MATHS

BOOKS - NDA PREVIOUS YEARS

SETS, RELATIONS, FUNCTIONS AND NUMBER SYSTEM

Mcq

1. Universal set,

$U = \{x \mid x^5 - 6x^4 + 11x^3 - 6x^2 = 0\}$

$A = \{x \mid x^2 - 5x + 6 = 0\}$

$B = \{x \mid x^2 - 3x + 2 = 0\}$

What is $(A \cap B)'$ equal to ?

A. {1, 3}

B. {1, 2, 3}

C. {0, 1, 3}

D. {0, 1, 2, 3}

Answer: C

Watch Video Solution

2. Suppose that A denotes the collection of all complex numbers whose square is a negative real number. Which one of the following statements is correct ?

A. $A \subseteq R$

B. $A \supseteq R$

C. $A = \{x + iy | x^2 \in R | x, y \in R\}$

D. $A = \{iy \mid y \in R\}$

Answer: D

Watch Video Solution

3. A relation R is defined on the set Z of integers as follows :

$mRn \Leftrightarrow m + n$ is odd.

Which of the following statements is/are true for R ?

1. R is reflexive 2. R is symmetric

3. R is transitive

Select the correct answer using the code given below :

A. 2 only

B. 2 and 3

C. 1 and 2

D. 1 and 3

Answer: A

Watch Video Solution

4. Let A and B be two non-empty subsets of a set X. If $(A - B) \cup (B - A) = A \cup B$, then which one of the following is correct?

A. $A \subset B$

B. $A \subset (X - B)$

C. $A = B$

D. $B \subset A$

Answer: B

Watch Video Solution

5. Let $A = \{(n, 2n) : n \in N\}$ and $B = \{(2n, 3n) : n \in N\}$. What is $A \cap B$ equal to ?

A. $\{(n, 6n) : n \in N\}$

B. $\{(2n, 6n) : n \in N\}$

C. $\{(n, 3n) : n \in N\}$

D. ϕ

Answer: D

Watch Video Solution

6. Which one of the following operations on sets is not correct where B' denotes the complement of B?

A. $(B' - A') \cup (A' - B') = (A \cup B) - (A \cap B)$

B. $(A - B) \cup (B - A) = (A' \cup B') - (A' \cap B')$

C. $(B' - A') \cap (A' - B') = (B - A) \cap (A - B)$

D. $(B' - A') \cap (A' - B') = (B - A') \cup (A' - B)$

Answer: C

Watch Video Solution

7. which one of the following sets has elements as odd positive integers

(a) $S = \{x \in R \mid x^3 - 8x^2 + 19x - 12 = 0\}$ b)

$S = \{x \in R \mid x^3 - 9x^2 + 23x - 15 = 0\}$ c)

$S = \{x \in R \mid x^3 - 7x^2 + 14x - 8 = 0\}$ d)

$S = \{x \in R \mid x^3 - 12x^2 + 44x - 48 = 0\}$

A. $S = \{x \in R \mid x^3 - 8x^2 + 19x - 12 = 0\}$

B. $S = \{x \in R \mid x^3 - 9x^2 + 23x - 15 = 0\}$

C. $S = \{x \in R \mid x^3 - 7x^2 + 14x - 8 = 0\}$

D. $S = \{x \in R \mid x^3 - 12x^2 + 44x - 48 = 0\}$

Answer: B

Watch Video Solution

8. Which of the following statements is not correct for the R by aRb if and only if b lives within one kilometer from a (a) R is reflexive (b) R is symmetric (c) R is not anti-symmetric (d) None of the above

A. R is reflexive

B. R is symmetric

C. R is not anti-symmetric

D. Nonee of the above

Answer: B

Watch Video Solution

9. Let X be any non-empty set containing n elements. Then what is the number of relations on X ?

A. 2^{n^2}

B. 2^n

C. 2^{2n}

D. n^2

Answer: A

Watch Video Solution

10. What is the region that represent $A \cap B$ if $A = \{(x, y) \mid x + y \leq 4\}$ and $B = \{(x, y) \mid x + y \leq 0\}$?

A. $\{(x, y) \mid x + y \leq 2\}$

B. $\{(x, y) \mid 2x + y \leq 4\}$

C. $\{(x, y) \mid x + y \leq 0\}$

D. $\{(x, y) \mid x + y \leq 4\}$

Answer: C

Watch Video Solution

11. In a group of 500 students, there are 475 students who can speak Hindi and 200 can speak Bengali. What is the number of students who can speak Hindi only ?

A. 275

B. 300

C. 325

D. 350

Answer: B

Watch Video Solution

12. Let X and Y be two non-empty sets and let R_1 and R_2 be two relations from X into Y. Then, which one of the following is correct ?

A. $(R_1 \cap R_2)^{-1} \subset R_1^{-1} \cap R_2^{-1}$

B. $(R_1 \cap R_2)^{-1} \supset R_1^{-1} \cap R_2^{-1}$

C. $(R_1 \cap R_2)^{-1} = R_1^{-1} \cap R_2^{-1}$

D. $(R_1 \cap R_2)^{-1} = R_1^{-1} \cup R_2^{-1}$

Answer: D

Watch Video Solution

13. What is the value of $\frac{(1001)_2^{(11)_2} - (101)_2^{(11)_2}}{(1001)_2^{(10)_2} + (1001)_2^{(01)_2}(101)_2^{(01)_2} + (101)_2^{(10)_2}}$?

A. $(1001)_2$

B. $(101)_2$

C. $(110)_2$

D. $(100)_2$

Answer: D

Watch Video Solution

14. Let x>y be two real numbers and $z \in R, z \neq 0$, Consider the following : 1.$x + z > y + z$ and $xz > yz$2. x+z>y-z and x-z>y-z 3.xz>yz and x/z>y/z 4.x-z>y-z and x/z>y/z then which are correct:

A. 1 only

B. 2 only

C. 1 and 2 only

D. 1,2,3 and 4

Answer: D

Watch Video Solution

15. If A, B and C are any three arbitrary events then which one of the following expressions shows that both A and B occur but not C ?

A. $A \cap \overline{B} \cap \overline{C}$

B. $A \cap B \cap \overline{C}$

C. $\overline{A} \cap \overline{B} \cap \overline{C}$

D. $(A \cup B) \cap \overline{C}$

Answer: B

Watch Video Solution

16. Let $P = \{p_1, p_2, p_3, p_4\}$

$Q = \{q_1, q_2, q_3, q_4\}$ and

$R = \{r_1, r_2, r_3, r_4\}$.

If $S_{10} = \{(p_i, q_j, r_k) : i + j + k = 10\}$,

how many elements does S_{10} have ?

A. 2

B. 4

C. 6

D. 8

Answer: C

Watch Video Solution

17. Which one of the following is correct ?

A. $A \cup (B - C) = A \cap (B \cap C')$

B. $A-(B \cup C)=(A \cap B') \cap C'$

C. $A-(B \cap C)=(A \cap B') \cap C$

D. $A \cap (B-C)=(A \cap B) \cap C$

Answer: B

Watch Video Solution

18. The maximum three digit integer in the decimal system will be represented in the binary system by which one of the following ?

A. 1111110001

B. 1111111110

C. 1111100111

D. 1111000111

Answer: C

Watch Video Solution

19. What is the difference between the smallest five digit binary integer and the largest four digit binary integer ?

A. The smallest four digit binary integer

B. The smallest one digit binary integer

C. The greatest one digit binary integer

D. The greatest three digit binary integer.

Answer: C

Watch Video Solution

20. If F(n) denotes the set of all divisors of n except 1, what is the least value of y satisfying $[F(20) \cap F(16)] \subseteq F(y)$?

A. 1

B. 2

C. 4

D. 8

Answer: B

Watch Video Solution

21. On the set Z of integers, relation R is defined as "$aRb \Leftrightarrow a + 2b$ is an integral multiple of 3". Which one of following statements is correct for R? (a) R is only reflexive (b) R is only symmetric (c) R is only transitive (d) R is an equivalence relation

A. R is only reflexive

B. R is only symmetric

C. R is only transitive

D. R is an equivalence relation

Answer: D

Watch Video Solution

22. For non-empty sets A, B and C, the following two statements are given:

Statement P: $A \cap (B \cup C) = (A \cap B) \cup C$

Statement Q: C is a subset of A

Which one of the following is correct ?

A. $P \leq Q$

B. $P \Leftrightarrow Q$

C. $P \Rightarrow Q$

D. Nothing can be said about the correctness of the above three with certainty

Answer: B

Watch Video Solution

23. If $X = \{x : x > 0, x^2 < 0\}$, and Y = {flower, Churchill, moon, Kargil), then which one of the following is a correct statement?

A. X is well defined but Y is not a well defined set

B. Y is well defined but X is not a well defined set

C. Both X and Y are well defined sets

D. Neither X nor Y is a well defined set

Answer: C

Watch Video Solution

24. Consider the following for any three non-empty sets, A, B and C.

1. $A - (B \cup C) = (A - B) \cup (A - C)$

2. $A - B = A - (A \cap B)$

3. $A = (A \cap B) \cup (A - B)$

Which of the above is/are correct ?

A. Only 1

B. 2 and 3

C. 1 and 2

D. 1 and 3

Answer: B

Watch Video Solution

25. Consider the following statements There are infinitely many rational numbers between two distinct 1...integers. 2 rational numbers 3, real numbers Which of the statements above are correct (a) Only 1 and 2 ((b) Only 2 and 3 c) Only 1 and 3 (d) 1, 2 and 3

A. Only 1 and 2

B. Only 2 and 3

C. Only 1 and 3

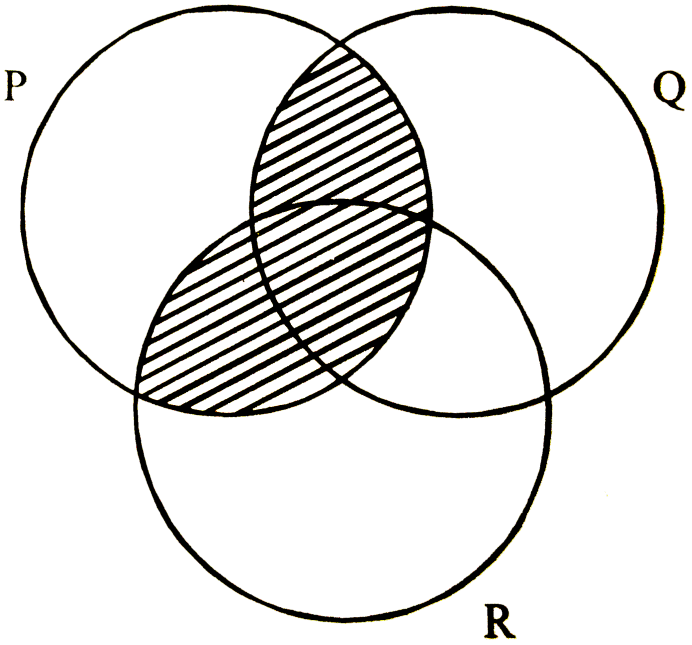
D. 1, 2 and 3

Answer: D

Watch Video Solution

26. What does the shaded region represent in the figure given below ?

.



