

SET 2 – Multiple Choice Questions

51. If $A=\{1,2,3\}, B=\{x,y\}$, then number of ordered pairs in $A \times B$ is:

- (a) 6
- (b) 5
- (c) 3
- (d) 2

52. If $P=\{a\}, Q=\{b,c\}$, then $Q \times P$ is:

- (a) $\{(b,a), (c,a)\}$
- (b) $\{(a,b), (a,c)\}$
- (c) $\{(a,a), (b,c)\}$
- (d) None

53. If $n(A)=2, n(B)=4$, then number of elements in $A \times B$ is:

- (a) 6
- (b) 8
- (c) 10
- (d) 12

54. If $A=\{-1,0,1\}$, then number of elements in $A \times A$ is:

- (a) 6
- (b) 8
- (c) 9
- (d) 3

55. If $P \times Q$ has 15 elements, $n(P)=3$. Then $n(Q)$ is:

- (a) 12
- (b) 5
- (c) 45
- (d) 8

56. Two ordered pairs $(a,b)=(c,d)$ if and only if:

- (a) $a = b$ and $c = d$
- (b) $a = c$ and $b = d$
- (c) $a = d$ and $b = c$
- (d) $a = c$ or $b = d$

57. If $A=\{1,2\}, B=\{a,b\}$, then subsets of $A \times B$ are:

- (a) 2
- (b) 4
- (c) 8
- (d) 16

58. If $A=\{1,2,3\}, B=\{4,5,6\}$, then $A \times (B \cap \{5,6\})$ has:

- (a) 3 elements
- (b) 6 elements
- (c) 9 elements
- (d) 12 elements

59. The relation $R=\{(x,y):y=x^2, x \in \{1,2,3\}\}$ is:

- (a) $\{(1,1),(2,4),(3,9)\}$
- (b) $\{(1,2),(2,3),(3,4)\}$
- (c) $\{(1,0),(2,1),(3,2)\}$
- (d) $\{(1,4),(2,9),(3,16)\}$

60. The domain of relation $R=\{(2,3),(3,4),(5,6)\}$ is:

- (a) $\{3,4,6\}$
- (b) $\{2,3,5\}$

- (c) $\{2,4,6\}$
- (d) $\{3,5,6\}$

61. The codomain of a relation R from A to B is:

- (a) Always equal to domain
- (b) Always equal to range
- (c) The set B
- (d) The set A

62. If domain = $\{1,2,3\}$ and codomain = $\{a,b\}$, then maximum number of relations is:

- (a) 3
- (b) 8
- (c) 64
- (d) 512

63. Range of relation $R = \{(x,y): y=x+2, x \in \{1,2,3\}\}$ is:

- (a) $\{1,2,3\}$
- (b) $\{3,4,5\}$
- (c) $\{2,3,4\}$
- (d) $\{0,1,2\}$

64. Total number of relations from set with m elements to set with n elements is:

- (a) 2^{m+n}
- (b) 2^{mn}
- (c) m^n
- (d) n^m

65. Which of the following is a function?

- (a) $\{(1,2),(2,3),(3,2)\}$
- (b) $\{(1,2),(1,3)\}$
- (c) $\{(2,3),(3,4),(4,5)\}$
- (d) $\{(1,1),(2,2),(2,3)\}$

66. The relation $R = \{(a,b): a,b \in \mathbb{N}, a \text{ divides } b\}$ is:

- (a) Reflexive
- (b) Symmetric
- (c) Transitive
- (d) Reflexive and Transitive

67. The function $f(x) = 2x$ is:

- (a) One-one but not onto
- (b) Onto but not one-one
- (c) One-one and onto
- (d) Neither one-one nor onto

68. The function $f(x) = x^2, x \in \mathbb{R}$ is:

- (a) One-one
- (b) Onto
- (c) Neither one-one nor onto ($\mathbb{R} \rightarrow \mathbb{R}$)
- (d) Bijective

