1. The general solution of $(y-z)p + (z-x)q = x-y$ is:

   (a) $\phi(x+y+z , x^2+y^2+z^2) = 0$
   (b) $\phi(xyz , x+y+z) = 0$
   (c) $\phi(xyz , x^2+y^2+z^2) = 0$
   (d) $\phi(x^2-y^2-z^2 , x-y-z) = 0$

2. If A and B are two odd order skew-symmetric matrices such that $AB = BA$, then the matrix AB is

   (a) an identity matrix
   (b) an orthogonal matrix
   (c) a skew-symmetric matrix
   (d) a symmetric matrix

3. Pair of tangents drawn to the conic $\alpha x^2 + \beta y^2 = 1$ so as always parallel to conjugate diameters of the conic $ax^2 + 2hxy + by^2 = 1$. The points of intersection of such tangents lie on the curve

   (a) $ax^2 + 2hxy + by^2 = \frac{ab}{\alpha\beta}$
   (b) $\alpha x^2 + \beta y^2 = \frac{a}{\alpha} + \frac{\beta}{b}$
   (c) $ax^2 + 2hxy + by^2 = \frac{a}{b} + \frac{a}{\beta}$
   (d) $ax^2 + 2hxy + by^2 = \frac{a}{\alpha} + \frac{b}{\beta}$

4. Let V be a 3-dimensional vector space with A and B its subspaces of dimensions 2 and 1 respectively. If $A \cap B = \{0\}$, then

   (a) $V = A - B$
   (b) $V = A \cdot B$
   (c) $V = A + B$
   (d) None of these

5. If $A = \begin{bmatrix} 3 & -2 \\ 4 & -2 \end{bmatrix}$ satisfies the matrix equation $A^2 - kA + 2I = 0$, then the value of k is:

   (a) 0
   (b) 1
   (c) 2
   (d) 3

6. The solution of $\frac{dx}{x^2-y^2-z^2} = \frac{dy}{2xy} = \frac{dz}{2xz}$ is given by

   (a) $\frac{y}{z} = c_1 , \left(\frac{x^2+y^2-z^2}{z}\right) = c_2$
   (b) $\frac{y}{z} = c_1 , \left(\frac{x^2-y^2-z^2}{z}\right) = c_2$
   (c) $\frac{y}{z} = c_1 , \left(\frac{x^2+y^2+z^2}{z}\right) = c_2$
   (d) $\frac{y}{z} = c_1 , (x^2 + y^2 + z^2) = c_2$

7. Which of the following is not true ?

   (a) Cylinder is a surface generated by a line parallel to a given line and passing through a curve.
   (b) Cylinder is a surface generated by a line parallel to a given line and always at constant distance from given line.
   (c) Right circular cone is surface generated by a line through a fixed point and making a constant angle from the axis.
   (d) Only (a) and (c) options are correct.

8. An integrating factor for $(cosy.sin2x)dx + (cos^2 y - cos^2 x)dy = 0$ is

   (a) $sec^2 y + secy\, tany$
   (b) $tan^2 y + secy\, tany$
   (c) $\frac{1}{sec^2 y + secy + tany}$
   (d) $\frac{:}{tan^2 y + secy\, tany}$

9. Let T be a linear operator on $\mathbb{R}^3$ defined by $T(x, y, z) = (2x, x - y , 5x + 4y + z)$. Then T^1 is

   (a) $\left(\frac{x}{2} , \frac{x-2y}{2} , \frac{-9x+8y+2z}{2}\right)$
   (b) $\left(\frac{3x}{2} , \frac{2x-y}{2} , \frac{-9x+8y+z}{2}\right)$
   (c) $\left(\frac{5x}{2} , \frac{2x-y}{2} , \frac{-9x+8y+2z}{2}\right)$
   (d) $\left(\frac{x}{2} , \frac{2y-x}{2} , \frac{9x+8y+2z}{2}\right)$

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10. The general solution of $y = 2x\frac{dy}{dx} + y\left(\frac{dy}{dx}\right)^2$ is

    (a) $2xc - y + c^2 = 0$
    (b) $2x^2c - y + c^2 = 0$
    (c) $2xc - y^2 + c^2 = 0$
    (d) $2x^2c - y^2 + c^2 = 0$

