Roll No.----------

Paper Code		
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(To be filled in the OMR Sheet)

O.M.R. Serial No. | | | | | | | | |

प्रश्नपुस्तिका क्रमांक
Question Booklet No.

प्रश्नपुस्तिका सीरीज
Question Booklet Series
C

BCA (Second Semester) Examination, July-2022

BCA-205(N)

Mathematics-II
(B.P.)

Time : 1:30 Hours **Maximum Marks-100**

जब तक कहा न जाय, इस प्रश्नपुस्तिका को न खोलें

निर्देश : –

1. परीक्षार्थी अपने अनुक्रमांक, विषय एवं प्रश्नपुस्तिका की सीरीज का विवरण यथास्थान सही– सही भरें, अन्यथा मूल्यांकन में किसी भी प्रकार की विसंगति की दशा में उसकी जिम्मेदारी स्वयं परीक्षार्थी की होगी।
2. **इस प्रश्नपुस्तिका में 100 प्रश्न हैं, जिनमे से केवल 75 प्रश्नों के उत्तर परीक्षार्थियों द्वारा दिये जाने है। प्रत्येक प्रश्न के चार वैकल्पिक उत्तर प्रश्न के नीचे दिये गये हैं। इन चारों में से केवल एक ही उत्तर सही है। जिस उत्तर को आप सही या सबसे उचित समझते हैं, अपने उत्तर पत्रक (O.M.R. ANSWER SHEET) में उसके अक्षर वाले वृत्त को काले या नीले बाल प्वांइट पेन से पूरा भर दें। यदि किसी परीक्षार्थी द्वारा किसी प्रश्न का एक से अधिक उत्तर दिया जाता है, तो उसे गलत उत्तर माना जायेगा।**
3. प्रत्येक प्रश्न के अंक समान हैं। आप के जितने उत्तर सही होंगे, उन्हीं के अनुसार अंक प्रदान किये जायेंगे।
4. सभी उत्तर केवल ओ०एम०आर० उत्तर पत्रक **(O.M.R. ANSWER SHEET)** पर ही दिये जाने हैं। उत्तर पत्रक में निर्धारित स्थान के अलावा अन्यत्र कहीं पर दिया गया उत्तर मान्य नहीं होगा।
5. ओ०एम०आर० उत्तर पत्रक **(O.M.R. ANSWER SHEET)** पर कुछ भी लिखने से पूर्व उसमें दिये गये सभी अनुदेशों को सावधानीपूर्वक पढ़ लिया जाय।
6. परीक्षा समाप्ति के उपरान्त परीक्षार्थी कक्ष निरीक्षक को अपनी ओ०एम०आर० शीट उपलब्ध कराने के बाद ही परीक्षा कक्ष से प्रस्थान करें।
7. निगेटिव मार्किंग नहीं है।

महत्वपूर्ण : – **प्रश्नपुस्तिका खोलने पर प्रथमतः जॉच कर देख लें कि प्रश्नपुस्तिका के सभी पृष्ठ भलीभॉति छपे हुए हैं। यदि प्रश्नपुस्तिका में कोई कमी हो, तो कक्ष निरीक्षक को दिखाकर उसी सीरीज की दूसरी प्रश्नपुस्तिका प्राप्त कर लें।**