A. $(P \cup Q) - (P \cap Q)$

B. $P \cap (Q \cap R)$

C. $(P \cap Q) \cap (P \cap R)$

D. $(P \cap Q) \cup (P \cap R)$

Answer: D

Watch Video Solution

27. If $a^x = b, b^y = c, c^z = a$, then what is the value of $\frac{1}{(xy + yz + zx)}\left(\frac{1}{x} + \frac{1}{y} + \frac{1}{z}\right)$?

A. 0

B. abc

C. 1

D. -1

Answer: C

Watch Video Solution

28. If $2^x = 3^y = 12^z$, then what is $(x + 2y)/(xy)$ equal to ?

A. z

B. $\frac{1}{z}$

C. 2z

D. $\frac{z}{2}$

Answer: B

Watch Video Solution

29. If a set X contains n (n>5) elements, then what is the number of subsets of X containing less than 5 elements

A. C(n, 4)

B. C(n, 5)

C. $\sum_{r=0}^{5} C(n, r)$

D. $\sum_{r=0}^{4} C(n, r)$

Answer: D

Watch Video Solution

30. Which one of the following is an infinite set ?

A. The set of human beings on the earth

B. The set of water drops in a glass of water

C. The set of trees in a forest

D. The set of all primes

Answer: D

Watch Video Solution

31. What is the value of $0.\bar{2} + 0.\overline{23}$?

A. $0.\overline{43}$

B. $0.\overline{45}$

C. $0.\overline{223}$

D. $0.2\overline{23}$

Answer: B

Watch Video Solution

32. If $3^{(x-1)} + 3^{(x+1)} = 30$, then what is the value of $3^{(x+2)} + 3^x$?

A. 30

B. 60

C. 81

D. 90

Answer: D

Watch Video Solution

33. Let $f:[-100\pi, 100\pi] \to [-1, 1]$ be defined by $f(\theta) = \sin\theta$ Then what is the number of values of $\theta \in [-100\pi, 1000\pi]$ for which $f(\theta) = 0$

A. 1000

B. 1101

C. 1100

D. 1110

Answer: B

Watch Video Solution

34. For non-empty subsets A,B and C of a set X such that $A \cup B = B \cap C$, which one of the following, is the strongest inference that can be derived? a)A=B=C b) $A \subseteq B = C$ c) $A = B \subseteq C$ d) $A \subseteq B \subseteq C$

A. A=B=C

B. $A \subseteq B = C$

C. $A = B \subseteq C$

D. $A \subseteq B \subseteq C$

Answer: D

Watch Video Solution

35. If μ is the universal set and P is a subset of μ then what is $P \cap (P - \mu) \cup (\mu - P)$ equal to

A. ϕ

B. P'

C. μ

D. P

Answer: A

Watch Video Solution

36. let μ= the set of all triangles, P = the set of all isosceles triangles, Q = the set of all equilateral triangles, R = the set of all right-angled triangles. What do the sets $P \cap Q$ and R-P represents respectively ?

A. The set of isosceles triangles, the set of non- isosceles right angled triangles

B. The set of isosceles triangles, the set of right angled triangles

C. The set of equilateral triangles, the set of right angled triangles

D. The set of isosceles triangles, the set of equilateral triangles

Answer: A

Watch Video Solution

37. Consider the following statements:

For non empty sets A, B and C

1. $A - (B - C) = (A - B) \cup C$

2. $A - (B \cup C) = (A - B) - C$

Which of the statements given above is/are correct?

A. 1 only

B. 2 only

C. Both 1 and 2

D. Neither 1 nor 2

Answer: B

Watch Video Solution

38. A relation R is defined over the set of non-negative integers as $xRy \Rightarrow x^2 + y^2 = 36$ what is R?

A. $\{(0, 6)\}$

B. $\{(6, 0), (\sqrt{11}, 5), (3, 3, \sqrt{3})\}$

C. $\{(6, 0), (0, 6)\}$

D. $\{(\sqrt{11}, 5), (2, 4\sqrt{2}), (5\sqrt{11}), (4\sqrt{2}, 2)\}$

Answer: C

Watch Video Solution

39. Consider the following statements:

1. Parallelism of lines is an equivalence relation.

2. x R y, if x is a father of y, is an equivalence relation.

Which of the statements given above is/are correct?

A. 1 only

B. 2 only

C. Both 1 and 2

D. Neither 1 nor 2

Answer: A

Watch Video Solution

40. Which one of the following binary number is the prime number?

A. 111101

B. 111010

C. 111111

D. 100011

Answer: A

Watch Video Solution

41. What is the product of the binary numbers 1001.01 and 11.1?

A. 101110.011

B. 100000.011

C. 101110.101

D. 100000.101

Answer: B

Watch Video Solution

42. Among the following equations, which are linear

1. $2x + y - z = 5$

2. $\pi x + y - ez = \log 3$

3. $3^x + 2y = 7$

4. $\sin x - y - 5z = 4$

Select the correct answer using the code given below

A. 1 only

B. 1 and 2 only

C. 3 and 4

D. 1, 2 and 4

Answer: B

Watch Video Solution

43. The multiplication of the number $(10101)_2$ by $(1101)_2$ yields which one of the following ?

A. $(100011001)_2$

B. $(100010001)_2$

C. $(110010011)_2$

D. $(100111001)_2$

Answer: B

Watch Video Solution

44. If A and B are two sets satisfying A-B = B-A, then which one of the following is correct? (a) $A = \phi$ (b) $A \cap B = \phi$ (d) None of these (c) A=B

A. $A = \phi$

B. $A \cap B = \phi$

C. $A = B$

D. None of the these

Answer: C

Watch Video Solution

45. Which one of the following is correct? The real number $\sqrt[3]{2+\sqrt{5}}+\sqrt[3]{2-\sqrt{5}}$ is :

A. an integer

B. a rational number but not an integer

C. an irrational number

D. none of the above

Answer: B

Watch Video Solution

46. If $(A - B) \cup (B - A) = A$ for subsets A and B of the universal set U, then which one of the following is correct?

A. B is proper non-empty subset of A

B. A and B are non-empty disjoint sets

C. $B = \phi$

D. None of the above

Answer: C

Watch Video Solution

47. If A, B and C are three sets and U is the universal set such that n(U)=700, n(A)=200, n(B)=300 and $n(A \cap B) = 100$, then what is the value of $(A' \cap B')$?

A. 100

B. 200

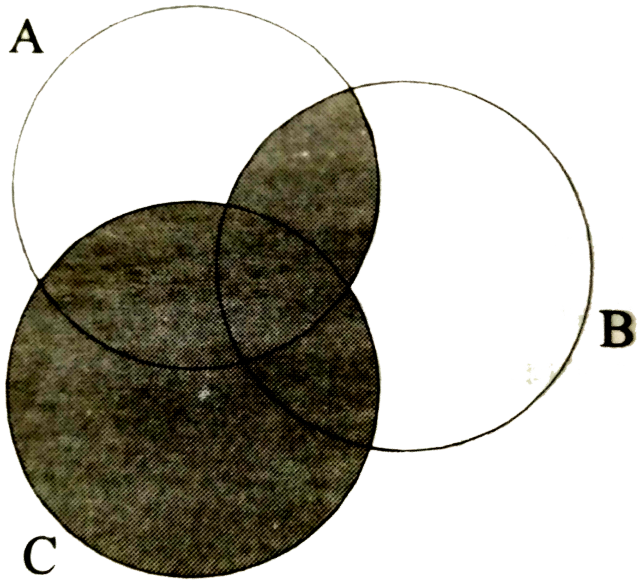
C. 300

D. 400

Answer: C

Watch Video Solution

48. What does the shaded region in the Venn diagram given below represent ?



A. $C \cap (A' \cap B')$

B. $C \cup (C' \cap A \cap B)$

C. $C \cup (C \cap A) \cup (C \cap B)$

D. $C \cup (A / B)$

Answer: B

Watch Video Solution

49. Let N be the set of integers. A relation R or N is defined as $R = \{(x, y) : xy > 0, x, y, \in N\}$. Then, which one of the following is correct?

A. R is symmetric but not reflexive

B. R is reflexive but not symmetric

C. R is symmetric and reflexive but not transitive

D. R is an equivalence relation

Answer: D

Watch Video Solution

50. What is the value of

$$\frac{\log_{27} 9 \times \log_{16} 64}{\log_4 \sqrt{2}}?$$

A. $\frac{1}{6}$

B. $\frac{1}{4}$

C. 8

D. 4

Answer: D

Watch Video Solution

51. Elements of a population are classified according to the presence or absence of each of 3 attributes A, B and C. What is the number of smallest ultimate classes into which is population is divided?

A. 5

B. 6

C. 8

D. 9

Answer: C

Watch Video Solution

52. The following question consist of two statements, one labelled as the 'Assertion (A)' and the other as 'Reason (R)'. You are to examine these two statements carefully and select the answer.

Assertion (A) : If events, A, B, C, D are mutually exhaustive, then $(A \cup B \cup C)^C = D$.

Reason (R): $(A \cup B \cup C)^C = D$ implies if any element is excluded from the sets A, B and C, then it is included in D.

A. Both A and R are individually true, and R is the correct explanation of A.

B. Both A and R are individually true but R is not the correct explanation of A.

C. A is true but R is false

D. A is false but R is true

Answer: A

Watch Video Solution

53. For what value (s) of x is $\log_{10}\left\{999+\sqrt{x^2-3x+3}\right\}=3$?

A. 0

B. 1 only

C. 2 only

D. 1, 2

Answer: D

Watch Video Solution

54. Which one of the following is correct? The function $F: A \to R$ where $A = \left\{x \in R, -\frac{\pi}{2} < x < \frac{\pi}{2}\right\}$ defined by f(x) = tan x.

A. Injective

B. Not injective

C. Not Bijective

D. None Of These

Answer: A

Watch Video Solution

55. Which one of the following real valued functions is never zero?

A. Polynomial function

B. Trigonometric function

C. Logarithmic function

D. Exponential function

Answer: D

Watch Video Solution

56. Assertion (A) : $\{x \in R \mid x^2 < 0\}$ is not a set. Here R is the correct of real numbers.

Reason (R) : For every real number x, $x^2 > 0$.