11. The equation of the cone, reciprocal to the cone $x^2 + 2y^2 + 3z^2 = 0$ is

    (a) $x^2 + 2y^2 + 3z^2 = 0$
    (b) $2x^2 + 3y^2 + 6z^2 = 0$
    (c) $x^2 + y^2 + z^2 = 0$
    (d) $6x^2 + 3y^2 + 2z^2 = 0$

12. The direction cosines of the line which is equally inclined to the axes is

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

13. Let $T : R^2 \to R^3$ defined by $T(x, y) = (-x - y, 3x + 8y, 9x - 11y)$. Then the rank and nullity are respectively

    (a) 1 & 0
    (b) 2 & 0
    (c) 0 & 2
    (d) 1 & 1

14. If PSP' and QSQ' be two perpendicular focal chords of a conic given by $y^2 = 4x$ then $\frac{1}{SP \cdot SP'} + \frac{1}{SC}$ equals

    (a) $\frac{1}{2}$
    (b) $\frac{1}{4}$
    (c) 0
    (d) 4

15. The equation of axis of the conic $\sqrt{(ax)} + \sqrt{(by)} = 1$ is

    (a) $a(b^2 + a^2)x - b(a^2 + b^2)y + (b^2 - a^2) = 0$
    (b) $b(a^2 + b^2)x + a(b^2 + a^2)y - ab = 0$
    (c) $\frac{ax}{a^2+b^2} + \frac{by}{a^2+b^2} = 1$
    (d) None of these

16. If the Trapezoidal rule with interval $[0,1]$ is exact for approximating the integral $\int_0^1 (x^3 - cx^2$ then the value of 'c' is equal to

    (a) 1
    (b) 3
    (c) 0.75
    (d) 1.5

17. If S is the set of all real numbers except -1 and $*$ is an operation defined by $a*b = a + b + ab$, the inverse of $2*3$ is

    (a) $-\frac{2}{3}$
    (b) $-\frac{6}{7}$
    (c) $-\frac{3}{4}$
    (d) $-\frac{11}{12}$

18. Equation of the cone with vertex at origin and direction cosines of generators satisfying the rel $l^2 + 2m^2 - 3n^2 = 0$ is given by

    (a) $x^2 + 2y^2 - 3z^2 = \sqrt{1^2 + 2^2 + 3^2}$
    (b) $x^2 + 2y^2 - 3z^2 = xy - 6yz - 3zx$
    (c) $x^2 + 2y^2 - 3z^2 = 0$
    (d) All of the above

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19. Let $f(x,y,z) = e^{\sqrt{z-x^2-y^2}}$. Then the range of f is:

    (a) $(1, \infty)$ (b) $[1, \infty)$

    (c) $[1, \infty]$ (d) $(1, \infty]$

20. Let G be a group having elements a and b such that $O(a)=4$, $O(b)=2$ and $a^3b=ba$. Then $O(ab)$ is

    (a) 2   (b) 4

    (c) 8   (d) 6

21. The value of $\iint_R y \sin(ny)\,dA$, where $R = [1, 2] \times [0, \pi]$ is

    (a) 0   (b) $-\frac{1}{2}$

    (c) 1   (d) None of these

22. The volume of the solid in the first octant bounded by the cylinder $z = 9 - y^2$ and the plane $x = 2$ is

    (a) 36   (b) 9

    (c) 18   (d) 27

23. The volume of the solid that lies under the paraboloid $z = x^2 + y^2$ above the xy-plane. and inside the cylinder $x^2 + y^2 = 2x$ is

    (a) $\frac{\pi}{2}$ (b) 3π

    (c) $\frac{3\pi}{2}$ (d) π

24. Consider the series $x_{n+1} = \frac{x_n}{2} + \frac{9}{8x_n}$. $x_o = 0.5$ obtained from the Newton-Raphson method. The series converges to

    (a) 1.5 (b) $\sqrt{2}$

    (c) 1.6 (d) 1.4

25. $\lim_{(x,y)\to(0,0)} f(x,y)$ where $f(x,y) = \tan^{-1}\left(\frac{|x|+|y|}{x^2+y^2}\right)$ is