1. Range of function $f(x) = \tan x$ is :

   (A) $(-1, 1)$

   (B) $\left(\frac{-\pi}{2}, \frac{\pi}{2}\right)$

   (C) $[-\pi, \pi]$

   (D) $(-\infty, \infty)$

2. Equation of a plane passing through $(1, 2, 1), (2, -1, -4), (1, 0, -1)$ is :

   (A) $2x - y + z = 1$

   (B) $x + y + z = 1$

   (C) $2x + y + z = 1$

   (D) NOT

3. Function $f: N \to N$ such that $f(x) = x + 1$ is :

   (A) One-one only

   (B) Onto only

   (C) One-one onto

   (D) NOT

4. Range of $f(x) = cos\ x$ is :

   (A) $(-1, 1)$

   (B) $[-2, 2]$

   (C) $[-\pi, \pi]$

   (D) $[-1, 1]$

5. Stationary point is a point where $f(x, y)$ have ?

   (A) $\frac{\partial f}{\partial x} = 0$

   (B) $\frac{\partial f}{\partial y} = 0$

   (C) $\frac{\partial f}{\partial x} = 0$ and $\frac{\partial f}{\partial y} = 0$

   (D) $\frac{\partial f}{\partial x} < 0$ and $\frac{\partial f}{\partial y} > 0$

6. Saddle point is a point where function has :

   (A) Maximum value

   (B) Minimum value

   (C) Zero value

   (D) Neither maximum nor minimum value

7. The value of $\int_0^2 \int_1^y xy\, dx\, dy$ is :

(A) 0

(B) -1

(C) 2

(D) 1

8. Let $D_{30} = \{1, 2, 3, 5, 6, 10, 15, 30\}$ and relation 'a divides b' be a partial ordering on D_{30}. The lub of 10 and 15 respectively is :

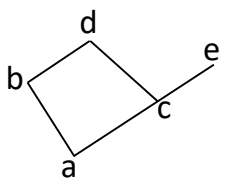
(A) 30

(B) 15

(C) 10

(D) 16

9. Which element is minimal in the following diagram :



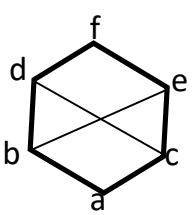
(A) d

(B) b

(C) c

(D) a

10. The graph given below is an example of :



(A) Non lattice

(B) Lattice

(C) Semi lattice

(D) NOT

11. Function $f(x, y)$ has maximum value at (a, b) if :

(A) $rt - s^2 > 0$ and r < 0

(B) $rt - s^2 > 0$ and r > 0

(C) $rt - s^2 < 0$ and r < 0

(D) $rt - s^2 < 0$ and r > 0

12. If $u = \log(x + y + 1)$, then $\frac{\partial u}{\partial x}$ at $(1, 2)$:

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

(B) 4

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

(D) $\frac{1}{4}$

13. Let X = $\{2, 3, 6, 12, 24\}$ and '$\leq$' be the partial order relation $x \leq y$ if x divides y. Number of edges in the Hasse diagram of $(X, \leq)$ is :

(A) 3

(B) 4

(C) 9

(D) NOT

14. If $f(x) = \frac{2x+5}{x^2+x+5}$, then $f\big(f(-1)\big)$ is equal to :

(A) $\frac{155}{149}$

(B) $\frac{149}{155}$

(C) 0

(D) NOT

15. If the function $f: Q \to Q$ is defined by the relation $f(x) = x - \frac{1}{2}$, $x \in Q$ then f is :

(A) Many one onto mapping

(B) One-one into mapping

(C) One-one onto mapping

(D) Many one onto mapping

16. $A = \{1, 2, 3, 4\},\ B = \{2, 3, 4,5\},\ C = \{4, 5, 6, 7\}$ then $(A \cap B) \cap C$ then :

