



MATHS

BOOKS - DEEPTI MATHS (TELUGU ENGLISH)

MATHEMATICAL REASONING [APPENDIX - 4]

Solved Problems

1. If $p: 7 > 5$, $q: 10 < 12$, then $p \wedge q$

A. True

B. False

C. Can not be determined

D. None

Answer: A



Watch Video Solution

2. If $p: 5 > 7$, $q: 10 < 12$, then $p \vee q$

A. True

B. False

C. Can not be determined

D. None

Answer: A



Watch Video Solution

3. If $p: x^2 - 16 = 0$, $q: (x + 4)(x - 4) = 0$,

then $p \leftrightarrow q$

A. True

B. False

C. Can not be determined

D. None

Answer: A



Watch Video Solution

4. If $p: 3 + 5 = 10, q = 3 \times 5 = 15$, then

$p \leftrightarrow q$

A. True

B. False

C. Can not be determined

D. None

Answer: B



Watch Video Solution

5. The converse of the statement "If $x \in A \cup B$ then $x \in A$ or $x \in B$ " is

A. If $x \in B$, then $x \in A$

B. If $B = A$, then $A = B$

C. If $A \subset C$, then $A \subset B$ and $B \subset C$

D. If $x \in A$ or $x \in B$, then $x \in A \cup B$

Answer: D



Watch Video Solution

Exercise

1. If sentence can be judged to be true or false, but not both then it is called

A. an open sentence

B. a statement

C. a tautology

D. a contradiction

Answer: B



Watch Video Solution

2. The truthfulness or falsity of a statement is called its

A. negation

B. converse

C. inverse

D. truth value

Answer: D



Watch Video Solution

3. The combination of one or more simple statements with connective is called

- A. a conjunction
- B. a disjunction
- C. an open sentence
- D. a compound statement

Answer: D



Watch Video Solution

4. Denial of a statement is called its

- A. negation

B. converse

C. inverse

D. truth value

Answer: A



Watch Video Solution

5. The statement which uses the connective

\vee (OR) is called a

A. negation

B. disjunction

C. conjunction

D. tautology

Answer: B



Watch Video Solution

6. The statement which uses the connective

\wedge (AND) is called a

A. conjunction

B. disjunction

C. implication

D. negation

Answer: A



Watch Video Solution

7. The statement of the form " if.....
then....." is called

A. Disjunction

B. Conjunction

C. Implication

D. Negation

Answer: C



Watch Video Solution

8. "Earth is a planet", the negation of this statement is

A. The earth is round

B. The earth is not round

C. The earth revolves round the sun

D. The earth is not a planet

Answer: D



Watch Video Solution

9. The negation of the statement "If I become a teacher, then I will open a school" is

A. Neither I will become a teacher nor I will open a school

B. I will not become a teacher or I will open a school

C. I will become a teacher and I will not open a school

D. Either I will not become a teacher or I will not open a school

Answer: C



Watch Video Solution

10. The conjunction of the statements, "5 is an odd number", "5 is positive" is

- A. 5 is an odd number and 5 is positive
- B. 5 is an odd number or 5 is positive
- C. 5 is an odd number and 5 is not positive
- D. 5 is not an odd number and 5 is positive

