OBJECTIVE CBT QUESTIONS ON SET THEORY (MTH 101) BY OPRALD TUTORIAL CENTRE 08132588623

1. If A is a subset of a universal set U, the compliment of set A is given as:
A. U
B. U - A
C. U + B
D. U - B Answer: B

2. The set statement $(A \cup B) \cap C = A \cup (B \cap)C$ is relevant to
A. Associative Law
B. Cummulative lowa
C. Distributibe Law
D. Closure
Answer: A

3. If *U = (Integers ≤ 20); D = {multiples of 4}; E = {multiples of 3},* the element of $D' \cap E$ are A. {1,2}
B. {3,6,9,15,18}
C. {4,8,16,20}
D. {3,6,9,.12,15,18}
Answer: B

4. The notation $A - B$ is equivalent to
A. $A \cup B^c$
B. $A \cup B$
C. $A \cap B$
D. $A \cap B^c$
$Answer$: D

5. The notation $(A \cup B)'$ is equivalent to
A. $A^c \cap B^c$
B. $A^c - B^c$
C. $A \cup B$
D. $A \cap B^c$
$Answer$: A

6. The number of distinct elements found in a given set is called
A. Power set of a set
B. Order of a set
C. Power of a cardinality
D. Cardinality of a power set
Answer: B

7. If two sets A and B are subsets of a universal set, then the notation $n(A \cup B)$ is equal to
A. $n(A) + n(B)$
B. $n(A) + n(C) - n(A \cup B)$
C. $n(A) + n(B) + n(A \cup B)$
D. $n(A) + n(B) - n(A \cap B)$
Answer: D

In a survey of 60 students, 60 study botany, 50 zoology and 48 biology. If 38 students study botany, zoology and biology,

Use the information above to answer questions 8 & 9

8. How many study only zoology?

A. 12
B. 10
C. 0
D. 5 Answer: C

9. How many study non of the three courses?

A. 12
B. 10
C. 0 D. 5
Answer: C

10. How many study the Zoology and Botany?

A. 12
B. 10
C. 0
D. 5 Answer: A

In a particular group of students during a school's sports competition, 15 play lawn tennis, 11 swim, 9 play lawn tennis and swim and 3 none of the sport activities

11. How many students swim only?

A. 6
B. 2
C. 9
D. 20 Answer: B

12. How many students play lawn tennis only?

A. 6 B. 2
C. 9
D. 20 Answer: A

13. How many students are in the group?

A. 6 B. 2
C. 9
D. 20 Answer: D

14. In a group of 40students, 22 study Maths, 18 study physics, 14 study statistics, 9 study both Maths and Physics, 7 study both Maths and Statistics, 5 study both Physics and Statistics and 2 study all the subjects. How many study none of the subjects?

A. 4
B. 5 C. 6
D. 7 Answer: B

15. Simplify $\frac{1}{2-\sqrt{3}} + \frac{5}{\sqrt{3}+2} - \frac{1}{\sqrt{3}-\sqrt{2}}$

A. $12 - 5\sqrt{3} - \sqrt{2}$ B. $12 - 5\sqrt{3} + \sqrt{2}$ C. $12 + 5\sqrt{3} + \sqrt{2}$
D. $12 + 5\sqrt{3} - \sqrt{2}$
Answer: D

16. Find the square root of $7 - \sqrt{13}$

A. 0.8424
B. 1.8424
C. 1.8244

D. 0.8244 Answer:
B

17. Find the roots of the equation: $x^3 + 5x^2 - 2x - 24$

A. -4,3,2
B. -4,-3,-2
C. -4,-3,2 D. 4,3,-2 Answer: C

18. Find the roots of the equation $2x^3 + 11x^2 - 17x - 6$

A.....**Error! Bookmark not defined.**
B.....**Error! Bookmark not defined.**
C.....**Error! Bookmark not defined.**
DAnswer: .....**Error! Bookmark not defined.**

19. Solve the equation $2x^2 - 5x + 7 = 0$

$\frac{5\pm\sqrt{31}}{4}$

$\frac{5\pm i\sqrt{31}}{4}$

$\frac{5\pm i\sqrt{31}}{4}$

A.