A. Both A and R are individually true, and R is the correct explanation of A.

B. Both A and R are individually true but R is not the correct explanation of A.

C. A is true but R is false

D. A is false but R is true

Answer: A

Watch Video Solution

57. Let R be a relation on the set N of natural numbers defined by $n\ R\ m$ iff n divides m. Then, R is (a) Reflexive and symmetric (b) Transitive and symmetric (c) Equivalence (d) Reflexive, transitive but not symmetric

A. R is reflexive only

B. R is symmetric only

C. R is transitive only

D. R is reflexive and transitive

Answer: D

Watch Video Solution

58. If $10^{(\log_{10}|x|)}$ =2, what is the value of x ?

A. 2 only

B. -2 only

C. 2 or -2

D. 1 or -1

Answer: C

Watch Video Solution

59. Consider the following statements

1. $\phi \in \{\phi\}$ 2.$\{\phi\} \subseteq \phi$

Which of the statements given above is/are correct?

A. 1 only

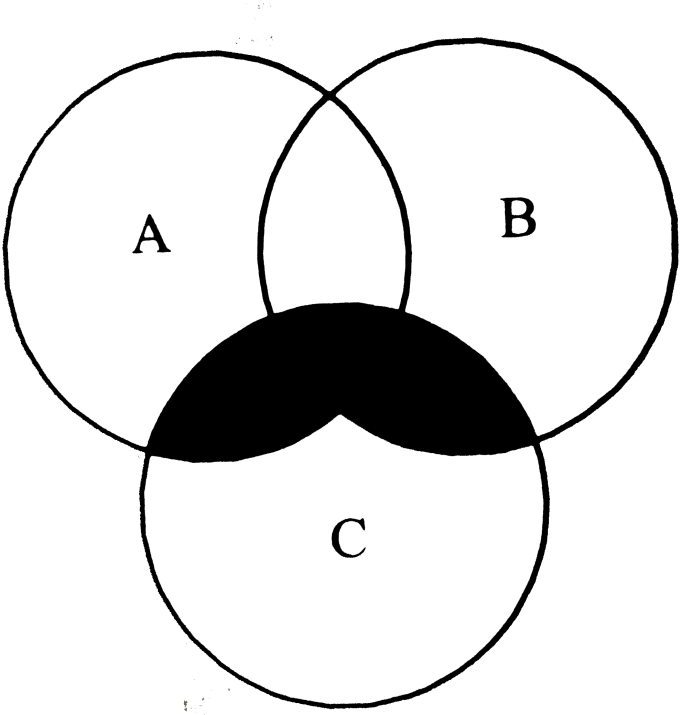
B. 2 only

C. Both 1 and 2

D. Neither 1 nor 2

Answer: D

Watch Video Solution



60.

What does the shaded region in the above diagram represent?

A. $(A \cap B) \cap C$

B. $(A \cup B) \cap C$

C. $(A \cup B) - C$

D. None of the above

Answer: B

Watch Video Solution

61. The binary number 0.111111.... (where the digit 1 is recurring) is equivalent in decimal system to which one of the following?

A. $\frac{1}{10}$

B. $\frac{11}{10}$

C. 1

D. $\frac{10}{11}$

Answer: C

Watch Video Solution

62. The difference of two numbers 10001100 and 1101101 in binary system is expressed in decimal system by which one of the following?

A. 27

B. 29

C. 31

D. 33

Answer: C

Watch Video Solution

63. Let $A = \{x \in R \mid -9 \leq x < 4\}, B = \{x \in R \mid -13 < x \leq 5\}$ and $C = \{x$

.

Then, which one of the following is correct?

A. $-9 \in (A \cap B \cap C)$

B. $-7 \in (A \cap B \cap C)$

C. $4 \in (A \cap B \cap C)$

D. $5 \in (A \cap B \cap C)$

Answer: B

Watch Video Solution

64. Which one of the following is correct?

A. $A \cup P(A) = P(A)$

B. $A \cap P(A) = A$

C. $A - P(A) = A$

D. $P(A) - \{A\} = P(A)$

Answer: A

Watch Video Solution

65. A function f is defined by $f(x) = x + \frac{1}{x}$. Consider the following.

$(1)(f(x))^2 = f(x^2) + 2$

$(2)(f(x))^3 = f(x^3) + 3f(x)$

Which of the above is/are correct?

A. 1 only

B. 2 only

C. Both 1 and 2

D. Neither 1 nor 2

Answer: C

Watch Video Solution

66. If a set A contains 4 elements, then what is the number of elements in $A \times P(A)$?

A. 16

B. 32

C. 64

D. 128

Answer: C

Watch Video Solution

67. If A, B and C are three sets such that $A \cap B = A \cap C$ and $A \cup B = A \cup C$, then (1) $A = B$ (2) $A = C$ (3) $B = C$ (4) $A \cap B = \varphi$

A. A=B only

B. B=C only

C. A=C only

D. A=B=C

Answer: B

Watch Video Solution

68. The number $\left(2+\sqrt{2}\right)^2$ is

A. a natural number

B. an irrational number

C. a rational number

D. a whole number

Answer: B

Watch Video Solution

69. If A and B are disjoint sets, then $A \cap (A' \cup B)$ is equal to which one of the following?

A. ϕ

B. A

C. $A \cup B$

D. $A - B'$

Answer: A

Watch Video Solution

70. If A, B, C are three sets, then what is A-(B-C) equal to?

A. $A - (B \cap C)$

B. $(A - B) \cup C$

C. $(A - B) \cup (A \cap C)$

D. $(A - B) \cup (A - C)$

Answer: C

Watch Video Solution

71. If A and B are two subsets of a set X, then what is $A \cap (A \cup B)'$ equal to?

A. A

B. B

C. ϕ

D. A'

Answer: C

Watch Video Solution

72. $f: \{1, 2, 3\} \to \{4, 5\}$ is not a functio if it is defined by which one of the following?

A. {(2,4),(3,5),(1,5)}

B. {(1,4),(2,4),(3,4)}

C. {(1,4),(2,5),(3,4)}

D. {(1,4),(1,5),(2,4),(2,5),(3,4),(3,5)}

Answer: D

Watch Video Solution

73. If A={1,2,3,4} and $R = \{(1, 1), (1, 3), (2, 2), (3, 1), (3, 4), (4, 3), (4, 4)\}$ is a relation on $A \times A$, then which one of the following is correct?

A. R is reflexive

B. R is symmteric and transitive

C. R is transitive but not reflexive

D. R is neither reflexive nor transitive

Answer: D

Watch Video Solution

74. If X and Y are any two non-empty sets, then what is (X-Y)' equal to?

A. X'-Y'

B. $X' \cap Y$

C. $X' \cup Y$

D. $X - Y'$

Answer: C

Watch Video Solution

75. What is the binary equivalent of decimal number $(0.8125)_{10}$?

A. $(0.1101)_2$

B. $(0.1001)_2$

C. $(0.1111)_2$

D. $(0.1011)_2$

Answer: A

Watch Video Solution

76. What is the total number of proper subsets of a set containing n elements?

A. 2n-1

B. 2n-2

C. $2^n - 1$

D. $2^n - 2$

Answer: C

Watch Video Solution

77. If A, B and C are three finite sets, then what is $[(A \cup B) \cap C]$ equal to?

A. $A' \cup B' \cap C'$

B. $A' \cap B' \cap C'$

C. $A' \cap B' \cup C'$

D. $A \cap B \cap C$

Answer: C

Watch Video Solution

78. If A and B are subsets of a set X, then what is $\{A \cap (X - B)\} \cup B$ equal to?

A. $A \cup B$

B. $A \cap B$

C. A

D. B

Answer: A

Watch Video Solution

79. The total number of subsets of a finite set A has 56 more elements than the total number of subsets of another finite set B. What is the number of elements in the set A?

A. 5

B. 6

C. 7

D. 8

Answer: B

Watch Video Solution

80. Which one of the following is correct?

A. $A \times (B - C) = (A - B) \times (A - C)$

B. $A \times (B - C) = (A \times B) - (A \times C)$

C. $A \cap (B \cup C) = (A \cap B) \cup C$

D. $A \cup (B \cap C) = (A \cup B) \cap C$

Answer: B

Watch Video Solution

81. In an examination out of 100 students,75 passed in English, 60 passed in Mathematics and 45 passed in both English and Mathematics. What is the number of students passed in exactly one of the two subjects? (a) 45 (b) 60 (C) 75 (d) 90

A. 45

B. 60

C. 75

D. 90

Answer: A

Watch Video Solution

82. Let $R = \{x \mid x \in N, x \text{ is a multiple of } 3 \text{ and } x \leq 100\}$

$S = \{x \mid x \in N, x \text{ is a multiple of } 5 \text{ and } x \leq 100\}$

What is the number of elements in $(R \times S) \cap (S \times R)$?

A. 36

B. 33

C. 20

D. 6

Answer: A

Watch Video Solution

83. If A={a,b,c} and R={(a,a),(a,b),(b,c),(b,b),(c,c),(c,a)}` is a binary relation of A, then which one of the following is correct?

A. R is reflexive and symmetric, but not transitive

B. R is reflexive and transitive, but not symmetric

C. R is reflexive, but neither symmetric nor transitive

D. R is reflexive, symmetric and transitive

Answer: C

Watch Video Solution

84. If $\log_{10}(x+1)+\log_{10}5=3$, then what is the value of x?

A. 199

B. 200

C. 299

D. 300

Answer: A

Watch Video Solution

85. What is the value of $2\log_8 2 - \frac{1}{3}\log_3 9$?

A. 0

B. 3

C. $8/3$

D. $16/3$

Answer: A

Watch Video Solution

86. What is the decimal equivalent of $(101.\ 101)_2$?

A. $(5.225)_{10}$

B. $(5.525)_{10}$

C. $(5.625)_{10}$

D. $(5.65)_{10}$

Answer: C

Watch Video Solution

87. Let A = { x | x<=9, $x \in N$}. Let B = { a,b,c} be the subset of A where (a+b+c) is a multiple of 3. What is the largest possible number of subsets like B?

A. 12

B. 21

C. 27

D. 30

Answer: D

Watch Video Solution

88. Let A={-1, 2, 5, 8} B={0, 1, 3, 6, 7} and R be the relation 'is one less than' form A to B, then how many elements will R contain?