Answer: A



Watch Video Solution

11. The conjunction of the statement, "2 is even", "Its square is even", is

A. 2 is even and its square is even

B. 2 is even or its square is even

C. 2 is even but its square is not even

D. 2 is not even and is its square is not even

Answer: A



Watch Video Solution

12. The disjunction of the statement, "It is raining", "The sun is shining", is

A. It is raining and the sun is shining

B. It is raining or the sun is shining

C. It is raining and the sun is not shining

D. It is not raining or the sun is not shining

Answer: B



Watch Video Solution

13. The disjunction of the statement, "Hyderabad is in India", $2+2 = 4$ is

A. Hyderabad is in India and $2+2=4$

B. Hyderabad is in India or $2+2 = 4$

C. Hyderabad is in India but not $2+2=4$

D. Hyderabad is not in India or $2+2=4$

Answer: B



Watch Video Solution

14. The disjunction of the statement, " $1+2 = 3$ ", " $3+4 = 6$ ", is

A. $1+2 = 3$ and $3+4 = 6$

B. $1 + 2 = 3$ or $3 + 4 = 6$

C. $1 + 2 = 3$ but not $3 + 4 = 6$

D. Neither $1 + 2 = 3$ nor $3 + 4 = 6$

Answer: B



Watch Video Solution

15. The disjunction of $3+5 = 8$, $7-4 = 3$ is

A. $3+5 = 8$ and $7-4=3$

B. $3 + 5 = 8$ or $7 - 4 = 3$

C. If $3 + 5 = 8$ then $7 - 4 = 3$

D. $3 + 5 = 8$ only If $7 - 4 = 3$

Answer: B



Watch Video Solution

16. The conjunction of $6+3=9$, $8-3 = 5$ is

A. $6+3 = 9$ and $8 - 3 = 5$

B. $6 + 3 = 9$ or $8 - 3 = 5$

C. If $6 + 3 = 9$ then $8 - 3 = 5$

D. $6 + 3 = 9$ onlt if $8 - 3 = 5$

Answer: A



Watch Video Solution

17. The implication of $x+3 = 8$, $2x + 5 = 10$ is

A. $x + 3 = 8$ and $2x + 5 = 10$

B. $x + 3 = 8$ or $2x + 5 = 10$

C. If $x + 3 = 8$ then $2x + 5 = 10$

D. $x + 3 = 8$ only if $2x + 5 = 10$

Answer: C



Watch Video Solution

18. "5 + 7 = 10 and 4 + 3 = 7". Write the statement using the appropriate connective

A. $5 + 7 = 10 \vee 4 + 3 = 7$

B. $5 + 7 = 10 \wedge 4 + 3 = 7$

C. $5 + 7 = 10 \Rightarrow 4 + 3 = 7$

D. $5 + 7 = 10 \Leftrightarrow 4 + 3 = 7$

Answer: B



Watch Video Solution

19. "7 is odd Or 7 is prime". Write the statement using the appropriate connective

A. 7 is odd \vee 7 is prime

B. 7 is odd \wedge 7 is prime

C. 7 is odd \Rightarrow 7 is prime

D. 7 is odd \Leftrightarrow 7 is prime

Answer: A



Watch Video Solution

20. "If $x + 2 = 0$ then $x = -2$ ". Write the statement using the appropriate connective

A. $x + 2 = 0 \vee x = -2$

B. $x + 2 = 0 \wedge x = -2$

C. $x + 2 = 0 \Rightarrow x = -2$

D. $x + 2 = 0 \Leftrightarrow x = -2$

Answer: C



Watch Video Solution

21. " $x + 2 = 0$ iff $x = -2$ ". Write the statement using the appropriate connective