B.

C.

D. $\frac{5\pm\sqrt{31}}{2}$

Answer: B

20. In the expression y_____ _____ _____$2+22y+1 = y2+12y-2 + y2+32y+3$, determine the value of $y2 + 2y + 1$

$\frac{5\pm\sqrt{71}}{4}$

$\frac{5\pm i\sqrt{-71}}{2}$

$\frac{5\pm i\sqrt{71}}{2}$

A.

B.

C.

D. $\frac{5\pm i\sqrt{71}}{2}$

Answer: C

21. The value of k in $\sqrt{k-1} + 5\sqrt{k-9} = 4\sqrt{k-6}$ is

A. 9
B. 10 C. 11
D. 12
Answer: B

22. If $5g^4 + 9g^3 - 12g^2 - 9g + 5 = 0$, find the value of R where R is a positive integer and $R = g - \frac{1}{g}$

A. 2
B. 1
C. 1/5
D. -2 Answer: C

23. The values of x, y in the equations $x + 2y = 3$ & $x^2 + 2y^2 = 6$ are

A. $1 + \sqrt{2}, \frac{2-\sqrt{2}}{2}$

B. $1 + \sqrt{2}, \frac{2+\sqrt{2}}{2}$

C. $1 - \sqrt{2}, \frac{2-\sqrt{2}}{2}$

D. $1 - \sqrt{2}, \frac{2+\sqrt{2}}{2}$

Answer: A

24. a, b & c respectively in the equations $2ab = a + b, 5ac = 6c - 2a$ & $3bc = 3b + 4c$ are A. $\frac{3}{2}, \frac{1}{2}, -1$

B. $\frac{1}{2}, \frac{3}{2}, -1$

C. $-\frac{1}{2}, -\frac{3}{2}, -1$

D. $\frac{1}{2}, \frac{3}{2}, 1$

Answer: *B*

25. Solve for x in the equation $16^{3x} = \frac{1}{4}(32)^{x-1}$

A. 1

B. 2

C. -2

D. -1

Answer: D

26. Simplify $(216)^{-1/3} \times (0.16)^{-1/2}$

A. 12/17

B. 5/13

C. 12/15

D. 5/12

Answer: D

27. Given that $y = 3x, and\ 3^{x-y} = \frac{1}{81}$, find x

A. 2 B. 3 C. 4 D. 5

Answer: A

28. If $8^{x/2} = 2^{3/8} \times 4^{3/4}$, find the value of $4x$

A. 4 B. 5

C. 6

D. 7

Answer: 5

29. Solve for x in $3^{2x+1} - 18(3^x) - 81 = 0$

A. -1

B. 3

C. -3

D. 2

Answer: D

30. Solve for x in $26(5^{x-1}) = 5^{2x} + 1$ A. -1,-2

B. -1,1
C. -1,2
D. 2,-2
Answer: B

31. Evaluate $log_a 256 = 4$
A. 2
B. 3 C. 4 D. 5
Answer: 4

32. Given that $log_2 64 = k$, find $4klog_{16} 32$
A. 60 B. 50 C. 40 D. 30
Answer: D

33. The value of x in $log_3 x - 3log_x 3 = 2$ is A. -1/3
B. -27
C. 27
D. 3
Answer: C

34. What is the positive value of y in $3log_8 y = log_4(y + 4)$?
A. -2,3
B. -2,-3
C. 2,-3
D. 2,3
Answer: A

35. If $25^{x+1} = 64\ (^5)^6, find\ x$ 2
A. -1
B. 1
C. -2
D. 2
Answer: D

36. Simplify $(\frac{8}{27})^{1/3} - (\frac{4}{9})^{1/2}$
A. 0
B. 1
C. 2
D. 3
Answer: A

37. Simplify $18\frac{\qquad\qquad\qquad\qquad}{6^{n2+n1+}\ 2\times\ \times 2^{\,n}\ 9^{-n1}\ \times\times\ 4\ 12^{2n2-n1+1}}$