    (a) 1   (b) $\pi/2$

    (c) 0   (d) does not exist

26. The value of $\int_c (y^2dx + x^2dy)$; where c is the triangle given by $x = 0$, $x+y = 1$, $y = 0$ is

    (a) 1   (b) -1

    (c) ½   (d) 0

27. The solution of the linear difference equation $y_{k+1} - ay_k = 0$, $a \neq 1$ is

    (a) $y_k = ak$ (b) $y_k = ca^k$

    (c) $y = ca^k$ (d) $y_{k-1} = ca^{k+1}$

28. The general solution of the differential equation : $(D^2 - a^2)^3 y = e^{ax}$, where $D = \frac{d}{dx}$ is

  (a) $(c_1 + c_2 x)e^{ax} + (c_3 + c_4 x)e^{-ax} + \frac{x^3 e^{ax}}{a \lfloor 3 \, a^3}$

  (b) $(c_1 + c_2 x + c_3 x^2)e^{ax} + (c_4 + c_5 x + c_6 x^2)e^{-ax} + \frac{x^3 e^{ax}}{a \lfloor 3 \, a^3}$

  (c) $(c_1 + c_2 x + c_3 x^2)e^{ax} + (c_4 + c_5 x + c_6 x^2)e^{-ax} + \frac{x^3 e^{ax}}{a \lfloor 3 \, a^3}$

  (d) $(c_1 + c_2 x + c_3 x^2)e^{ax} + (c_4 + c_5 x + c_6 x^2)e^{-ax} + \frac{x e^{ax}}{8a}$

29. The shortest distance from the point (1, 0, –2) to the plane x + 2y + z = 4 is

  (a) $\frac{5\sqrt{6}}{6}$

  (b) $\frac{5}{6}$

  (c) $\frac{\sqrt{6}}{6}$

  (d) $5\sqrt{6}$

30. Let $f(x)$ be continuous whose values are known at –2, –1, 1 and 2. If the Lagrange's interp. formula $f(x) = L_1 f(-2) + L_2 f(-1) + L_3 f(1) + L_4 f(2)$ is used to approximate $f(0)$, then L_3 is

  (a) 0

  (b) $\frac{1}{3}$

  (c) $\frac{2}{3}$

  (d) $\frac{4}{3}$

31. In the analysis of data of a randomized block design with 5 blocks and 4 treatments, th degrees of freedom is:

  (a) 12

  (b) 15

  (c) 16

  (d) 20

32. The following hPP

  Maximize $z = x_1 + x_2$

  Sub to $x_1 + x_2 \leq 1$

  $-3x_1 + x_2 \geq 3$

  $x_1 , x_2 \geq 0$

  (a) has a feasible solution

  (b) has an optimal solution

  (c) has basic solution ($x_1 = -1$, $x_2 = 2$)

  (d) is infeasible

33. If $x \geq 1$ is the critical region for testing $H_0 : \theta = 2$ against $H_1 : \theta = 1$, on the basis of observation from the population :

$$f(x ; \theta) = \theta \, e^{-\theta x} \ , x \geq 0$$

then the value of the level of significance is

  (a) $\frac{1}{e}$

  (b) $\frac{1}{e^2}$

  (c) $\frac{1}{\sqrt{e}}$

  (d) $1 + e$

34. The standard deviation of sample means is called

  (a) sampling error

  (b) mean square error

  (c) standard error

  (d) non sampling error

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35. If x has an exponential distribution with mean 3, then the variance of the random variable x is

(a) 1.5   (b) 3

(c) 6   (d) 9

36. Consider a lot consisting of 20 defective and 80 non defective items. Two items are drawn at random without replacement. What is the probability that both items are defective?

(a) $\frac{1}{495}$ (b) $\frac{11}{495}$

(c) $\frac{19}{495}$ (d) $\frac{1}{4}$

37. Suppose that the random variable x has possible values 1,2,3, ... and $P(x = j) = \frac{1}{2j}, j = 1,2,3, ...$ then P(x is even) is equal to

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

(c) 1   (d) $\frac{1}{2}$

38. Coefficient of correlation is equal to

(a) A.M. of two regression coefficients   (b) H.M. of two regression coefficients

(c) G.M. of two regression coefficients   (d) None of these

39. If X has the discrete uniform distribution with pmf $f(x) = \frac{1}{8}$ for x = 1, 2, ..., 8, then the mean of the distribution is