A. 2

B. 3

C. 5

D. 9

Answer: B

Watch Video Solution

89. The series of natural numbers is divided into groups asfollows ; $(1), (2, 3), (4, 5, 6), (7, 8, 9, 10)$ and so on. Find the sum of the numbers in the n^th group is

A. 605

B. 615

C. 671

D. 693

Answer: C

Watch Video Solution

90. What is the value of

$$\frac{\log_{27} 9 \times \log_{16} 64}{\log_4 \sqrt{2}}?$$

A. 1

B. 2

C. 4

D. 8

Answer: C

Watch Video Solution

91. If $x = (1101)_2$ and $y = (110)_2$, then what is the value of $x^2 - y^2$?

A. $(1000101)_2$

B. $(10000101)_2$

C. $(10001101)_2$

D. $(10010101)_2$

Answer: B

Watch Video Solution

92. If $(10x010)_2 - (11y1)_2 = (10z11)_2$, then what are the possible values of the binary digits x, y, z respectively?

A. 0, 0, 1

B. 0, 1, 0

C. 1, 1, 0

D. 0, 0, 0

Answer: B

Watch Video Solution

93. The number 0.0011 in binary system represents

A. rational number $3/8$ in decimal system

B. rational number $1/8$ in decimal system

C. rational number $3/16$ in decimal system

D. rational number $5/16$ in decimal system

Answer: C

Watch Video Solution

94. If A and B are two sets such that $n(A) = 115,\ n(B) = 326,\ n(A - B) = 47$, then write $n(A \cup B)$.

A. 373

B. 165

C. 370

D. 394

Answer: A

Watch Video Solution

95. If P(A) denotes the power set of A and A is the void set, then what is number of elements in $P(P(P(P(A))))$

A. 0

B. 1

C. 4

D. 16

Answer: D

Watch Video Solution

96. During a certain plane period a state out of a total budget of Rs 1400 crores had spent 28% of the total amount on Agriculture, 35% on Industry, 12% on Energy and 8% on social Welfare, 105 crores on Education and the balance amount on Transport. What is the amount spent on Transport in crores of rupees?

A. 123

B. 145

C. 165

D. 133

Answer: D

Watch Video Solution

97. In a town 34.5% of the people are not literates 27% have education up to primary school, 18.6% have education up to middle school. The people with education up to high school are twice the number of people with education up to Pre-University. Of the remaining, 660 are graduates. If the population of the town is 15000, then what is the number of people with education up to high school?

A. 3120

B. 1560

C. 1550

D. None of these

Answer: C

Watch Video Solution

98. If $(\log_3 x)(\log_x 2x)(\log_{2x} y) = \log_x x^2$, then what is y equal to?

A. $9/2$

B. 9

C. 18

D. 27

Answer: B

Watch Video Solution

99. If $\log_k x \log_5 k = 3$, then what is x equal to?

A. k^5

B. $5k^3$

C. 243

D. 125

Answer: D

Watch Video Solution

100. If $N_a = \{ax \mid x \in N\}$, then what is $N_{12} \cap N_8$ equal to?

A. N_{12}

B. N_{20}

C. N_{24}

D. N_{48}

Answer: C

Watch Video Solution

101. If $X = \{4^n - 3n - 1; n\varepsilon N\} \& Y = \{9(n-1) : n\varepsilon N\}$ Prove that $X \subset Y$

A. X

B. Y

C. N

D. A null set

Answer: B

Watch Video Solution

102. Sets A and B have n elements in common. How many elements will $(A \times B)$ and $(B \times A)$ have in common?

A. 0

B. 1

C. n

D. n^2

Answer: D

Watch Video Solution

103. Let $f: R \to R$ be defined by $f(x) = |x|/x, x \neq 0, f(0) = 2$. What is the range of f?

A. {1,2}

B. {1,-1}

C. {-1,1,2}

D. {1}

Answer: C

Watch Video Solution

104. What is the equivalent binary number of the decimal number 13.625?

A. 1101.111

B. 1111.101

C. 1101.101

D. 1111.111

Answer: C

Watch Video Solution

105. The order of a set A is 3 and that of a set B is 2. What is the number of relations from A to B?

A. 4

B. 6

C. 32

D. 64

Answer: B

Watch Video Solution

106. What is the value of $\frac{\log_{\sqrt{\alpha\beta}}(H)}{\log_{\sqrt{\alpha\beta\gamma}}(H)}$?

A. $\log_{\alpha\beta}(\alpha)$

B. $\log_{\alpha\beta\gamma}(\alpha\beta)$

C. $\log_{\alpha\beta}(\alpha\beta\gamma)$

D. $\log_{\alpha\beta}(\beta)$

Answer: C

Watch Video Solution

107. For a set A, consider the following statements:

1. $A \cup P(A) = P(A)$ 2. $\{A\} \cap P(A) = A$

3. $P(A) - \{A\} = P(A)$

where P denotes power set.

Which of the statements given above is/are correct?

A. 1 only

B. 2 only

C. 3 only

D. 1, 2 and 3

Answer: A

Watch Video Solution

108. If A=P({1, 2}) where P denotes the power set, then which one of the following is correct?

A. $\{1, 2\} \subset A$

B. $1 \in A$

C. $\phi \not\in A$

D. $\{1, 2\} \in A$

Answer: D

Watch Video Solution

109. Let X be the set of all graduates in India. Elements x and y in X are said to be related if they are graduates of the same university. Which one of the following statements is correct?

A. Relation is symmetric and transitive only

B. Relation is reflexive and transitive only

C. Relation is reflexive and symmetric only

D. Relation is reflexive symmetric and transitive

Answer: D

Watch Video Solution

110. What is the value of

$$\frac{(0.101)_2^{(11)_2} + (0.011)_2^{(11)_2}}{(0.101)_2^{(10)_2} - (0.101)_2^{(01)_2}(0.011)_2^{(01)_2} + (0.011)_2^{(10)_2}}$$

A. $(0.001)_2$

B. $(0.01)_2$

C. $(0.1)_2$

D. $(1)_2$

Answer: D

Watch Video Solution

111. If A={a,b,c,d}, then what is the number of proper subsets of A?

A. 16

B. 15

C. 14

D. 12

Answer: B

Watch Video Solution

112. Out of 32 persons, 30 invest in National Savings Certificates and 17 invest in shares. What is the number of persons who invest in both?

A. 13

B. 15

C. 17

D. 19

Answer: B

Watch Video Solution

113. What is $(1111)_2 + (1001)_2 - (1010)_2$ equal to ?

A. $(111)_2$

B. $(1100)_2$

C. $(1110)_2$

D. $(1010)_2$

Answer: C

Watch Video Solution

114. The relation $R = \{(1, 1), (2, 2), (3, 3), (1, 2), (2, 3), (1, 3)\}$ on a set A={1, 2, 3} is

A. reflexive, transitive but not symmetric

B. reflexive, symmetric but not transitive

C. symmetric, transitive but not reflexive

D. reflexive but neither symmetic nor transitive

Answer: A

Watch Video Solution

115. If $\log_3[\log_3[\log_3 x]] = \log_3 3$, then what is the value of x?

A. 3

B. 27

C. 3^9

D. 3^{27}

Answer: D

Watch Video Solution

116. What is the binary number equivalent of the decimal number 32.25?

A. 100010.10

B. 100000.10

C. 100010.01

D. 100000.01

Answer: D

Watch Video Solution

117. If A and B are two disjoint sets, then which one of the following is correct?

A. $A - B = A - (A \cap B)$

B. $B - A' = A \cap B$

C. $A \cap B = (A - B) \cap B$

D. All of these

Answer: A

Watch Video Solution

118. Let N denote the set of naturalno.s and A = $\{n^2 : n \in N\}$ and B = $\{n^3 : n \in N\}$.Which one of the following is correct?

A. $A \cup B = N$

B. The complement of $(A \cup B)$ is an infinite set

C. $A \cap B$ must be a finite set

D. $A \cap B$ must be a proper subset of $\{m^6 : m \in N\}$

Answer: A

Watch Video Solution

119. If A={2, 3}, B={4, 5}, C={5, 6}, then what is the number of elements of $A \times (B \cap C)$?

A. 2

B. 4

C. 6

D. 8

Answer: A

Watch Video Solution

120. Let U={1,2,3,.....,20}. Let A, B, C be the subsets of U. Let A be the set of all numbers, which are perfect squares, B be the set of all numbers which are multiples of 5 and C be the set of all numbers, which are divisible by 2 and 3. Consider the following statements :

I. A, B, C are mutually exclusive.

II. A, B, C are mutually exhaustive.

III. The number of elements in the complement set of $A \cup B$ is 12.

Which of the statements given above are the corret?

A. I and II only

B. I and III only

C. II and III only

D. I, II and III

Answer: B

Watch Video Solution

121. If the cardinality of a set A is 4 and that of a set B is 3, then what is the cardinality of the set $A \Delta B$?

A. 1

B. 5

C. 7

D. Cannot be determined as the sets A and B are not given

Answer: D

Watch Video Solution

122. The range $f(x) = \cos 2x - \sin 2x$ contains the set

A. [2, 4]

B. $[-1, 1]$

C. $[-\sqrt{2}, \sqrt{2}]$

D. $(-\sqrt{2}, 2)$

Answer: C

Watch Video Solution

123. If A={1,2,5,6} and B={1,2,3}, then what is $(A \times B) \cap (B \times A)$ equal to?

A. {(1,1),(2,1),(6,1),(3,2)}

B. {(1,1),(1,2),(2,1),(2,2)}

C. {(1,1),(2,2)}

D. {(1,1),(1,2),(2,5),(2,6)}

Answer: B

Watch Video Solution

124. The students of a class are offered three languages (Hindi, English and French). 15 students learn all the three languages whereas 28 students do not learn any language. The number of students learning

Hindi and English but not French is twice the number of students learning Hindi French but not English. The number of students learning English and French but not Hindi is thrice the number of students learning Hindi and French but not English. 23 students learn only Hindi and 17 students learn only English. The total number of students learning French is 46 and the total number of students learning only French is 11. How many students learn precisely two languages?

A. 55

B. 40

C. 30

D. 13

Answer: C

Watch Video Solution

125. The students of a class are offered three languages (Hindi, English and French). 15 students learn all the three languages whereas 28

students do not learn any language. The number of students learning Hindi and English but not French is twice the number of students learning Hindi French but not English. The number of students learning English and French but not Hindi is thrice the number of students learning Hindi and French but not English. 23 students learn only Hindi and 17 students learn only English. The total number of students learning French is 46 and the total number of students learning only French is 11. How many students learn at least two languages?

A. 15

B. 30

C. 45

D. 55

Answer: C

Watch Video Solution

126. The students of a class are offered three languages (Hindi, English and French). 15 students learn all the three languages whereas 28 students do not learn any language. The number of students learning Hindi and English but not French is twice the number of students learning Hindi French but not English. The number of students learning English and French but not Hindi is thrice the number of students learning Hindi and French but not English. 23 students learn only Hindi and 17 students learn only English. The total number of students learning French is 46 and the total number of students learning only French is 11. What is the total strength of the class?