(A) $\{4\}$

(B) $\{2, 3, 4\}$

(C) $\{3, 4\}$

(D) ϕ

17. If R is an equivalence relation on set B then R^{-1} is :

(A) Reflexive only

(B) Symmetric only

(C) Equivalence

(D) NOT

18. Let R and T be two equivalence relations on a set A then :

(A) $R \cup S$ is an equivalence relation

(B) $R \cap S$ is an equivalence relation

(C) $R - S$ is an equivalence relation

(D) NOT

19. Let R be a reflexive relation on a set A and I be the identity relation on A, then :

(A) $R \subset I$

(B) $I \subset R$

(C) $R = I$

(D) NOT

20. A relation $f(x) = y\ \ s.t.$:

(A) $y^2 = 4ax$ is a function

(B) $y^2 = -4ax$ is a function

(C) $y = x$ is a function

(D) NOT

21. If $f(x) = \frac{x+2}{x-3}$, $x \neq 3$ then $f^{-1}(x)$ is equal to :

(A) $\frac{x-1}{3x+2}$

(B) $\frac{3x+2}{x-1}$

(C) $\frac{x-3}{x+2}$

(D) $\frac{x-2}{x+3}$

22. Range of function $f: R \to R\ st. f(1) = 2, f(2) = 3, f(3) = 4$ is :

(A) $\{1, 2, 3\}$

(B) R

(C) $\{2, 3, 4\}$

(D) $\{(1, 2), (2, 3), (3, 4)\}$

23. The number of elements in the power set of a set having $n - 2$ elements is :

(A) $2^n - 2$

(B) 2^n

(C) 2^{n-2}

(D) 2^{n-1}

24. Relation $R = \{(1, 1), (2, 2), (3, 3), (1, 2), (2, 3)(1, 3)\}$ on the set $A = \{1, 2, 3\}$ is :

(A) Reflexive but not symmetric

(B) Reflexive but not transitive

(C) Symmetric and transitive

(D) NOT

25. If $R \subset A \times B$ and $S \subset B \times C$ be two relations, then $(SoR)^{-1}$ equals to :

(A) $S^{-1}\text{o}\, R^{-1}$

(B) $R^{-1}\text{o}\, S^{-1}$

(C) SoR

(D) RoS

26. Let $f: z \to z$ (z is set of integers) be defined by $f(x) = x^2 + x - 2$ then $f\big(f(-2)\big)$ is :

(A) -2

(B) -1

(C) 1

(D) 3

27. Let $A = \{-2, -1, 0\}$ and $f(x) = 2x - 3$ then the range of f is :

(A) $\{7, -5, -3\}$

(B) $(-7, 5, -3)$

(C) $\{-7, -5, -3\}$

(D) NOT

28. If $f(x) = x^2$ and $g(x) = \sin x$ then the value of $gof(x)$ is :

(A) $cos\ x$

(B) $sin\ x^2$

(C) $-sin\ x^2$

(D) $sin\ x$

29. Which of the following is a partial order as well as equivalence relation?

(A) Equal to (=)

(B) Less than (<)

(C) Greater than (>)

(D) NOT

30. Which laws are satisfied for a lattice?

(A) Associative law

(B) Commutative law

(C) Absorption law

(D) All above

31. A POSET in which every pair of element has both a least upper bound and greatest lower bound is :

(A) Sublattice

(B) Lattice

(C) Not a lattice

(D) NOT

32. $a \wedge (b \wedge c) = (a \wedge b) \wedge c$ is :

(A) Distributive law

(B) Associative law

(C) commutative law

(D) NOT

33. Maximum value of xe^{-x} is :

(A) e

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

(C) $-e$

(D) $-\frac{1}{e}$

34. If $f(x,y) = \frac{x+y}{y}$ then $x\frac{\partial f}{\partial x} + y\frac{\partial f}{\partial y}$ is :

(A) 0

(B) 1

(C) 2

(D) 3

35. If $u = ax^2 + 2hxy + by^2$ then using Euler's theorem, $x\frac{\partial u}{\partial x} + y\frac{\partial u}{\partial y}$ is :