(a) 4   (b) 4.5

(c) 8   (d) 9

40. If P (X = 0) = 1 – P(X = 1), and E(X) = 3V(X), the value of P(X = 0) is equal to _____

(a) 1   (b) 0

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

41. If X is a discrete random variable taking positive integer values and possess memory-less property, then the distribution of X is

(a) Binomial distribution   (b) Poisson distribution

(c) Geometric distribution   (d) Hyper-geometric distribution

42. If $X \sim N(\mu, \sigma^2)$, then $Z^2 = \left(\frac{X-\mu}{\sigma}\right)^2$ is a Chi-square variate with

(a) 1 degrees of freedom   (b) 2 degrees of freedom

(c) 3 degrees of freedom   (d) n degrees of freedom

43. The mean difference between 9 paired observations is 15, and the standard deviation of differences is 5. The value of statistic t is

(a) 27   (b) 9

(c) 3   (d) 0

44. Sum of the deviation about means is

(a) zero   (b) minimum

(c) maximum   (d) one

P.T.O.

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45. The standard deviation of a set of 50 observations is 8. If each observation is multiplied by 2, the new value of standard deviation will be

(a) 4

(b) 8

(c) 16

(d) none of the above

46. The standard deviation of first n natural number is

(a) $\sqrt{\dfrac{(n^2-1)}{6}}$

(b) $\sqrt{\dfrac{(n^2+1)}{6}}$

(c) $\sqrt{\dfrac{(n^2-1)}{12}}$

(d) $\sqrt{\dfrac{(n^2+1)}{12}}$

47. Let $f(x) = \dfrac{x^2}{18}$, $-3 < x < 3$, zero elsewhere, be the pdf of X, then $P(|x| < 1)$ is

(a) $\dfrac{1}{54}$

(b) $\dfrac{1}{27}$

(c) 1

(d) $\dfrac{1}{2}$

48. The points of inflexion of a normal distribution with mean μ and variance σ^2 are

(a) $\mu \pm \sigma$

(b) $\mu \pm 2\sigma$

(c) $\mu \pm 3\sigma$

(d) $\mu \pm 4\sigma$

49. If P is the population proportion of some characteristic under study. $Q = 1 - P$ and n is the sample size, then the standard error of the observed sample proportion is equal to

(a) $n\,PQ$

(b) $\dfrac{PQ}{n}$

(c) $\sqrt{nPQ}$

(d) $\sqrt{\dfrac{PQ}{n}}$

50. Let $X_1, X_2, \ldots X_n$ are independently and identically distributed random variables and foll $N(\mu, \sigma^2)$. Which of the following is simple hypothesis under H_0?

(a) $\mu = \mu_0, \sigma^2$ known

(b) $\mu = \mu_0, \sigma^2$ unknown

(c) $\mu \geq \mu_0, \sigma^2$ known

(d) $\mu \geq \mu_0, \sigma^2$ unknown

51. Two bodies of mass 100g and 20g are moving with velocities $(2\hat{i} - 7\hat{j} + 3\hat{k})$ cm/s $(-10\hat{i} + 35\hat{j} - 3\hat{k})$ cm/s respectively. What is the velocity of centre of mass of this two b system?

(a) $2\hat{k}$ cm/s

(b) $(10\hat{i} + 9\hat{j} - 4\hat{k})$ cm/s

(c) $(4\hat{i} - 5\hat{j})$ cm/s

(d) $3\hat{j}$ cm/s

52. The kinetic energy of a body is twice its rest mass energy. What is the ratio of relativistic mas rest mass of the body?

(a) $\sqrt{3}$

(b) 9

(c) 2

(d) 3

53. Which of the following potentials does not satisfy Laplace's equation?

(a) $x^2 + 5y^2 - 6z^2$

(b) $2y + 7$

(c) $x - y^2 + z^2$

(d) $2x^2 - 4y^2 + z^2$

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54. An inductive coil having a resistance of 5Ω and an inductance of 5mH is connected in series with $2\mu F$ capacitor. The value of Q factor of the coil is

(a) zero

(b) 1

(c) 10

(d) ∞

55. A sinusoidal voltage with peak value $40\sqrt{58}$ V and frequency $\frac{200}{\pi}$ Hz, is applied to a series LCR circuit in which R = 2Ω, L = 25 mH and C = 500 μF. What would be the power dissipated in this circuit?