A. 6
B. 12
C. 1/6
D. 1/12
Answer: D

38. If $|x| < p,\ \ then$
A. $p < x < -p$
B. $-p < x < p$
C. $-p > x < p$

D. $-p < x > p$
Answer: B

39. The value of x in $\frac{5x-1}{3} - \frac{1-2x}{5} < 8 + x$

A. $x < 8$
B. $x < -8$
C. $x > 8$
D. $x > -8$
Answer: A

40. Find the range of x for which $12 + x - x^2 < 0$

A. $x < 3 \ or \ x < -4$
B. $x < -3 \ or \ x < 4$
C. $-3 < x < 4$
D. $3 < x < -4$
Answer: C

41. The equivalent of $(a + b)(a^1 + b^1)(a b_{22} + b a_{22})$ is

A. $16\sqrt{ab}$
B. 16
C. $8\sqrt{ab}$
D. 8
Answer: D

42. The equivalent of $(a + b)\left(\frac{1}{a^2} + \frac{1}{b^2}\right)\left(\frac{a_4}{b^2} + \frac{b_4}{a^2}\right)$

A. $16\sqrt{ab}$
B. 16
C. $8\sqrt{ab}$
D. 8
Answer: C

43. If $(x-1)x^2(x+3) = 16(xP-1) + 4(xG-1)^2 + 16(Hx+3)$, the value of P + G + H is

A. 3 B. 1
C. 7
D. 10 Answer: B

44. The first 3 terms of the sequence given by $T_n = \frac{3n}{n^2+1}$ respectively are

A. 3/8, 4/11, 5/14
B. 4/11, 5/14, 6/17
C. 2/5, 3/8, 4/11
D. 3/8, 4/11, 6/17
Answer: C

45. Given the nth term of a sequence $log_{16}(n + 3)$, what is the difference between the 13th and first terms?

A. ½
B. 2
C. 1
D. -1 Answer: A

46. The sum of the terms of a sequence is known as
A. Series
B. Arithmetic sequence
C. Geometric sequence
D. Sequence Answer: A

47. The type of sequence in which the next term differs from the preceding term by a difference is termed
A. Arithmetic Sequence
B. Geometric sequence
C. Geometric Infinity
D. Infinite series
Answer: A

48. The correct expression for the common difference in an A.P. is
A. $T - T_n$
B. $T_n - T_{n+1}$ C. $T_n - T_{n-1}$
D. $T_n - T_{n+2}$
$Answer: C$

49. The common difference in the series $K, K + 3, K + 6, \ldots\ldots$ is
A. 2
B. 3
C. 4
D. -4 Answer: B

50. If the first 3 terms of an A.P. are $y, 3y + 1, 7y - 4,$ find the 10^{th} term of the sequence
A. 66
B. 55
C. 44
D. 33
Answer: A

51. The 6^{th} and 13^{th} term of an A.P. are 0 and 14 respectively, find the 20^{th} term
A. 18
B. -18
C. 28
D. -28 Answer C

52. If P = {prime factors of 84} and Q = {prime factors of 315}, the elements of $P \cup Q$ & $P \cap Q$ are respectively
A. {3,4,5,7,9 & {3,7}
B. {3,4,5,7} & {5,7} C. {2,3,5,7} & {3,7}
D. {2,3,5,7} & {2,7} Answer: C

53. In a class of 100 students, 40 students study botany, 32 study microbiology while 44 study zoology. The number of students that study botany and microbiology is 24, botany and zoology is 24, while 20 study microbiology and zoology. If 20 students study all the three subjects, how many study none of the three courses
A. 32
B. 42
C. 68
D. 24 Answer:
A

54. The union of the set A and B denoted by A ∪ B denoted by A ∪ B, is the set of elements which belong to

A. either A nor B nor both
B. either A or B or both
C. neither A nor B or both
D. neither A or B nor both Answer: B

55. The word "Infinity" is
A. a real number
B. a complex number
C. an integer number
D. constant Answer: C

56. In a class, 220 students offer Mathematics or Chemistry or both. 125 offer Mathematics and 110 offer Chemistry. How many offer Chemistry but not Mathematics? (a) 80 (b) 110 (c) 125 (d) 95 A. 80
B. 110
C. 125
D. 95 Answer: D