A. $x + 2 = 0 \vee x = -2$

B. $x + 2 = 0 \wedge x = -2$

C. $x + 2 = 0 \Rightarrow x = -2$

D. $x + 2 = 0 \Leftrightarrow x = -2$

Answer: D



Watch Video Solution

22. $(7 \neq 10)$. Write the statement using the appropriate connective

A. $\sim(7 = 10)$

B. $\sim(7 \neq 10)$

C. $\sim(-7 = 10)$

D. $(-7 \neq 10)$

Answer: A



Watch Video Solution

23. The symbolic form of "not p" is

A. $\sim p$

B. $\sim(\sim p)$

C. p

D. $p\sim p$

Answer: A



Watch Video Solution

24. The symbolic form of "p or q" is

A. $p \vee q$

B. $p \wedge q$

C. $p \Rightarrow q$

D. $p \Leftrightarrow q$

Answer: A



Watch Video Solution

25. The symbolic form of "p and q" is

A. $p \vee q$

B. $p \wedge q$

C. $p \Rightarrow q$

D. $p \Leftrightarrow q$

Answer: B



Watch Video Solution

26. The symbolic form of "p only if q" is

A. $p \vee q$

B. $p \wedge q$

C. $p \Rightarrow q$

D. $q \Rightarrow p$

Answer: C



Watch Video Solution

27. The symbolic form of "p iff q" is

A. $p \vee q$

B. $p \wedge q$

C. $p \Rightarrow q$

$$D. p \Leftrightarrow q$$

Answer: D



Watch Video Solution

28. The symbolic form of "p and not q" is

A. $p \wedge (\sim q)$

B. $p \vee (\sim q)$

C. $(\sim p) \wedge q$

D. $(\sim p) \vee q$

Answer: A



Watch Video Solution

29. The symbolic form of " (not p) or q" is

A. $(\sim p) \wedge q$

B. $(\sim p) \vee q$

C. $p \wedge (\sim q)$

D. $p \vee (\sim q)$

Answer: B



Watch Video Solution

30. The symbolic form of " (either p) or (not p)"

is

A. $p \vee (\sim p)$

B. $p \wedge (\sim p)$

C. $p \Rightarrow (\sim p)$

D. $p \Leftrightarrow (\sim p)$

Answer: A



31. The symbolic form of "p or not q" is

A. $p \vee (\sim q)$

B. $p \wedge (\sim q)$

C. $p \Rightarrow q$

D. $p \Rightarrow \sim q$

Answer: A



32. The symbolic form of "(not p) and (not q)" is

A. $(\sim p) \vee (\sim q)$

B. $(\sim p) \wedge (\sim q)$

C. $\sim p \Rightarrow \sim q$

D. $\sim p \Leftrightarrow \sim q$

Answer: B



Watch Video Solution

33. The symbol for connective of the following

: p and not p

A. $p \vee (\sim p)$

B. $p \vee q$

C. $p \Leftrightarrow p$

D. $p \wedge (\sim p)$

Answer: D



Watch Video Solution

34. p : x is odd , q : x^2 is odd, the symbolic form of "x is even or x^2 is odd", is

A. $p \vee q$

B. $p \wedge q$

C. $(\sim p) \vee q$

D. $p \vee (\sim q)$

Answer: C



Watch Video Solution

35. p : x is odd , q : x^2 is odd. The symbolic form of " x is odd or x^{20} is odd", is

A. $p \vee q$

B. $p \wedge q$

C. $(\sim p) \vee q$

D. $p \vee (\sim q)$

Answer: A



Watch Video Solution

36. p : x is odd : q : x^2 is odd. The symbolic form of "x is odd and x^2 is even", is

A. $p \vee q$

B. $p \wedge q$

C. $(\sim p) \vee q$

D. $p \wedge (\sim q)$

Answer: D



Watch Video Solution

37. p : x is odd , q is x^2 is odd. The symbolic form of " x is odd and x^2 is not odd", is

A. $p \vee q$

B. $p \wedge q$

C. $(\sim p) \vee q$

D. $p \wedge (\sim q)$

Answer: D



Watch Video Solution

38. p : x is odd , q : x^2 is odd. The symbolic form of "If x is odd then x^2 is odd", is

A. $p \vee q$

B. $p \wedge q$

C. $p \Rightarrow q$

D. $q \Rightarrow p$

Answer: C



Watch Video Solution

39. p : x is odd , q : x^2 is odd. The symbolic form of "If x is not odd then x^2 is odd", is

A. $p \Rightarrow q$

B. $q \Rightarrow p$

C. $(\sim p) \Rightarrow q$

D. $(\sim q) \Rightarrow p$

Answer: C



Watch Video Solution

40. p : x is odd, q : x^2 is odd. The symbolic form of "x is odd iff x^2 is odd", is

A. $p \vee q$

B. $p \wedge q$

C. $p \Rightarrow q$

D. $p \Leftrightarrow q$

Answer: D



Watch Video Solution

41. p : x is odd, q : x^2 is odd. The symbolic form of "x is even iff x^2 is even", is

A. $p \Leftrightarrow q$

B. $p \Leftrightarrow (\sim q)$

C. $(\sim p) \Leftrightarrow q$

D. $(\sim p) \Leftrightarrow (\sim q)$

Answer: D



Watch Video Solution

42. p : x is even, q : x^2 is even. The symbolic form of "x is even or x^2 is even", is

A. $p \Leftrightarrow q$

B. $p \wedge q$

C. $p \vee q$

D. $p \Rightarrow q$

Answer: C



Watch Video Solution

43. p : x is even , q : x^2 is even. The symbolic form of " x is not even and x^2 is even", is