(a) $60\sqrt{58}$ W

(b) $260\sqrt{29}$ W

(c) 2150 W

(d) 3200 W

56. The state of polarization of light with the electric field vector $\vec{E} = \hat{i}E_0\cos(kz - wt) - \hat{j}E_0\cos(kz - wt)$ is

(a) Linearly polarized at $-45°$ to x-axis

(b) Linearly polarized at $+60°$ to y-axis

(c) Left circularly polarized

(d) Elliptically polarized with the major axis along x-axis

57. A diffraction grating has 5000 rulings per cm. What is the second order diffraction angle for violet light ? (Given λ_{viola} = 500 nm)

(a) $30°$

(b) $45°$

(c) $60°$

(d) $90°$

58. For the given circuit, if V_{BE} = 0.7 V, then the operating point (Q) would be:
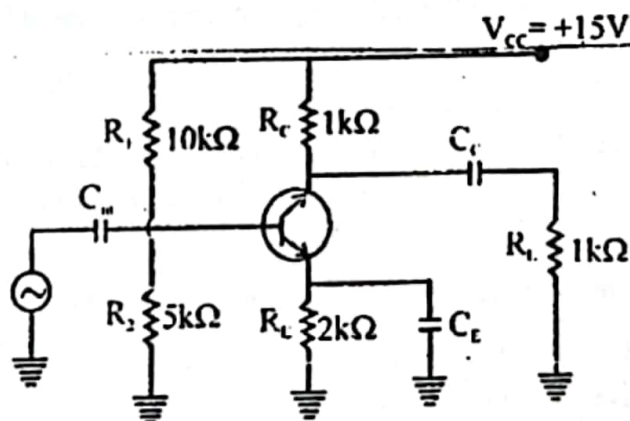
(a) 2.15V, 8.55 mA

(b) 12.0 V, 2.15 mA

(c) 8.55 V, 2.15 mA

(d) 8.55V, 12.0 mA

59. For a RC phase-shift oscillator consisting of three RC phase shift networks, if v_i and v_o represents the input and output voltage of these RC network, then the ratio of v_o to v_i to provide sustained oscillation would be

(a) 29

(b) -29

(c) $-\frac{1}{29}$

(d) $\frac{1}{29}$

60. The Laurent's series of the function $f(z) = \frac{e^{2z}}{(z-1)^3}$ at $z = 1$ is

(a) $\frac{e^2}{(z-1)^3} + \frac{2e^2}{(z-1)^2} + \frac{2e^2}{(z-1)} + \frac{2}{3} + \frac{2e^2}{3}(z-1) + \cdots$

(b) $\frac{e^2}{(z-1)^3} + \frac{2e^2}{(z-1)^2} + \frac{1}{3} + \frac{2e^2}{3}(z-1) + \cdots$

(c) $\frac{e^2}{(z-1)^3} + \frac{1}{3} + \frac{2e^2}{3}(z-1) + \cdots$

(d) $\frac{e^2}{(z-1)^3} + \frac{2e^2}{(z-1)^2} + \frac{2e^2}{(z-1)} + \frac{4}{3} + \frac{2e^2}{3}(z-1) + \cdots$

61. The Laguerre polynomial $L_n(0)$ is equal to

(a) 0

(b) –1

(c) 1

(d) 2

62. Half-life of a radioactive material is 4 days. After 20 days, the fraction left undecayed will be:

(a) $\frac{1}{16}$

(b) $\frac{1}{32}$

(c) $\frac{1}{20}$

(d) $\frac{1}{80}$

63. Two coherent sources, whose intensity ratio is 36 : 1, produce interference fringes. What is the of maximum intensity and minimum intensity of the interference pattern?