A. 124

B. 100

C. 96

D. 66

Answer: A

Watch Video Solution

127. The students of a class are offered three languages (Hindi, English and French). 15 students learn all the three languages whereas 28 students do not learn any language. The number of students learning Hindi and English but not French is twice the number of students learning Hindi French but not English. The number of students learning English and French but not Hindi is thrice the number of students learning Hindi and French but not English. 23 students learn only Hindi and 17 students learn only English. The total number of students learning French is 46 and the total number of students learning only French is 11. How many students learn at least one languages?

A. 30

B. 43

C. 45

D. 73

Answer: A

Watch Video Solution

128. The students of a class are offered three languages (Hindi, English and French). 15 students learn all the three languages whereas 28 students do not learn any language. The number of students learning Hindi and English but not French is twice the number of students learning Hindi French but not English. The number of students learning English and French but not Hindi is thrice the number of students learning Hindi and French but not English. 23 students learn only Hindi and 17 students learn only English. The total number of students learning French is 46 and the total number of students learning only French is 11. How many students learn at least one languages?

Watch Video Solution

129. What is

$$\log\left(a+\sqrt{a^2+1}\right)+\log\left(\frac{1}{a+\sqrt{a^2+1}}\right)$$ equal to?

A. 1

B. 0

C. 2

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

Answer: B

Watch Video Solution

130. Consider the following with regard to a relation R on a set of real numbers defined by xRy if and only if 3x+4y=5

I. 0 R 1 II. $1R\frac{1}{2}$

III. $\frac{2}{3}R\frac{3}{4}$

Which of the above are correct?

A. I and II

B. I and III

C. II and III only

D. I, II and III

Answer: C

Watch Video Solution

131. What is the value of

$$\log_{10}\left(\frac{9}{8}\right) - \log_{10}\left(\frac{27}{32}\right) + \log_{10}\left(\frac{3}{4}\right)?$$

A. 3

B. 2

C. 1

D. 0

Answer: D

Watch Video Solution

132. In a binary number system, assume that a=00111 and b=01110, then in a decimal system $\frac{b}{a}$, which is equal to

A. 1

B. 2

C. 4

D. 5

Answer: B

Watch Video Solution

133. Let M be the set of men and R is a relation 'is son of' defined on M. Then, R is (a) an equivalence relation (b) a symmetric relation only (c) a transitive relation only (d) None of the above

A. an equivalence relation

B. a symmetric relation only

C. a transitive relation only

D. None of the above

Answer: D

Watch Video Solution

134. The number 10101111 in binary system is represented in decimal system by which one of the following numbers?

A. 157

B. 175

C. 571

D. 751

Answer: B

Watch Video Solution

135. If A, B and C are non-empty sets such that $A \cap C = \phi$, then what is $(A \times B) \cap (C \times B)$ equalt ot?

A. $A \times C$

B. $A \times B$

C. $B \times C$

D. ϕ

Answer: D

Watch Video Solution

136. If

$A = \{4n + 2 \mid n \text{ is a natural number}\}$ and $B = \{3n \mid n \text{ is a natural num}$

, then what is $(A \cap B)$ equal to?

A. $\{12n^2 + 6n \mid n \text{ is a natural number}\}$

B. $\{24n - 12 \mid n \text{ is a natural number}\}$

C. $\{60n - 30 \mid n \text{ is a natural number}\}$

D. $\{12n - 6 \mid n \text{ is a natural number}\}$

Answer: D

Watch Video Solution

137. If P, Q and R are three non-collinear points, then what is $PQ \cap PR$ equal to?

A. Null set

B. {P}

C. {P, Q, R}

D. {Q, R}

Answer: B

Watch Video Solution

138. In binary system the decimal number 0.3 can be expressed as

A. $(0.01001\ldots\ldots)_2$

B. $(0.10110\ldots\ldots)_2$

C. $(0.11001\ldots\ldots)_2$

D. $(0.10101\ldots\ldots)_2$

Answer: A

Watch Video Solution

139. If $\tan\theta = \sqrt{m}$, where m is non-square natural number, then sec 2θ is

A. a negative number

B. a transcendental number

C. an irrational number

D. a rational number

Answer: A

Watch Video Solution

140. If A={a,b,c}, then what is the number of proper subsets of A?

A. 5

B. 6

C. 7

D. 8

Answer: C

Watch Video Solution

141. What is the value of $\log_2(\log_3 81)$?

A. 2

B. 3

C. 4

D. 9

Answer: A

Watch Video Solution

142. If ϕ is a null set, then which one of the following is correct?

A. $\phi = 0$

B. $\phi = \{0\}$

C. $\phi = \{\phi\}$

D. $\phi = \{\quad\}$

Answer: D

Watch Video Solution

143. Out of 500 first year students, 260 passed in the first semester and 210 passed in the second semester. If 170 did not passed in either semester,how many passed in both semesters?

A. 30

B. 40

C. 70

D. 140

Answer: D

Watch Video Solution

144. What is the decimal number representation of the binary number $(11101.001)_2$?

A. 30.125

B. 29.025

C. 29.125

D. 28.025

Answer: C

Watch Video Solution

145. Let $U = \{x \in N : 1 \leq x \leq 10\}$ be the universal set, N being the set of natural numbers. If A={1,2,3,4} and B={2,3,6,10} then what is the complement of (A-B)?

A. {6,10}

B. {1,4}

C. {2,3,5,6,7,8,9,10}

D. {5,6,7,8,9,10}

Answer: C

Watch Video Solution

146. Let A={x:x is a square of a natural number and x is less than 100} and B is a set of even natural numbers. What is the cardinality of $A \cap B$?

A. 4

B. 5

C. 9

D. None of the above

Answer: A

Watch Video Solution

147. The number 292 in decimal system is expressed in binary system by

A. 100001010

B. 100010001

C. 100100100

D. 101010000

Answer: C

Watch Video Solution

148. The set $A = \{x : x + 4 = 4\}$ can also be represented by:

A. 0

B. φ

C. $\{\varphi\}$

D. {0}

Answer: D

Watch Video Solution

149. What is the percentage of persons who read all the three papers?

A. $20\ \%$

B. $25\ \%$

C. $30\ \%$

D. $40\ \%$

Answer: B

Watch Video Solution

150. What is the percentage of persons who read only two papers?

A. $19\ \%$

B. $31\ \%$

C. $44\ \%$

D. None of the above

Answer: A

Watch Video Solution

151. What is the percentage of persons who read only one paper?

A. $38\ \%$

B. $48\ \%$

C. $51\ \%$

D. None of the above

Answer: B

Watch Video Solution

152. What is the percentage of persons who read only A but neither B nor C?

A. $4\ \%$

B. $3\ \%$

C. $1\ \%$

D. None of the above

Answer: C

Watch Video Solution

153. What is the value of $2\log_8 2 - \frac{1}{3}\log_3 9$?

A. 0

B. 1

C. 2

D. $1/3$

Answer: A

Watch Video Solution

154. If A={0, 1} and B={1, 0}, then what is $A \times B$ equal to?

A. {(0,1),(1,0)}

B. {(0,0),(1,1)}

C. {(0,1),(1,0),(1,1)}

D. $A \times A$

Answer: D

Watch Video Solution

155. If A and B are two non-empty sets having n elements in common, then what is the number of common elements in the sets $A \times B$ and $B \times A$?

A. n

B. n^2

C. 2n

D. zero

Answer: B

Watch Video Solution

156. If A and B are any two sets, then what is $A \cap (A \cup B)$ equal to?

A. Complement of A

B. Complement of B

C. B

D. A

Answer: D

Watch Video Solution

157. The relation "has the same father as" over the set of children is:

A. only reflexive

B. only symmetric

C. only transitive

D. an equivalence relation

Answer: A

Watch Video Solution

158. The decimal representation of the number $(1011)_2$ in binary system is:

A. 5

B. 7

C. 9

D. 11

Answer: D

Watch Video Solution

159. The decimal number $(57.375)_{10}$ when converted to binary number takes the form:

A. $(111001.011)_2$

B. $(100111.110)_2$

C. $(110011.101)_2$

D. $(111011.011)_2$

Answer: A

Watch Video Solution

160. If $(\log_3 x)(\log_x 2x)(\log_{2x} y) = \log_x x^2$, then what is y equal to?

A. 4.5

B. 9

C. 18

D. 27

Answer: B

Watch Video Solution

161. Let P={1, 2, 3} and a relation on set P is given by the set R={(1,2),(1,3),(2,1),(1,1),(2,2),(3,3),(2,3)}. Then R is:

A. reflexive, transitive but not symmetric

B. Symmetric, transitive but not reflexive

C. Symmetric, reflexive but not transitive

D. None of the above

Answer: A

Watch Video Solution

162. If a non-empty set A contains n elements, then its power set contains how many elements ?

A. n^2

B. 2^n

C. 2n

D. n+1

Answer: B

Watch Video Solution

163. Let $A = \{x \in W, \quad \text{the set of whole numbers and} x < 3\}$.

$B = \{x \in N, \quad \text{the set of natural numbers and} 2 \leq x < 4\}$ and C={3, 4}, then how many elements will $(A \cup B) \times C$ contain?

A. 6

B. 8

C. 10

D. 12

Answer: B

Watch Video Solution

164. What is the range of the function $f(x) = \frac{|x|}{x}, x \neq 0$?

A. Set of all real numbers

B. Set of all integers

C. {-1, 1}

D. {-1, 0, 1}

Answer: C

Watch Video Solution

165. The binary representation of the decimal number 45 is

A. 110011

B. 101010

C. 1101101

D. 101101

Answer: D

Watch Video Solution

166. If d is the number of degrees contained in an angle, m is the number of minutes and s is the number of seconds, then the value of $(s-m)/(m-d)$ is:

A. 1

B. 60

C. $\frac{1}{60}$

D. None of these

Answer: C

Watch Video Solution

167. In a state with a population of $75x10^6$, 45% of them know Hindi, 22% know English, 18% know Sanskrit, 12% know. Hindi and English, 8% know English and Sanskrit, 10% know Hindi and Sanskrit and 5% known all the three languages What is the number of people who do not know any of the above three languages? What is the number of people who know only Hindi . What is the number of people who know only Sanskrit? What is the number of people who know only English? What is the number of people who know only one language? What is the number of people who know only two languages?

A. 3×10^6

B. 4×10^6

C. 3×10^7

D. 4×10^7

Answer: A

Watch Video Solution

168. विधार्थियो के एक समूह में, 100 विधार्थी हिंदी,50 विधार्थी अंग्रेजी तथा 25 विधार्थी दोनों भाषाओ को जानते है! विधार्थियो में से में से प्रत्येम या तो हिंदी या अंग्रेजी जानते है! समूह में कुल कितने विधार्थी है!