(A) u

(B) $2u$

(C) $3u$

(D) $n(n-1)$

36. Domain of the function $f(x) = \sqrt{4-x^2}$ is all real x $s.t.$:

(A) $x < 2$

(B) -2

(C) $-2 \leq x \leq 2$

(D) $x > -2$

37. A function $f: R \to R$ $s.t.$ $f(x) = x^2$ is :

(A) One one, onto

(B) One one, into

(C) Many one into

(D) Does not exist

38. Domain of $sin^{-1}(4x)$ is :

(A) $[0, 1]$

(B) $\left[\frac{-1}{4}, \frac{1}{4}\right]$

(C) $[-3, 3]$

(D) NOT

39. The relation '<' in the set of natural numbers is :

(A) Only symmetric

(B) Only transitive

(C) Only reflexive

(D) Equivalence relation

40. Let $f: R \to R$ be defined by $f(x) = 3x - 4$, then $f^{-1}(x)$ is :

(A) $\frac{x+4}{3}$

(B) $\frac{x}{3} - 4$

(C) $3x + 4$

(D) $x + 3$

41. Radius of the sphere $x^2 + y^2 + z^2 + 2ux + 2vy + 2wz + d = 0$ is :

(A) $\sqrt{u^2 + v^2 + w^2}$

(B) $\sqrt{u^2 + v^2 + w^2 - d}$

(C) $\sqrt{u^2 + v^2 + w^2 + d}$

(D) NOT

42. Center of sphere $x^2 + y^2 + z^2 + 2x - 4y - 6z + 5 = 0$ is :

(A) $(1, 2, 3)$

(B) $(-1, -2, 3)$

(C) $(-1, 2, 3)$

(D) $(1, 2, -3)$

43. If $A = \{a, b\}$ then power set P(A) is :

(A) $\{\phi, \{a\}, \{b\}, \{a, b\}\}$

(B) $\{\{a\}, \{b\}\}$

(C) $\{\{a\}, \{b\}, \{a, b\}\}$

(D) $\{\phi, a, b, A\}$

44. If $A = \{x: x \text{ is a factor of } 10\}$ $B = \{2, 5\}$ then :

(A) $A \subset B$

(B) $A = B$

(C) $B \subset A$

(D) $A \cap B = \phi$

45. If $n(A) = 40,\ n(B) = 40,\ n(A \cap B) = 20,\ n(A \cup B) = 60$ then $n(B \backslash A)$ is :

(A) 60

(B) 40

(C) 30

(D) 20

46. If $A = \{1\},\ B = \{2\}$ then $A \times B$ is :

(A) $\{(1, 2)\}$

(B) $\{1, 2\}$

(C) $\{1\}$

(D) $\{2\}$

47. If $Ai = \{0, i\}, i \in z$ then $A_1 \cup A_2$ is equal to :

(A) A_1

(B) A_2

(C) $A_1 \cap A_2$

(D) A_3

48. Which of the following represent the equation of plane?

(A) $ax^2 + by = d$

(B) $ax + by + cz = xy$

(C) $ax + by + cz = d$

(D) NOT

49. Mid points of the line segment joining the points $(2, 3, 4)$ and $(8, -3, 8)$ are :

(A) $(10, 0, 12)$

(B) $(5, 6, 0)$

(C) $(6, 5, 0)$

(D) $(5, 0, 6)$

50. If the plane passes through three collinear points (x_1, y_1, z_1),(x_2, y_2, z_2), (x_3, y_3, z_3) then which of the following true ?

(A) $x_1y_1z_1 + x_2y_2z_2 + x_3y_3z_3 = 0$

(B) $\begin{vmatrix} x_1 & y_1 & z_1 \\ x_2 & y_2 & z_2 \\ x_3 & y_3 & z_3 \end{vmatrix} = 0$

(C) $x_1 + y_1 + z_1 = 0$

(D) NOT

51. Triple integral is used to calculate :

(A) Area

(B) Volume

(C) (A) only

(D) NOT

52. Changing the order of integration the integral $\int_{y=2}^{3} \int_{x=0}^{2} f(x, y) dx\, dy$ is equal to :

(A) $\int_{x=0}^{2} \int_{y=2}^{3} f(x, y)\, dy\, dx$

(B) $\int_{x=0}^{3} \int_{y=2}^{2} f(x, y)\, dy\, dx$

(C) (A) and (B) both

(D) NOT

53. Using volume integral, which of the following quantity can be calculated :

(A) Area of circle

(B) Area of square

(C) Volume of cube

(D) NOT

54. Double integral $\int_{x_1}^{x_2} \int_{y_1}^{y_2} dy\, dx$ represents :

(A) Volume

(B) Area and volume

(C) Area

(D) NOT

55. $\int_a^b \int_c^d dx\, dy$ is :