(a) 49 . 25

(b) 6 : 1

(c) 4 : 1

(d) 25 : 4

64. A light source of wavelength λ illuminates a metal and ejects photoelectrons with a maxi kinetic energy of 1.00eV. A second light source, with half the wavelength of the first, photoelectrons with a maximum kinetic energy of 4.00 eV. What is the work function of the m

(a) 1 eV

(b) 2 eV

(c) 3 eV

(d) 4 eV

65. If $f(x,y) = xy^2$, then the directional derivative of $f(x,y)$ in the direction $2\hat{i} + \hat{j}$ at point $(2,3)$ is

(a) $\sqrt{5}$

(b) $\frac{10}{\sqrt{5}}$

(c) $\frac{20}{\sqrt{5}}$

(d) $\frac{30}{\sqrt{5}}$

66. A transistor has the following typical values of its h parameters: $h_{fe} = 330$, $h_{ie} = 4.5$ kΩ, $h_{re}=2$ and $h_{oe} = 20 \times 10^{-6}$ mho. The transistor is used as a CE amplifier with the load resistance $R_L = $ and the internal resistance of the signal source $R_s = 10$ kΩ. What would be the value of the cu gain?

(a) 300

(b) 250

(c) 200

(d) 150

67. If the power factor changes from $\frac{1}{2}$ to $\frac{1}{4}$, then what would be the increase in impedance in circuit?

(a) 25%

(b) 50%

(c) 200%

(d) 100%

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68. For a conservative force field $\vec{F}$ which of the following is always true ?

(a) $\vec{\nabla} \times \vec{F} = 0$

(b) $\vec{\nabla} \times \vec{F} \neq 0$

(c) $\vec{\nabla} \cdot \vec{F} = 0$

(d) $\vec{\nabla} \cdot \vec{F} \neq 0$

69. The collector leakage current in a CE configuration is 300 µA. If the transistor is now connected in CB-configuration, what will be the leakage current ? (Given value of $\beta = 120$).

(a) 2.4 µA

(b) 119.0 µA

(c) 238.0 µA

(d) 300.0 µA

70. Which one of the following is one of the values of i^i (i raised to the power i) ?

(a) $2\pi i$

(b) $\pi + i$

(c) $e^{-\frac{\pi}{2}}$

(d) 0.79

71. E -- R modeling technique is a

(a) top-down approach

(b) bottom-up approach

(c) left-right approach

(d) right-left approach

72. Output of the following c-code

```
main ( )
{
        print f ("Helio");
        main( ):
}
```

(a) Hello – one time

(b) Hello – infinite times

(c) Compile time error

(d) Run-time error

73. Which of the following algorithms solves the all-pair shortest path problem?

(a) Dijkstra's Algorithm

(b) Floyd's Algorithm

(c) Prim's Algorithm

(d) Warshall's Algorithm

74. System CPU time is defined as:

(a) Time attributed to kernel, when it executes on the behalf of the process

(b) Time attributed to user instruction

(c) Time taken to feed program in the System

(d) None of the above

75. Predict the output of below program:

```
#include <stdio.h>
int main ( )
{
        int arr[5]:
        //Assume that base address of arr is 2000 and size of integer // is 32 bit
        arr++:
        printf(:"%u", arr):
        return 0;
}
```

(a) 2002

(b) 2004

(c) 2020

(d) value required

P.T.O.

76. The following sequence of operation is performed on stack:

    push(1), push(2), pop, push(1), push(2), pop,pop,pop,push(2),pop. The sequence of poppe values are :

    (a) 2,2,1,2,2
    (b) 2,1,2,1,2
    (c) 2,2,1,1,2
    (d) 2,1,1,2,2

77. Consider the following terms
    (1)   EDGE
    (2)   Universal Mobile Telecommunication System
    (3)   FHSS
    (4)   Evolved High Speed Packet Access

    Which of the wireless telecommunication systems given above is/are belong to GSM family?

    (a) 1 and 3
    (b) only 2
    (c) 1, 2 and 4
    (d) 1, 3 and 4

78. What is the value of X in the following equation?

    $$(11!111)_2 + (4543)_8 = (X)_{16}$$

    (a) 9A2
    (b) 9B2
    (c) 2A9
    (d) 2B9

79. Physical topology of FDDI is:

    (a) Bus
    (b) Ring
    (c) Star
    (d) None of the above

80. Which one of the following is correct statement?

    (a) Von-Neumann Computers are only sequential computers
    (b) Von-Neumann Computers are sto program computers
    (c) Von-Neumann Computers have different memories for data and instructions
    (d) Von-Neumann Computers are sequer stored program computers and have : memory for data and instructions.

