)	95.(4)	96.(3)	97.(2)	98.(1)	99.(2)
100.(1)										