(A) $-\int_c^d \int_a^b dy\, dx$

(B) $\int_c^d \int_a^b dy\, dx$

(C) $abcd$

(D) $bc - ad$

56. Distance of plane $3x + 4y - 5z - 7 = 0$ from origin is :

(A) $\frac{7}{\sqrt{40}}$

(B) $\frac{6}{\sqrt{34}}$

(C) $\frac{8}{\sqrt{50}}$

(D) $\frac{7}{\sqrt{50}}$

57. If l, m, n represents the direction cosines then $l^2 + m^2 + n^2$ is :

(A) 0

(B) 3

(C) -1

(D) 1

58. If $u(x, y) = xy + yz + zx$, then $\frac{\partial f}{\partial x} + \frac{\partial f}{\partial y} + \frac{\partial f}{\partial z}$ is :

(A) $y + x$

(B) $y + z$

(C) $2(x + y + z)$

(D) $x + y + z$

59. Equation of sphere in standard form is :

(A) $x^2 + y^2 + z^2 = r^2$

(B) $x^2 + y^2 + 2gx + 2fy + c = 0$

(C) $xyz = r^2$

(D) $(x - h)^2 + (y - k)^2 = r^2$

60. If the lines $\frac{x-x_1}{a} = \frac{y-y_1}{b} = \frac{z-z_1}{c}$ and $\frac{x-x_2}{p} = \frac{y-y_2}{q} = \frac{z-z_2}{r}$ lei on a plane then :

(A) $\begin{vmatrix} x_1 & y_1 & z_1 \\ a & b & c \\ p & q & r \end{vmatrix} = 0$

(B) $\begin{vmatrix} x_1 - x_2 & y_1 - y_2 & z_1 - z_2 \\ a & b & c \\ p & q & r \end{vmatrix} = 0$

(C) $\begin{vmatrix} x_1 - x_2 & y_1 - y_2 & z_1 - z_2 \\ a & b & c \\ p & q & r \end{vmatrix} \neq 0$

(D) NOT

61. A×B is defined as :

(A) $\{(a, b) ;\ a, b \in A\}$

(B) $\{(a, b) ;\ a, b \in B\}$

(C) $\{(a, b) ;\ a \in A,\ b \in B\}$

(D) $\{(a, b) ;\ a \in B,\ b \in A\}$

62. Set of integers z with relation '>' is a :

(A) POSET

(B) Not POSET but Reflexive

(C) Reflexive

(D) Not a POSET

63. If $A = \{x; x^2 \leq 16,\ x \in z\}$ then A is :

(A) $\{0, 1, 2, 3, 4\}$

(B) $\{-4, -3, -2, -1, 0, 1, 2, 3, 4\}$

(C) $\{x;\ -4 \leq x \leq 4\}$

(D) NOT

64. If P(S) is power set of S, then $(P(S), \subseteq)$ is :

(A) Never a lattice

(B) Always a lattice

(C) $|P(S)| = |S|$

(D) $|P(S)| = 2$

65. Relation '<' on z^+ is :

(A) Partial order relation

(B) Not a partial order relation

(C) Reflexive

(D) NOT

66. Set $A = \{x;\ 3x - 2 = 3,\ x \epsilon \mathbb{Z}\}$ is :

(A) $\left\{\frac{5}{2}\right\}$

(B) $\frac{5}{3}$

(C) ϕ

(D) $\{\phi\}$

67. If $A = \{a, b\}, B = \{b, a\}$ then :

(A) $A \neq B$

(B) $A = B$

(C) $A \cap B = \phi$

(D) NOT

68. If $f(x,y) = x^3 - 3xy^2,\ g(x,y) = 3x^2y - y^3$ then :

(A) $\frac{\partial f}{\partial x} = \frac{\partial g}{\partial x}$

(B) $\frac{\partial f}{\partial x} = \frac{-\partial g}{\partial y}$

(C) $\frac{\partial f}{\partial y} = \frac{\partial g}{\partial x}$

(D) $\frac{\partial f}{\partial y} = \frac{-\partial g}{\partial x}$

69. $n(A \cup B)$ is equal to :