81. Which of the following system call is used to create new process in UNIX operating system?

    (a) init()
    (b) stime()
    (c) fork()
    (d) wait()

82. The minimum number of nodes in an AVL tree of height 6 is

    (a) 12
    (b) 16
    (c) 20
    (d) 32

83. What is the maximum number of edges a directed graph having n vertices can have including loops?

    (a) $n*n$
    (b) $n*(n-1)$
    (c) n^n
    (d) n^{n-1}

84. The Banker's theorem is associated with which of the following concept?

    (a) Mutual Exclusion
    (b) Paging
    (c) Segmentation
    (d) Deadlock

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85. What is *degree* of a vertex 'V' of an undirected graph?

(a) number of immediate neighbour vertices of 'V'
(b) number of edges incident to 'V'
(c) number of vertices which can be reached from 'V'
(d) number of vertices which cannot be reached from 'V'

86. Which one of the following statements is true regarding Array and Linked List ?

(a) Elements of Array are not stored in adjacent memory locations while for Linked List, elements are stored in adjacent memory locations
(b) Elements of Array are stored in adjacent memory locations while for Linked List, elements are not stored in adjacent memory locations
(c) For Array and Linked List both, elements are not stored in adjacent memory locations
(d) For Array and Linked List both, elements are stored in adjacent memory locations

87. In SQL, which command can remove specific row from a table

(a) Truncate
(b) Remove
(c) Cut
(d) Delete

88. Malicious software is known as

(a) badware
(b) malware
(c) maliciousware
(d) illegalware

89. To avoid the race condition, the number of processes that may be simultaneously inside their critical section is:

(a) 8
(b) 1
(c) 16
(d) 0

90. Which access method is used to obtain a record from a cassette tape?

(a) Direct
(b) Sequential
(c) Random
(d) All of the above

91. Indian Cinema Halls should not be allowed to show foreign movies.

Assumption:
I. Foreign movies are responsible for falling moral values.
II. Indian movies are responsible for falling moral values.

(a) Only Assumption I is implicit
(b) Only Assumption II is implicit
(c) Either I or II is implicit
(d) Neither I nor II is implicit

92. Renuka started walking from her house. She first walked for 3 km towards West, then she turned towards North and moved 4 km in that direction. How far Renuka is from her house?

(a) 3 km South
(b) 3 km North
(c) 5 km South West
(d) 5 km North West

93. X is to the South-West of Y, L is to East of X and South-East of Y and M is to the North of L in line with XY. In which direction of Y is M located?

(a) South
(b) South-West
(c) North
(d) North-East

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94. Choose the correct alternative that will constitute the same pattern

98, 90, 82, 74, _____, 58

(a) 66
(b) 65
(c) 68
(d) 60

95. Find the next number in the series

2, 9, 28, 65, _____

(a) 125
(b) 126
(c) 85
(d) 95

96. The missing number in the series 40, 120, 60, 180, 90, ____ , 135 is :

(a) 110
(b) 270
(c) 105
(d) 210

97. The relationship between the standardized and non-standardized regression coefficients is:

(a) $B_{YX} = b_{yx} (S_X / S_Y)$
(b) $B_{YX} = b_{yx} (S_Y / S_X)$
(c) $B_{YX} = b_{xy} (S_X / S_Y)$
(d) $B_{xy} = b_{yx} (S_X / S_Y)$

98. A, B, C, D, E, F and G are travelling in three different vehicles. There are at least two passeng each vehicle -I, II and III and each vehicle has passengers of both the sexes. There an engineers, two doctors and three teachers among them. C is a lady doctor and she does not with the pair of sisters A and F; B a male engineer, travels with only G, a teacher in vehicle I. male doctor. Two persons belonging to same profession do not travel in the same vehicle. A an engineer and travels in vehicle II. In which vehicle does C travel?

(a) I
(b) II
(c) III
(d) II and III

99. If x = +; + = –; – = ÷ and ÷ = x, then find the solution of the following expression:

$8 \div 2 \times 12 - 3 + 9$

(a) $\frac{95}{3}$
(b) $\frac{22}{3}$
(c) 11
(d) 14

100. Choose the correct alternative:

7, 15, 32, ____, 138, 281

(a) 64
(b) 65
(c) 66
(d) 67

ALIGARH MUSLIM UNIVERSITY
Admission Test-Answer Sheet

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Series (A)

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10230