A. 21×10^6

B. 25×10^6

C. 28×10^6

D. 3×10^7

Answer: D

Watch Video Solution

169. In a state with a population of $75x10^6$, 45% of them know Hindi, 22% know English, 18% know Sanskrit, 12% know. Hindi and English, 8% know English and Sanskrit, 10% know Hindi and Sanskrit and 5% known all the three languages What is the number of people who do not know any of the above three languages? What is the number of people who know only Hindi . What is the number of people who know only Sanskrit? What is the number of people who know only English? What is the number of people who know only one language? What is the number of people who know only two languages?

A. 5×10^6

B. 45×10^5

C. 4×10^6

D. None of the above

Answer: D

Watch Video Solution

170. In a state with a population of $75x10^6$, 45% of them know Hindi, 22% know English, 18% know Sanskrit, 12% know. Hindi and English, 8% know English and Sanskrit, 10% know Hindi and Sanskrit and 5% known all the three languages What is the number of people who do not know any of the above three languages? What is the number of people who know only Hindi . What is the number of people who know only Sanskrit? What is the number of people who know only English? What is the number of people who know only one language? What is the number of people who know only two languages?

A. 5×10^6

B. 45×10^5

C. 4×10^6

D. None of the above

Answer: C

Watch Video Solution

171. In a state with a population of $75x10^6$, 45% of them know Hindi, 22% know English, 18% know Sanskrit, 12% know. Hindi and English, 8% know English and Sanskrit, 10% know Hindi and Sanskrit and 5% known all the three languages What is the number of people who do not know any of the above three languages? What is the number of people who know only Hindi . What is the number of people who know only Sanskrit? What is the number of people who know only English? What is the number of people who know only one language? What is the number of people who know only two languages?

A. 11.25×10^5

B. 4×10^6

C. 3×10^7

D. 4×10^7

Answer: B

Watch Video Solution

172. In a state with a population of $75x10^6$, 45% of them know Hindi, 22% know English, 18% know Sanskrit, 12% know. Hindi and English, 8% know English and Sanskrit, 10% know Hindi and Sanskrit and 5% known all the three languages What is the number of people who do not know any of the above three languages? What is the number of people who know only Hindi . What is the number of people who know only Sanskrit? What is the number of people who know only English? What is the number of people who know only one language? What is the number of people who know only two languages?

A. 11.25×10^5

B. 11.25×10^6

C. 12×10^5

D. 12.5×10^5

Answer: C

Watch Video Solution

173. Which one of the following is a null set ?

A. {0}

B. {{{}}}

C. {{}}

D. $\{x \mid x^2 + 1 = 0, x \in R\}$

Answer: D

Watch Video Solution

174. If A={x,y} , B={2,3} and C={3,4} , then the number of elements in $A \times (B \cup C)$ are :

A. 2

B. 4

C. 6

D. 8

Answer: C

Watch Video Solution

175. What is the value of $\log_y x^5 \log_x y^2 \log_z z^3$?

A. 10

B. 20

C. 30

D. 60

Answer: C

Watch Video Solution

176. If A is a relation on set R, then which of the following is correct ?

A. $R \subseteq A$

B. $A \subseteq R$

C. $A \subseteq (R \times R)$

D. $R \subseteq (A \times A)$

Answer: C

Watch Video Solution

177. If A={1, 2}, B={2, 3} and C={3, 4}, then what is the cardinality of $(A \times B) \cap (A \times C)$?

A. 8

B. 6

C. 2

D. 1

Answer: C

Watch Video Solution

178. If R is a relation on a finite set having n elements, then the number of relations on A is

A. 2^n

B. n^2

C. 2^{n^2}

D. n^n

Answer: C

Watch Video Solution

179. Which one of the following is an example of non-empty set ?

A. Set of all even prime numbers

B. $\left(x : x^2 - 2 = 0 \text{ and x is rational}\right)$

C. {x:x is a natural number, $x < 8$ and simultaneously $x > 12$}

D. {x:x is a point common to any two parallel lines}

Answer: A

Watch Video Solution

180. The number 83 is written in the binary system as

A. 100110

B. 101101

C. 1010011

D. 110110

Answer: C

Watch Video Solution

181. Let Z be the set of all integers and R be the relation on Z defined as $R = \{(a, b); a, \ b \in Z, \text{ and } (a - b) \text{ is divisible by } 5. \}$. Prove that R is an equivalence relation.

A. reflexive

B. reflexive but not symmetric

C. symmetric and transitive

D. an equivalence relation

Answer: D

Watch Video Solution

182. In a group of 50 people, two sets were conducted, one for diabetes and one for blood pressure. 30 people were diagnosed with diabetes and 40 people were diagnosed with high blood pressure. What is the minimum number of people who were having diabetes and high blood pressure ?

A. 0

B. 10

C. 20

D. 30

Answer: C

Watch Video Solution

183. Let A={a, b, c, d} and B={x, y, z}. What is the number of elements in $A \times B$?

A. 6

B. 7

C. 12

D. 64

Answer: C

Watch Video Solution

184. If A is a subset of B, then which one of the following is correct ?

A. $A^c \subseteq B^c$

B. $B^c \subseteq A^c$

C. $A^c = B^c$

D. $A \subseteq A \cap B$

Answer: B

Watch Video Solution

185. Find the angle between the hour-hand and the minute-hand in circular measure at half past 4

A. $\frac{\pi}{3}$

B. $\frac{\pi}{4}$

C. $\frac{\pi}{6}$

D. None of these

Answer: B

Watch Video Solution

186. Consider the following :

1. $A \cup (B \cap C) = (A \cap B) \cup (A \cap C)$

2. $A \cap (B \cup C) = (A \cup B) \cap (A \cup C)$

Which of the above is/are correct ?

A. 1 only

B. 2 only

C. Both 1 and 2

D. Neither

Answer: D

Watch Video Solution

187. A number in binary system is 110001. It is equal to which one of the following numbers in decimal system ?

A. 45

B. 46

C. 48

D. 49

Answer: D

Watch Video Solution

188. If A={1, 3, 5, 7}, then what is the cardinality of the power set P(A)?

A. 8

B. 15

C. 16

D. 17

Answer: C

Watch Video Solution

189. What is $\log_{81} 243$ equal to ?

A. 0.75

B. 1.25

C. 1.5

D. 3

Answer: B

Watch Video Solution

190. Let X be the set of all citizens of India. Elements x, y in X are said to be related if the difference of their age is 5 years. Which one of the following is correct ?

A. The relation is an equivalence relation on X.

B. The relation is symmetric but neither reflexive nor transitive

C. The relation is reflexive but neither, symmetric nor transitive

D. None of the above

Answer: B

Watch Video Solution

191. Consider the following relations from A to B where

A={u, v, w, x, y, z} and B={p, q, r, s}.

1. {(u,p),(v,p),(w,p),(x,q),(y,q),(z,q)}

2. {(u,p),(v,q),(w,r),(z,s)}

3. {(u,s),(v,r),(w,q),(u,p),(v,p),(z,q)}

4. {(u,q),(v,p),(w,s),(x,r),(y,q),(z,s)}

Which of the above relations are not functions ?

A. 1 and 2

B. 1 and 4

C. 2 and 3

D. 3 and 4

Answer: C

Watch Video Solution

192. Let S denote set of all integers. Define a relation R on S 'aRb if $ab \geq 0$ where $a, b \in S$. Then R is :

A. Reflexive but neither symmetric nor transitive relation

B. Reflexive, symmetric but not transitive relation

C. An equivalence relation

D. Symmetric but neither reflexive nor transitive relation

Answer: C

Watch Video Solution

193. What is the sum of the two numbers $(11110)_2$ and $(1010)_2$?

A. $(101000)_2$

B. $(110000)_2$

C. $(100100)_2$

D. $(101100)_2$

Answer: A

Watch Video Solution

194. p, q, r, s, t, are five numbers such that the average of p,q and r is 5 and that of s and t is 10. What is the average of all the five numbers ?

A. 7.75

B. 7.5

C. 7

D. 5

Answer: C

Watch Video Solution

195. The number 251 in decimal system is expressed in binary system by :

A. 11110111

B. 11111011

C. 11111101

D. 11111110

Answer: B

Watch Video Solution

196. In a survey of 25 students, it was found that 15 had taken Mathematics, 12 had taken Physics and 11 had taken Chemistry, 5 had taken Mathematics and Chemistry, 9 had taken Mathematics and Physics, 4 had taken Physics and Chemistry and 3 had taken all the three subjects. The number of students who had taken only physics is :

A. 2

B. 3

C. 5

D. 6

Answer: A

Watch Video Solution

197. In a survey of 25 students, it was found that 15 had taken Mathematics, 12 had taken Physics and 11 had taken Chemistry, 5 had taken Mathematics and Chemistry, 9 had taken Mathematics and Physics, 4 had taken Physics and Chemistry and 3 had taken all the three subjects. The number of students who had taken only physics is :

A. 7

B. 8

C. 9

D. 10

Answer: C

Watch Video Solution

198. In a survey of 25 students, it was found that 15 had taken Mathematics, 12 had taken Physics and 11 had taken Chemistry, 5 had taken Mathematics and Chemistry, 9 had taken Mathematics and Physics,

4 had taken Physics and Chemistry and 3 had taken all the three subjects.

Consider the following statements :

1. The number of students who had taken only one subject is equal to the number of students who had taken only two subjects.

2. The number of students who had taken at least two subjects is four times the number of students who had taken all the three subjects.

Which of the above statements is/are correct ?

A. 1 only

B. 2 only

C. Both 1 and 2

D. Neither 1 nor 2

Answer: B

Watch Video Solution

199. Consider the following statements :

1. The function f(x)=sinx decreases on the interval $(0, \pi/2)$.

2. The function f(x)=cosx increases on the interval $(0, \pi/2)$.

Which of the above statements is/are correct ?

A. 1 only

B. 2 only

C. Both 1 and 2

D. Neither 1 nor 2

Answer: D

Watch Video Solution

200. The relation S is defined on the set of integers Z as xSy if integer x devides integer y. Then

A. s is an equivalence relation

B. s is only reflexive and symmetric

C. s is only reflexive and transitive

D. s is only symmetric and transitive

Answer: C

Watch Video Solution

201. What is $(1001)_2$ equal to ?

A. $(5)_{10}$

B. $(9)_{10}$

C. $(17)_{10}$

D. $(11)_{10}$

Answer: B

Watch Video Solution

202. A and B are two sets having 3 elements in common. If n(A)=5, n(B)=4, then what is $n(A \times B)$ equal to ?

A. 0

B. 9

C. 15

D. 20

Answer: D

Watch Video Solution

203. Let X be the set of all persons living in a city. Persons x, y in X are said to be related as $x < y$ if y is at least 5 years older than x. Which one of the following is correct?