(A) $n(A) + n(B) - n(A \cap B)$

(B) $n(A) + n(B)$

(C) $n(A) - n(B)$

(D) $n(A) \cup n(B)$

70. If $n(A) = 20,\ n(B) = 30,\ n(A \cup B) = 100$ then $n(A \cap B)$ is :

(A) 50

(B) 40

(C) 20

(D) 30

71. $A = \{1,2,3\}, B = \{4,5,6\}$ then A – B is :

(A) $\{1,2,3\}$

(B) $\{4,5,6\}$

(C) ϕ

(D) B

72. If $f(x,y) = \frac{x^3+y^3}{\sqrt{x}+\sqrt{y}}$ is homogeneous function of degree n then n is :

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

(B) 3

(C) $\frac{5}{2}$

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

73. If $u = e^{xyz}$ then $\frac{\partial f}{\partial x}$ is :

(A) yzu

(B) yze^{yz}

(C) xyz

(D) xyu

74. Set of circles passing through origin is a :

(A) Finite set

(B) Infinite set

(C) Both finite and infinite set

(D) NOT

75. $(AUB)'$ is equal to :

(A) $A' \cup B'$

(B) $A' \cup \overline{B}$

(C) $A' \cap B'$

(D) $(A \cap B)'$

76. If $A = \phi$ then power set of A is :

(A) $\{\phi\}$

(B) $\{\phi, A\}$

(C) ϕ

(D) NOT

77. Number of elements in power set of set $A = \{1, 2, 3\}$ is :

(A) 3

(B) 8

(C) 9

(D) 6

78. If u is homogeneous function of x, y with degree n then :

(A) $x\frac{\partial u}{\partial x} + y\frac{\partial u}{\partial y} = nu$

(B) $x\frac{\partial u}{\partial x} + y\frac{\partial u}{\partial y} = u$

(C) $x\frac{\partial u}{\partial x} - y\frac{\partial u}{\partial y} = nu$

(D) NOT

79. If $z = \tan^{-1}\left(\frac{y}{x}\right)$, then the value of $\frac{\partial^2 z}{\partial x^2} + \frac{\partial^2 z}{\partial y^2}$ is equal to :

(A) $\frac{-y}{x^2+y^2}$

(B) $\frac{x}{x^2+y^2}$

(C) $\frac{2xy}{x^2+y^2}$

(D) 0

80. If $y = \log sin\, x + z$ then $\frac{\partial y}{\partial x}$ is :

(A) $\cot x$

(B) $\frac{1}{Sin\, x}$

(C) $cos\, x$

(D) z

81. If $f(x, y, z) = x^2 + xyz + z$ then $f_x(1, 1, 1)$ is :

(A) 0

(B) 3

(C) 1

(D) -1

82. If a line has direction ratio's $(1, 2, 3)$ then its direction cosines are :

(A) $\left(\frac{1}{\sqrt{14}}, \frac{-2}{\sqrt{14}}, \frac{3}{\sqrt{14}}\right)$

(B) $\left(\frac{1}{\sqrt{14}}, \frac{2}{\sqrt{14}}, \frac{3}{\sqrt{14}}\right)$

(C) $\left(\frac{-1}{\sqrt{14}}, \frac{2}{\sqrt{14}}, \frac{3}{\sqrt{14}}\right)$

(D) $\left(\frac{1}{\sqrt{14}}, \frac{2}{\sqrt{14}}, \frac{-3}{\sqrt{14}}\right)$