A. $p \vee q$

B. $(\sim p) \vee q$

C. $p \wedge q$

D. $(\sim p) \wedge q$

Answer: D



Watch Video Solution

44. The truth value of " $4+3 = 7$ or $5 \times 4 = 21$ ",
is

A. T

B. F

C. T or F

D. T and F

Answer: A



Watch Video Solution

45. The truth value of " $4+2 = 3$ or $2 + 3 = 4$ " is

A. T

B. F

C. T or F

D. T and F

Answer: B



Watch Video Solution

46. The truth value of " $20 + 10 = 2$ and $20 \times 10 = 200$ ", is

A. T

B. F

C. T or F

D. T and F

Answer: B



Watch Video Solution

47. The truth value of " $10 + 2 = 12$ and $10 \times 2 = 20$ " is

A. T

B. F

C. T or F

D. T and F

Answer: A



Watch Video Solution

48. The truth value of " $10 + 15 = 20$ and $15 - 10 = 25$ " is

A. T

B. F

C. T or F

D. T and F

Answer: B



Watch Video Solution

49. The truth value "if $3 + 2 = 5$ then $1 \times 0 = 0$ " is

A. T

B. F

C. T or F

D. T and F

Answer: A



Watch Video Solution

50. The truth value of "if $3 \times 6 = 20$ then $2 + 7 = 9$ " is

A. T

B. F

C. T or F

D. T and F

Answer: A



Watch Video Solution

51. The truth value of "if $5 \times 7 = 30$ then $2 + 1 = 4$ " is

A. T

B. F

C. T or F

D. T and F

Answer: A



Watch Video Solution

52. The truth value of "if $6 \times 7 = 42$ then $6 + 2 = 4$ " is

A. T

B. F

C. T or F

D. T and F

Answer: B



Watch Video Solution

53. The truth value of $p \wedge q$ is T if

A. The truth value of p is T if

B. The truth value of q is T

C. The truth value of p and q is T

D. The truth value of at least of p and q is T

Answer: C



Watch Video Solution

54. The truth value of $p \vee q$ is F if

A. The truth value of both p and q is F

B. Truth value of p is T, Truth value of q is F

C. Truth value of p is F, Truth value of q is T

D. The truth value of both p and q is T

Answer: A



Watch Video Solution

55. The truth value of $p \leftrightarrow q$ is F if

- A. If the truth value of p is T then the truth value of q is T
- B. If the truth value of p is F then the truth value of p is F
- C. The truth value of both p and q is T or F
- D. The truth values of p and q are opposite

Answer: C



Watch Video Solution

56. Which of the following is true ?

A. $4 + 3 = 10 \Leftrightarrow 4 \times 3 = 12$

B. $4 \times 7 = 28 \Leftrightarrow 4 + 7 = 1$

C. $5 \times 8 = 40 \Leftrightarrow 8 - 2 = 5$

D. $6 - 3 = 3 \Leftrightarrow 6 \times 3 = 18$

Answer: D



Watch Video Solution

57. Which of the following is true ?

A. $2 + 4 = 5$ or $4 + 2 = 3$

B. $3 + 5 = 8$ and $3 \times 2 = 6$

C. $x^2 = 4 \Rightarrow x = 2$

D. $3 \times 7 = 10 \Leftrightarrow 1 \times 2 = 3$

Answer: B



Watch Video Solution

58. Which of the following is true ?

A. $3 + 5 = 8 \wedge 1 + 2 = 3$

B. $3 \times 5 = 8 \wedge 2 \times 3 = 6$

C. $2 + 4 = 5 \wedge 4 + 2 = 3$

D. $3 + 5 = 8 \wedge 1 \times 0 = 10$

Answer: A



Watch Video Solution

59. Which of the following is true ?

A. $3 + 7 = 10 \Leftrightarrow 1 + 2 = 3$

B. $3 + 7 = 10 \Leftrightarrow 1 + 2 = 2$

C. $3 \times 7 = 10 \Leftrightarrow 1 \times 3 = 3$

D. $3 + 7 = 8 \Leftrightarrow 1 \times 2 = 2$

Answer: A



Watch Video Solution

60. $A = \{1,2,3,4,5\}$. Which of the following is true

?