A. The relation is an equivalence relation on X.

B. The relation is transitive but neither reflexive nor symmetric

C. The relation is reflexive but neither transitive nor symmetric

D. The relation is symmetric but neither transitive nor reflexive

Answer: B

Watch Video Solution

204. In a class of 60 students, 45 students like music, 50 students like dancing, 5 students like neither. Then The number of students in the class who like both music and dancing is

A. 35

B. 40

C. 50

D. 55

Answer: B

Watch Video Solution

205. If $\log_{10} 2, \log_{10}(2^x - 1)$ and $\log_{10}(2^x + 3)$ are three consecutive terms of an A.P, then the value of x is

A. 1

B. $\log_5 2$

C. $\log_2 5$

D. $\log_{10} 5$

Answer: C

Watch Video Solution

206. Let R ={(a, b):a,b in Z and (a-b) is divisible by 5 }. Show that R is an equivalence relation on Z.

Watch Video Solution

207. Let A={1, 2, 3, 4, 5, 6, 7, 8, 9, 10}. Then the number of subsets of A containing exactly two elements is

A. 20

B. 40

C. 45

D. 90

Answer: C

Watch Video Solution

208. The decimal number $(127.25)_{10}$, when converted to binary number, taken the form

A. $(1111111.11)_2$

B. $(1111110.01)_2$

C. $(1110111.11)_2$

D. $(1111111.01)_2$

Answer: D

Watch Video Solution

209. If A={x:x is a multiple of 3} and

B={x:x is a multiple of 4} and

C={x:x is a multiple of 12}, then which one of the following is a null set?

A. $(A/B) \cup C$

B. $(A/B)/C$

C. $(A \cap B) \cap C$

D. $(A \cap B)/C$

Answer: D

Watch Video Solution

210. If $(11101011)_2$ is converted decimal system, then the resulting number is

A. 235

B. 175

C. 160

D. 126

Answer: A

Watch Video Solution

211. For each non-zero real number x, let $f(x) = \frac{x}{|x|}$. The range of f is

A. a null set

B. a set consisting of only one element

C. a set consisting of two elements

D. a set consisting of infinitely many elements

Answer: C

Watch Video Solution

212. Let X be the set of all persons living in Delhi. The persons a and b in X are said to be related if the difference in their ages is at most 5 years. The relation is

A. an equivalence relation

B. reflexive and transitive but not symmetric

C. symmetric and transitive but not reflexive

D. reflexive and symmetric but not transitive

Answer: D

Watch Video Solution

213. What is $(1000000001)_2 - (0.0101)_2$ equal to ?

A. $(512.6775)_{10}$

B. $(512.6875)_{10}$

C. $(512.6975)_{10}$

D. $(512.0909)_{10}$

Answer: B

Watch Video Solution

214. If $A = \{x \in IR : x^2 + 6x - 7 < 0\}$ and $B = \{x \in IR : x^2 + 9x + 14 > 0\}$, then which of the following is/are correct?

1. $(A \cap B) = (-2, 1)$

2. $(A / B) = (-7, -2)$

Select the correct answer using the code given below:

A. 1 only

B. 2 Only

C. Both 1 and 2

D. Neither 1 nor 2

Answer: A

Watch Video Solution

215. A, B, C and D are four sets such that $A \cap B = C \cap D = \phi$. Consider the following :

1. $A \cup C$ and $B \cup D$ are always disjoint.

2. $A \cap C$ and $B \cap D$ are always disjoint

Which of the above statements is/are correct ?

A. 1 only

B. 2 only

C. Both 1 and 2

D. Neither 1 nor 2

Answer: B

Watch Video Solution

216. If $\log_8 m + \log_{\cdot} \frac{1}{6} = \frac{2}{3}$, then m is equal to

A. 24

B. 18

C. 12

D. 4

Answer: A

Watch Video Solution

217. f(xy)=f(x)+f(y) is true for all

A. Polynomial function f

B. Trigonometric function f

C. Exponential function f

D. Logarithmic function f

Answer: D

Watch Video Solution

218. Suppose there is a relation * between the positive numbers x and y given by x * y if and only if $x \leq y^2$. Then which one of the following is correct?

A. * is reflexive but not transitive and symmetric

B. * is transitive but not reflexive and symmetric

C. * is symmetric and reflexive but not transitive

D. * is symmetric and but not reflexive and transitive

Answer: A

Watch Video Solution

219. If $f(x_1) - f(x_2) = f\left(\frac{x_1 - x_2}{1 - x_1 x_2}\right)$ for $x_1, x_2 \in (-1, 1)$, then what is $f(x)$ equal to? (a) In $\left(\frac{1-x}{1+x}\right)$ (b) In $\left(\frac{2+x}{1-x}\right)$ (c) $\tan^{-1}\left(\frac{1-x}{1+x}\right)$ (d) $\tan^{-1}\left(\frac{1+x}{1-x}\right)$

A. $\ln\left(\frac{1-x}{1+x}\right)$

B. $\ln\left(\frac{2+x}{1-x}\right)$

C. $\tan^{-1}\left(\frac{1-x}{1+x}\right)$

D. $\tan^{-1}\left(\frac{1+x}{1-x}\right)$

Answer: A

Watch Video Solution

220. What is the range of the function $y = . \frac{x^2}{1+x^2}$ where $x \in \mathbb{R}$?

A. [0,1)

B. [0,1]

C. (0,1)

D. (0,1]

Answer: A

Watch Video Solution

221. What is the binary equivalent of the decimal number 0.3125?

A. 0.0111

B. 0.101

C. 0.0101

D. 0.1101

Answer: C

Watch Video Solution

222. Let R be a relation on the set N of naturalnumbers defined by $nRm \Leftrightarrow n$ is a factor of m(ie. nim) Then R is

A. R is reflexive, symmetric but not transitive

B. R is transitive, symmetric but not reflexive

C. R is reflexive, transitive but not symmetric

D. R is an equivalence relation

Answer: C

Watch Video Solution

223. What is the number of natural numbers less than or equal to 1000 which are neither divisible by 10 nor 15 nor 25?

A. 860

B. 854

C. 840

D. 824

Answer: B

Watch Video Solution

224. If $\log_a(ab) = x$ then $\log_b(ab)$ is equals to

A. $\frac{1}{x}$

B. $\frac{x}{x+1}$

C. $\frac{x}{1-x}$

D. $\frac{x}{x-1}$

Answer: D

Watch Video Solution

225. Let S be a set of all distinct numbers of the form $\frac{p}{q}$, where p, $q \in \{1, 2, 3, 4, 5, 6\}$. What is the cardinality of the set S

A. 21

B. 23

C. 32

D. 36

Answer: B

Watch Video Solution

226. If $A = \{x \in R : x^2 + 6x - 7 < 0)$ and $B = \{x \in R : x^2 + 9x + 14 > 0\}$ then which of the following is/ or correct 1) $A \cap B = \{x \varepsilon R : -2 < x < 1\}$

A. 1 only

B. 2 only

C. Both 1 and 2

D. Neither 1 nor 2

Answer: C

Watch Video Solution

227. Let R be a relation from A {1, 2, 3, 4) to B (1, 3, 5) such that $R\{(a, b) : a < b$, where $a \in A$ and $b \in B)$ then what is ROR^{-1} equal to?

A. {(1,3),(1,5),(2,3),(2,5),(3,5),(4,5)}

B. {(3,1),(5,1),(3,2),(5,2),(5,3),(5,4)}

C. {(3,3),(3,5),(5,3),(5,5)}`

D. {(3,3),(3,4),(4,5)}

Answer: C

Watch Video Solution

228. If the number 235 in decimal system is converted into binary system, then what is the resulting number ?

A. $(11110011)_2$

B. $(11101011)_2$

C. $(11110101)_2$

D. $(11011011)_2$

Answer: B

Watch Video Solution

229. In an examination, 70% students passed in Physics, 80% students passed in Chemistry, 75% students passed in Mathematics and 85% students passed in Biology, and x% students failed in all the four subjects. What is the minimum value of x ?

A. 10

B. 12

C. 15

D. None of the above

Answer: D

Watch Video Solution

230. A coin is tossed three times, consider the following events. A : No head appears, B: Exactly one head appears and C: Atleast two appear. Do they form a set of mutually exclusive and exhaustive events?

A. $(A \cup B) \cap (A \cup C) = B \cup C$

B. $(A \cup B') \cap (A \cup C') = B' \cup C'$

C. $A \cap (B' \cup C') = A \cup B \cup C$

D. $A \cap (B' \cup C') = B' \cap C'$

Answer: D

Watch Video Solution

231. Let S be the set of all persons living in Delhi. We say that x, y in S are related if they were born in Delhi on the same day. Which one of the following is correct?

A. The relation is an equivalent relation

B. The relation is not reflexive but it is symmetric and transitive

C. The relation is not symmetric but it is reflexive and transitive

D. The relation is not transitive but it is reflexive and symmetric

Answer: A

Watch Video Solution

232. Let A={1, 2, 3, 4, 5, 6, 7, 8, 9, 10}. Then the number of subsets of A containing two or three elements is

A. 45

B. 120

C. 165

D. 330

Answer: C

Watch Video Solution

233. Three-digit numbers are formed from the digits 1, 2 and 3 in such a way that the digits are not repeated. What is the sum of such three-digit numbers?

A. 1233

B. 1322

C. 1323

D. 1332

Answer: D

Watch Video Solution

234. Consider the following in respect of sets A and B :

1. $(A - B) \cup B = A$

2. $(A - B) \cup A = A$

3. $(A - B) \cap B = \phi$

4. $A \subseteq B \Rightarrow A \cup B = B$

Which of the above are correct?

A. 1, 2 and 3

B. 2, 3 and 4

C. 1, 3 and 4

D. 1, 2 and 4

Answer: B

Watch Video Solution

235. In the binary equation

$(1p101)_2 + (10q1)_2 = (100r00)_2$

where p, q and r are binary digits, what are the possible values of p, q and r respectively?