57. The universal set U contains only elements of the sets A, B, C where A = {3,q,r}, B = {a,2,c} and C = {1,3,4,b}. what are the elements in [(A - B) ∩ *{C – (A ∩ C)'}*]
A. {3,q,r}
B. {q,r}
C. {3}
D. {3,1} Answer: C

58. If R = $\{x: x^2 = 16, x > 5\}$, then R is equal to A. 0
B. {0}
C. ø
D. {ø} Answer: C

59. In a certain class, 22 pupils take one or more of Chemistry, Economics and Government. 12 take Economics €, 8 take Government (G) and 7 take Chemistry (C). Nobody takes Economics and Chemistry and 4 pupils take Economics and Government. How many pupils take both Chemistry and Government?
A. 1
B. 2
C. 3
D. 4 Answer: A

60. The universal set U has subsets M and N such that $M \subseteq N$. The set of $M \cap (M \cap N)'$ is
A. M
B. ∅
C. N
D. U Answer: B

61. Given the universal set U = {2,3,4,5,6,7,8,9} and subsets P = {2,4,6,8} and Q = {x: $x^2 < 50$, $x\ is\ odd$}, find $(P \cap Q)'$
A. {9}
B. {0}
C. ∅
D. U Answer: U

62. Simplify $\sqrt[3]{(729y^{-6})^{1/2}}$
A. $\frac{1}{3y}$
B. $3y$ C. $\frac{y}{3}$
D. 3

y

Answer: D

63. Evaluate $\sqrt[3]{\frac{0.0024\ x\ 35000}{0.0105}}$, leaving your answer in standard form

A.$2\ x\ 10^1$

B. $2\ x\ 10^2$

C.$1\ x\ 10^2$

D.$1\ x\ 10^1$

Answer: A

64. The square root of $3-\sqrt{2}$ is

A. $\frac{1-\sqrt{2}}{2}$

B. $\frac{2-\sqrt{2}}{2}$

C. $\frac{1+2\sqrt{2}}{2}$

D. $\frac{\sqrt[4]{1-2\sqrt{2}}}{2}$

Answer: D

65. If a & b are positive numbers, evaluate $4\square a\square b\square\square_{a^{\frac{1}{2}}\square\ b^{\frac{1}{2}}}\square\square_{b^{\frac{a}{2}^4}\square\ b_{a^4}^4}\square$

A. 32

B. $32\sqrt{ab}$

C. 16

D. $16\sqrt{ab}$ Answer: B

66. In the equation $5x^4 + 9x^3 - 12x^2 - 9x + 5 = 0$, find the value of $x - {}^1/_x$ *A.* $^{-1}/_5, 2$

B. $^1/_2, 5$

C. $^1/_5, -2$

D. 5, 2 Answer: C

67. Determine the square of the remainder when $3x^4 - 2x^3 - 10x - 5$ is divided by $x - 4$ A. 595

B. 475

C. 354025

D. 225625

Answer: C

68. In resolving $x\square x^{\frac{1}{2}}\square 1\square$ into partial fraction, what are the values of the constants A, B & C?

A. -2, $^1/_2$, $^1/_2$,

B. -1, $^1/_2$, ½

C. -1, $^1/_2$, $-1^1/_2$

Answer: B

69. Find the range of the validity of x in the equation $\frac{2x}{x}\square 1\square 1$

A. $x < 1$ *or* $x > 0$

B. $x < 0$ *or* $x < 1$ C. $x < 0$ *or* $x < 1$

D. *x > 0 or x > 1*
Answer: D

70. What is the remainder when $x^3 + 3x^2 - 13x - 10$ is divided by $(x - 3)$?
A. 4
B. $4^1/_4$
C. 6
D. 5 Answer: D

71. Given that $-2 = A(x - 1)^2 + B(x - 1)(x - 2) + C(x - 2)$, find the value of C
A. 2
B. -2
C. 1
D. -1
Answer: A

72. Resolve into partial fraction $\frac{x^3 - x^2 - 5x - 15}{(x-1)(x-2)}$ & give the values of A, B, C respectively
A. 2,3,4
B. 2,3,0
C. 2,0,3
D. 2, -2, 3 Answer: D