69. The modulus function $f(x) = |x|$ is not differentiable at:

- (a) $x = 0$
- (b) $x = 1$
- (c) $x = -1$
- (d) None

70. Range of $f(x) = \sin^2 x$ is:

- (a) $(-1,1)$
- (b) $[0,1]$
- (c) $[-1,1]$
- (d) $(0,1)$

71. Range of $f(x) = \cos^2 x + \sin^2 x$ is:

- (a) $\{0,1\}$
- (b) $\mathbb{R}$
- (c) $\{1\}$
- (d) $[-1,1]$

72. The function $f(x) = [x]$ is continuous at:

- (a) All integers
- (b) All non-integers
- (c) Nowhere
- (d) Everywhere

73. The function $f(x) = \text{sign}(x)$ has value -1 for:

- (a) $x = 0$
- (b) $x > 0$
- (c) $x < 0$
- (d) None

74. If $f(x) = 3x-2$, then $f(4) = ?$

- (a) 10
- (b) 12
- (c) 14
- (d) 8

75. If $f(x) = 2x+3$, then $f(-2) = ?$

- (a) -1
- (b) -3
- (c) 1
- (d) 7

76. Graph of $f(x) = x^3$ is symmetric about:

- (a) x-axis
- (b) y-axis
- (c) Origin
- (d) None

77. Graph of $f(x) = x^2$ is symmetric about:

- (a) x-axis
- (b) y-axis
- (c) Origin
- (d) None

78. Range of $f(x) = 1/(x^2+1)$ is:

- (a) $(0,1]$
- (b) $(-\infty, \infty)$
- (c) $[0, \infty)$
- (d) $(-1,1)$

79. Domain of $f(x) = \sqrt{x-3}$ is:

- (a) $x \geq 3$
- (b) $x \leq 3$
- (c) all real x
- (d) $x \neq 3$

80. Domain of $f(x) = 1/\sqrt{x-2}$ is:

- (a) $x \geq 2$
- (b) $x > 2$
- (c) $x \leq 2$
- (d) all real numbers

81. Function $f(x) = |x-2|$ has minimum value at:

- (a) $x = 0$
- (b) $x = 2$
- (c) $x = -2$
- (d) $x = 1$

82. The function $f(x) = \sin x$ is:

- (a) One-one
- (b) Many-one
- (c) Onto $\mathbb{R}$
- (d) Bijective

83. The function $f(x) = \tan x$ has domain:

- (a) $\mathbb{R} - \{n\pi, n \in \mathbb{Z}\}$
- (b) $\mathbb{R} - \{(2n+1)\pi/2, n \in \mathbb{Z}\}$
- (c) $\mathbb{R}$
- (d) $\mathbb{R}^+$

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

- (a) $(-\infty, \infty)$
- (b) $[-1, 1]$
- (c) $(0, \infty)$
- (d) $[0, 1]$

85. If $f(x) = \cos x$, then $f(0) = ?$

- (a) 0
- (b) 1
- (c) -1
- (d) Undefined

86. If $f(x) = \sin x$, then $f(\pi/2) = ?$

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

87. If $f(x) = 2x^2 - 1$, then $f(0) = ?$

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

88. If $f(x) = 3x^2$, then $f(-2) = ?$

- (a) -12
- (b) 12
- (c) 6
- (d) 0

89. If $f(x) = x^2 - 4$, then $f(3) = ?$

- (a) 5
- (b) 7
- (c) 9
- (d) -1

90. If $f(x) = |x|$, then $f(-5) = ?$

- (a) -5
- (b) 5
- (c) 0
- (d) 1

91. Function $f(x) = 1/(x^2-1)$ is not defined at:

- (a) $0, 1$
- (b) $1, -1$
- (c) $-1, 0$
- (d) 1 only

92. Range of $f(x) = x^3$ is:

- (a) $\mathbb{R}^+$
- (b) $\mathbb{R}^-$
- (c) $\mathbb{R}$
- (d) $\mathbb{Z}$

93. Which is bijective?

- (a) $f(x) = x^3, \mathbb{R} \rightarrow \mathbb{R}$
- (b) $f(x) = x^2, \mathbb{R} \rightarrow \mathbb{R}$
- (c) $f(x) = |x|, \mathbb{R} \rightarrow \mathbb{R}$
- (d) $f(x) = 2x, \mathbb{N} \rightarrow \mathbb{N}$

94. Function $f(x) = \cos x$ is even because:

- (a) $f(-x) = -f(x)$
- (b) $f(-x) = f(x)$
- (c) $f(x)$ is symmetric about origin
- (d) None

95. Function $f(x) = \sin x$ is odd because:

- (a) $f(-x) = f(x)$
- (b) $f(-x) = -f(x)$
- (c) $f(-x) \neq f(x)$
- (d) None

96. Graph of $f(x) = |x|$ is symmetric about:

- (a) x-axis
- (b) y-axis
- (c) Origin
- (d) None

97. Function $f(x) = \sqrt{x}$ is:

- (a) Increasing
- (b) Decreasing
- (c) Constant
- (d) None

98. $f(x) = 1/x$ is symmetric about:

- (a) x-axis
- (b) y-axis
- (c) Origin
- (d) None

99. $f(x) = \cos x$ has maximum value at:

- (a) $x = 0$
- (b) $x = \pi/2$
- (c) $x = \pi$
- (d) $x = 2\pi$

100. $f(x) = \sin x$ has minimum value at:

- (a) $x = -\pi/2$
- (b) $x = 0$
- (c) $x = \pi/2$
- (d) $x = 3\pi/2$

Answers – Set 2

51(a), 52(a), 53(b), 54(c), 55(b), 56(b), 57(c), 58(b), 59(a), 60(b),
61(c), 62(c), 63(b), 64(b), 65(c), 66(d), 67(c), 68(c), 69(a), 70(b),

71(c), 72(b), 73(c), 74(a), 75(a), 76(c), 77(b), 78(a), 79(a), 80(b),
81(b), 82(b), 83(b), 84(a), 85(b), 86(b), 87(a), 88(b), 89(a), 90(b),
91(b), 92(c), 93(a), 94(b), 95(b), 96(b), 97(a), 98(c), 99(a), 100(a).

www.anindyas.in