A. 0, 1, 0

B. 1, 1, 0

C. 0, 0, 1

D. 1, 0, 1

Answer: A

Watch Video Solution

236. If $S = \{x : x^2 + 1 = 0, x \text{ is real}\}$, then S is

A. $\{-1\}$

B. {0}

C. {1}

D. an empty set

Answer: D

Watch Video Solution

237. the mean weight of 150students in a certain class is $60kg$. The mean of boys in the class is $70kg$ and that of girls is $55kg$. The number of boys and the number of girls in the class, are respectively

A. 50

B. 55

C. 60

D. 100

Answer: A

Watch Video Solution

238. If x + $\log_{10}(1+2^x) = x\log_{10}5 + \log_{10}6$ then x is equal to

A. 2, -3

B. 2 only

C. 1

D. 3

Answer: C

Watch Video Solution

239. The remainder and the quotient of the binary division $(101110)_2 \div (110)_2$ respectively

A. $(111)_2$ and $(100)_2$

B. $(100)_2$ and $(111)_2$

C. $(101)_2$ and $(101)_2$

D. $(100)_2$ and $(100)_2$

Answer: B

Watch Video Solution

240. If E is the universal set and $A = B \cup C$, then the set $E - (E - (E - (E - (E - A))))$ is same as the set

A. $B' \cup C'$

B. $B \cup C$

C. $B' \cap C'$

D. $B \cap C$

Answer: C

Watch Video Solution

241. If A = {x : x is a multiple of 2}, B= {x: x is a multiple of 5} and C={x,x is a multiple of 10}, then $A \cap (B \cap C)$ is equal to

A. A

B. B

C. C

D. {x:x is a multiple of 100}

Answer: C

Watch Video Solution

242. Prove that the relation R on the set $N \times N$ defined by $(a,\ b)R\,(c,\ d) a + d = b + c$ for all $(a,\ b),\ (c,\ d) \in N \times N$ is an equivalence relation. Also, find the equivalence classes [(2, 3)] and [(1, 3)].

A. symmetric only

B. symmetric and transitive only

C. equivalence relation

D. Reflexive only

Answer: C

Watch Video Solution

243. If $n = (2017)!$, then what is

$$\frac{1}{\log_2 n} + \frac{1}{\log_3 n} + \frac{1}{\log_4 n} + ... + \frac{1}{\log_{2017} n}$$ equal to?

A. 0

B. 1

C. $\frac{n}{2}$

D. n

Answer: B

Watch Video Solution

244. Let A and B be subsets of X and $C = (A \cap B') \cup (A' \cap B)$, where A' and B' are complements of A and B respectively in X. What is C equal to?

A. $(A \cup B') - (A \cap B')$

B. $(A' \cup B) - (A' \cap B)$

C. $(A \cup B) - (A \cap B)$

D. $(A' \cup B) - (A' \cap B')$

Answer: C

Watch Video Solution

245. If $x + \log_{15}(1 + 3^x) = x \log_{15} 5 + \log_{15} 12$, where x is an integer, then what is x equal to?

A. -3

B. 2

C. 1

D. 3

Answer: C

Watch Video Solution

246. In a class, 54 students are good in Hindi only, 63 students are good in Mathematics only and 41 students are good in English only. There are 18 students who are good in both Hindi and Mathematics. 10 students are good in all three subjects.

What is the number of students who are good in either Hindi or Mathematics but not in English?

A. 99

B. 107

C. 125

D. 130

Answer: C

Watch Video Solution

247. In a class, 54 students are good in Hindi only, 63 students are good in Mathematics only and 41 students are good in English only. There are 18 students who are good in both Hindi and Mathematics. 10 students are good in all three subjects.

What is the number of students who are good in Hindi and Mathematics but not in English?

A. 18

B. 12

C. 10

D. 8

Answer: D

Watch Video Solution

248. The binary number expression of the decimal number 31 is

A. 1111

B. 10111

C. 11011

D. 11111

Answer: D

Watch Video Solution

249. What is $\frac{1}{\log_2 N} + \frac{1}{\log_3 N} + \frac{1}{\log_4 N} + ... + \frac{1}{\log_{100} N}$ equal to $(N \neq 1)$?

A. $\frac{1}{\log_{100!} N}$

B. $\frac{1}{\log_{99!} N}$

C. $\frac{99}{\log_{100!} N}$

D. $\frac{99}{\log_{99!} N}$

Answer: A

Watch Video Solution

250. What is the greatest integer among the following by which the number $5^5 + 7^5$ is divisible?

A. 6

B. 8

C. 11

D. 12

Answer: D

Watch Video Solution

251. A survey of 850 students in a University yields that 680 students like music and 215 like dance. What is the least number of students who like both music and dance?

A. 40

B. 45

C. 50

D. 55

Answer: B

Watch Video Solution

252. If $0 < a < 1,$ the value of $\log_{10} a$ is negative. This is justified by

A. Negative power of 10 is less than 1

B. Negative power of 10 is between 0 and 1

C. Negative power of 10 is positive

D. Negative power of 10 is negative

Answer: B

Watch Video Solution

253. A train covers the first 5 km of its journey at a speed of 30 km/hr and the next 15 km at a speed of 45 km/hr. What is the average speed of the train?

A. 35km/hr

B. 37.5km/hr

C. 39.5km/hr

D. 40km/hr

Answer: D

Watch Video Solution

254. the value of $\log_7\left[\log_7\sqrt{7\sqrt{7\sqrt{7}}}\right]$ is

A. $3\log_2 7$

B. $1-3\log_2 7$

C. $1-3\log_7 2$

D. $\frac{7}{8}$

Answer: C

Watch Video Solution

255. If A, B and C are subsets of a Universal set, then which one of the following is not correct?

A. $A\cup(B\cap C)=(A\cup B)\cap(A\cup C)$

B. $A'\cup(A\cup B)=(B'\cap A)'\cup A$

C. $A'\cup(B\cup C)=(C'\cap B)'\cap A$

D. $(A\cap B)\cup C=(A\cup C)\cap(B\cup C)$

Answer: C

Watch Video Solution

256. Let x be the number of integers lying between 2999 and 8001 which have at least two digits equal. Then x is equal to

A. 2480

B. 2481

C. 2482

D. 2483

Answer: B

Watch Video Solution

257. A survey was conducted among 300 students. If was found that 125 students like play cricket, 145 students like to play football and 90

students like to play tennis, 32 students like to play exactly two games out of the three games.

How many students like to play all the three games?

A. 14

B. 21

C. 28

D. 35

Answer: A

Watch Video Solution

258. A survey was conducted among 300 students. It was found that 125 students like to play cricket. 145 students like to play football and 90 students like to play tennis, 32 students like to play exactly two games out of the three games.

How many students like to play all three games?

A. 196

B. 228

C. 254

D. 268

Answer: C

Watch Video Solution

259. What is the value of $\log_9(27) + \log_8(32)$

A. $\frac{7}{2}$

B. $\frac{19}{6}$

C. 4

D. 7

Answer: B

Watch Video Solution

260. The sum of the binary numbers $(11011)_2(10110110)_2$ and $(10011x0y)_2$ is the binary number $(101101101)_2$. What are the values of x and y?

A. x=1, y=1

B. x=1, y=0

C. x=0, y=1

D. x=0, y=0

Answer: B

Watch Video Solution

261. If $(0.2)^x = 2$ and $\log_{10} 2 = 0 \cdot 3010,$ then what is the value of x to the nearest tenth ?

A. -10.0

B. -0.5

C. -0.4

D. -0.2

Answer: C

Watch Video Solution

262. Suppose X={1, 2, 3, 4} and R is a relation on X. If R={(1,1),(2,2),(3,3),(1,2),(2,1),(2,3),(3,2)}, then which one of the following is correct?

A. R is reflexive and symmetric, but not transitive

B. R is symmetric and transitive, but not reflexive

C. R is reflexive transitive, but not symmetric

D. R is neither reflexive nor transitive, but symmetric

Answer: D

Watch Video Solution

263. Let $R = \{(x, y) : x, y \in N \text{ and } x^2 - 4xy + 3y^2 = 0\}$, where N is the set of all natural numbers. Then the relation R is

A. R is reflexive and symmetric, but not transitive

B. R is reflexive and transitive, but not symmetric

C. R is reflexive, symmetric and transitive

D. R is reflexive, but neither symmetric nor transitive

Answer: D

Watch Video Solution

264. Consider the following statements for the two non-empty sets A and B :

$(1)(A \cap B) \cup \left(A \cap \overline{B}\right) \cup \left(\overline{A} \cap B\right) = A \cup B$

$(2)\left(A \cup \left(\overline{A} \cap \overline{B}\right)\right) = A \cup B$

Which of the above statements is/are correct ?

A. 1 only

B. 2 only

C. Both 1 and 2

D. Neither 1 nor 2

Answer: A

Watch Video Solution

265. Let X be a non-empty set and let A, B, C be subsets of X. Consider the following statements :

$(1) A \subset C \Rightarrow (A \cap B) \subset (C \cap B)(A \cup B) \subset (C \cap B)$

$(2)(A \cup B) \subset (C \cap B)$ for all sets B $\Rightarrow A \subset C$

(3) $(A \cup B) \subset (C \cup B)$ for all sets B $\Rightarrow A \subset C$

Which of the above statements are correct ?

A. 1 and 2 only

B. 2 and 3 only

C. 1 and 3 only

D. 1, 2 and 3

Answer: B

Watch Video Solution

266. If $A = \{\lambda, (\lambda, \mu)\}$, then the power set of A is

A. $\{\phi, \{\phi\}, \{\lambda\}, \{\lambda, \mu\}\}$

B. $\{\phi, \{\lambda\}, \{\{\lambda, \mu\}\}, \{\lambda, \{\lambda, \mu\}\}\}$

C. $\{\phi, \{\lambda\}, \{\lambda, \mu\}, \{\lambda, \{\lambda, \mu\}\}\}$

D. $\{\{\lambda\}, \{\lambda, \mu\}, \{\lambda, \{\lambda, \mu\}\}\}$

Answer: B

Watch Video Solution

267. In a school, all the students play at least one of three indoor games - chess, carrom and table tennis, 60 play chess, 50 play table tennis, 48 play carrom, 12 play chess and carrom, 15 play carrom and table tennis, 20 play table tennis and chess.

What can be the minimum number of students in the school?

A. 123

B. 111

C. 95

D. 63

Answer: B

Watch Video Solution

268. In a school, all the students play at least one of three indoor games - chess, carrom and table tennis, 60 play chess, 50 play table tennis, 48 play carrom, 12 play chess and carrom, 15 play carrom and table tennis, 20 play

table tennis and chess.

What can be the minimum number of students in the school?

A. 111

B. 123

C. 125

D. 135

Answer: B

Watch Video Solution

269. If $f(x) = \log_{10}(1 + x)$, then what is $4f(4) + 5f(1) - \log_{10} 2$ equal to ?

A. 0

B. 1

C. 2

D. 4

Answer: D

Watch Video Solution

270. For $r > 0$, $f(r)$ is the ratio of perimeter to area of a circle of radius r.

Then f(1) + f(2) is equal to

A. 1

B. 2

C. 3

D. 4

Answer: C

Watch Video Solution

271. In a circle of diameter44 cm, the length of a chord is 22 cm. What is the length of minor arc of the chord ?

A. $\frac{484}{21}$ cm

B. $\frac{242}{21}$cm

C. $\frac{121}{21}$cm

D. $\frac{44}{7}$cm

Answer: A

Watch Video Solution