73. Determine the range of values of x for which $\frac{x^2 - x - 2}{2} > x - 4$
A. *x > -4 or x > 2*
B. *x < -4 or x < 2*
C. *x < 4 or x > 2*
D. *x < -4 or x > 2*
Answer: A

74. In the equation $5x^4 - x^3 + 9x^2 - x + 5 = 0$, find the value of $x + \frac{1}{x}$
A. $\frac{1 \mp \sqrt{21}}{10}$
B. $\frac{1 \pm \sqrt{21}}{5}$
C. $\frac{1 \pm \sqrt{21}}{}$
D. $\frac{15}{\frac{1 \pm \sqrt{21}}{10}}$
Answer: D

75. Determine the values of p & q if $(x - 1)$ & $(x + 2)$ are factors of $2x^3 + px^2 - x + q$
A. p = -5, q = -6
B. p = 5, q = 6
C. p = 5, q = -6
D. p = -6, q = -5 Answer: C

76. Find the value of the constant k if $4x^3 + kx^2 + 7x - 23$ has a remainder 7 when divided by $2x - 5$
A. 8
B. -16
C. -8
D. 16 Answer: C

77. Expresses $\frac{3x^2 - x - 1}{x^3 - x}$ in partial fractions and find the value of A + B – C

A. -3
B. 2
C. 6
D. 7
Answer: C

78. Solve the inequality $\left|\frac{y-4}{y}\right| \geq 1$

A. -4 < y < 0
B. 4 < y < 0
C. 0 > y > -4 D. 0 < y < 4 Answer: A

79. The sum of the square of three positive numbers in arithmetic progression is 165. If the sum of the number is 21, find the sum of cubes of each of the numbers?

A. 4
B. 1400
C. 1407
D. 104 Answer: C

80. The sum of the first n terms of an AP whose difference is not zero equals half the sum of its subsequent n members. Find the ratio of the sum of the first 3n terms and the sum of the first …terms A. 6

B. 4
C. 8
D. 3
Answer: A

81. Given the following series: $\ln x$, $\ln x^2$, $\ln x^4$, $\ln x^8$, find the 21st term A. $20 \ln x$

B. $2^{20} \ln x$
C. $20^2 \ln x$
D. $20 \ln x^2$
Answer: *B*

82. Find the 8th term and the sum of the first 8 terms of the GP sequence: $\frac{1}{2}, -1, 2, -4, \ldots\ldots$?

A. $-64, -42.5$
B. -64, 42.5
C. 64, 42.5
D. -64, 45.4 Answer: A

83. The sum of the first eight terms of the AP: $\ln x$, lnx^2, $\ln x^3$ ... .. is

A. $\ln x^8$
B. $\ln x^9$
C. $\ln x^{36}$ D. $\ln x^{72}$ Answer: C

84. A man places a sum of money on a savings account in the bank. On each succeeding birthday, he deposits two times more than on the previous birthday. His total sum of the first eleven deposits is N20,480. How much was his first deposit?

A. N20
B. N25
C. N10
D. N12.50 Answer: C

85. The fourth term and the seventh term of an AP are in the ratio 5:8. Find the ratio of the 3^{rd} and 6^{th} term.
A. 4:5
B. 6:5 C. 4:6
D. 4:7 Answer: D

86. The second term of an AP is four times the first term, the last term is 13 times the first term and the sum of the series is 70. Find the first three terms of the progression
A. 2,4,6
B. 2,8,14
C. 2,4,8
D. 8,12,14 Answer: B

87. A polygon has 25sides, the length of which starting from the smallest side are in AP. If the perimeter of the polygon is 1100cm, and the length of the largest side is ten times that of the smallest, find the length of the smallest side
A. 5cm
B. 6cm C. 7cm D. 8cm Answer: D

Success in your examination