83. Sum of direction cosines of z axis is :

(A) 0

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

(C) 1

(D) 3

84. Volume of a cube with side a is :

(A) $\int_0^a \int_0^a \int_0^a dx\, dy\, dz$

(B) a^2

(C) $\int_0^a \int_0^a dx\, dy$

(D) $\frac{a^3}{8}$

85. To find the volume, which of the following integral can be used :

(A) Single

(B) Double

(C) Triple

(D) Double and triple

86. $\int_0^1 \int_0^x dx\, dy$ is :

(A) 1

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

(C) 2

(D) 3

87. Changing the order of integration in $\int_o^a \int_o^y f(x,y)\, dx\, dy$, the new integral is :

(A) $\int_o^a \int_x^a f(x,y)\, dy\, dx$

(B) $\int_x^a \int_o^a f(x,y)\, dy\, dx$

(C) $\int_o^a \int_x^y f(x,y)\, dy\, dx$

(D) $\int_o^a \int_{a-x}^a f(x,y)\, dy\, dx$

88. If $u = \log\left[\frac{x^2+y^2}{x+y}\right]$, them $x\frac{\partial u}{\partial x} + y\frac{\partial u}{\partial y}$ is :

(A) 0

(B) 1

(C) u

(D) eu

89. If the lines $3x + 2ky - 2 = 0$ and $2x + 5y + 1 = 0$ are parallel then the value of k is :

(A) $\frac{-5}{4}$

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

(C) $\frac{15}{4}$

(D) $\frac{2}{5}$

90. Which of the following is true ?

(A) $\frac{\partial^2 u}{\partial x^2} = \frac{\partial^2 u}{\partial y^2}$

(B) $\frac{\partial^2 u}{\partial x\, \partial y} = \frac{\partial^2 u}{\partial y\, \partial x}$

(C) $\frac{\partial u}{\partial x} = \frac{\partial v}{\partial y}$

(D) NOT

91. If $f(x,y) = \sqrt{x} + \sqrt{y}$ then degree of Homogeneous function $f(x,y)$ is :

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

(B) 2

(C) $\frac{1}{4}$

(D) NOT

92. $\int_0^{\pi}\int_0^{\pi} d\theta\, d\phi$ is :

(A) 1

(B) 0

(C) $\frac{\pi}{2}$

(D) π^2

93. Curve $y^2 = 4x$ is a :

(A) Parabola

(B) Hyperbola

(C) Straight line

(D) Ellipse

94. $\int_0^1\int_0^1\int_0^1 dx\, dy\, dz$ is :

(A) 1

(B) 2

(C) 0

(D) 4

95. A line makes an angle α, β, γ, with x, y, z, axis respectively then $\sin^2\alpha + \sin^2\beta + \sin^2\gamma$ is :

(A) 1

(B) 0

(C) 2

(D) NOT

96. Direction ratios of normal to the plane $2x - y + 2z + 1 = 0$ are :

(A) $(2, 1, 2)$

(B) $(2, -1, 2)$

(C) $(2, 1, -2)$

(D) NOT

97. Acute angle between the lines $x - 2 = 0$ and $\sqrt{3}\,x - y - 2 = 0$ is :

(A) $0°$

(B) $30°$

(C) $45°$

(D) $60°$

98. Equation of sphere with center at (-3, 2, 4) and radius 6 units is :

(A) $x^2 + y^2 + z^2 + 6x + 4y + 8z = 7$

(B) $x^2 + y^2 + z^2 + 6x - 4y - 8z = 7$

(C) $x^2 + y^2 + z^2 - 6x + 4y - 8z = 7$

(D) None

99. If $u = \frac{x^4+y^4}{x+y}$, then $x\frac{\partial u}{\partial x} + y\frac{\partial u}{\partial y}$ is :

(A) $4u$

(B) 4

(C) $3u$

(D) NOT

100. If $f(x, y) = x^2 + y^2$, then $\frac{\partial f}{\partial x}$ is :

(A) $2x + y^2$

(B) $2x$

(C) $2x + 2y$

(D) NOT

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Rough Work / रफ कार्य

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