A. $\exists x \in A \ni x + 3 = 10$

B. $\forall x \in A, x + 3 < 10$

C. $\exists x \in A \ni x + 3 > 10$

D. $\forall x \in A, x + 3 \leq 7$

Answer: B



Watch Video Solution

61. Biconditional statements are given below. true statement among them is

A. $5x - 10 = 0 \Leftrightarrow x = 3$

B. $x^2 - 16 = 0 \Leftrightarrow (x + 4)(x - 4) = 0$

C. $x^2 = 1 \Leftrightarrow x = 1$

D. $x^2 + 9 = 0 \Leftrightarrow x = 3$

Answer: B



Watch Video Solution

62. Which of the following statement is false ?

A. $x^2 - 9 = (x + 3)(x - 3), x \in R$

B. $x^2 + 1 = 0 \Rightarrow x \in R$

C. $x + 3 = 5 \Rightarrow x \in \{2\}$

D. $x^2 + 1 = 0 \Rightarrow x \notin R$

Answer: B



Watch Video Solution

63. $p \Rightarrow q$ is false is

A. p is true and q true

B. p is true and q is false

C. p is false and q is true

D. p is false and q is false

Answer: B



Watch Video Solution

64. If p is false, q is true then which of the following is false ?

A. $\sim(p \Rightarrow q)$

B. $\sim p$

C. $\sim p \Rightarrow q$

D. $\sim q$

Answer: D



Watch Video Solution

65. If $p: 10 > 8$, $q: 10 > 12$, then $p \wedge q$

A. True

B. False

C. Cannot be determined

D. none

Answer: B



Watch Video Solution

66. If $p: 7 > 4$, $q: 7 < 9$, then $p \vee q$

A. True

B. False

C. Cannot be determined

D. none

Answer: A



Watch Video Solution

67. If $p: 3 + 5 = 8$, $q: 2 \times 3 = 8$ then, $p \leftrightarrow q$

A. True

B. False

C. Cannot be determined

D. none

Answer: B



Watch Video Solution

68. The converse of $p \Rightarrow q$ is

A. $p \Rightarrow q$

B. $q \Rightarrow p$

C. $\sim p \Rightarrow \sim q$

D. $\sim q \Rightarrow \sim p$

Answer: B



Watch Video Solution

69. The inverse of $p \Rightarrow q$ is

A. $p \Rightarrow q$

B. $q \Rightarrow p$

C. $\sim p \Rightarrow \sim q$

$$D. \sim q \Rightarrow \sim p$$

Answer: C



Watch Video Solution

70. The contrapositive of $p \Rightarrow q$ is

A. $p \Rightarrow q$

B. $q \Rightarrow p$

C. $\sim p \Rightarrow \sim q$

D. $\sim q \Rightarrow \sim p$

Answer: D



Watch Video Solution

71. The converse of "If two triangles are congruent then they are similar" is

A. If two triangles are similar then they are congruent

B. If two triangles are not congruent then they are not similar

C. If two triangles are not congruent then they are not similar

D. none

Answer: A



Watch Video Solution

72. The inverse of "if two triangles are congruent then they are similar" is

A. If two triangles are similar then they are congruent

B. If two triangles are not congruent then they are not similar

C. If two triangles are not similar then they are not congruent

D. None

Answer: B



Watch Video Solution

73. The contrapositive of "if two triangles are congruent then they are similar" is

A. If two triangles are similar then they are congruent

B. If two triangles are not congruent then they are not similar

C. If two triangles are not similar then they are not congruent

D. none

Answer: C



Watch Video Solution

74. The converse of "if in a triangle ABC , $AB = AC$ then $\angle B = \angle C$ " is

A. If in a triangle ABC , $\angle B = \angle C$ then $AB = AC$

B. If in a triangle ABC , $AB \neq AC$, then $\angle B \neq \angle C$

C. If in a triangle ABC, $\angle B \neq \angle C$, then

$$AB \neq AC$$

D. If in a triangle ABC, $\angle B \neq \angle C$, then

$$AB = AC$$

Answer: A



Watch Video Solution

75. The inverse of "if in a triangle ABC, $AB = AC$

then $\angle B = \angle C$ " is

A. If in a triangle ABC, $\angle B = \angle C$ then $AB = AC$

B. If in a triangle ABC, $AB \neq AC$, then $\angle B \neq \angle C$

C. If in a triangle ABC, $\angle B \neq \angle C$, then $AB \neq AC$

D. If in a triangle ABC, $\angle B \neq \angle C$, then $AB = AC$

Answer: B



Watch Video Solution

76. The contrapositive of "if in a triangle ABC, $AB = AC$ then $\angle B = \angle C$ " is

A. If in a triangle ABC, $\angle B = \angle C$ then $AB = AC$

B. If in a triangle ABC, $AB \neq AC$, then $\angle B \neq \angle C$

C. If in a triangle ABC, $\angle B \neq \angle C$, then $AB \neq AC$

D. If in a triangle ABC, $\angle B \neq \angle C$, then

$$AB = AC$$

Answer: C



Watch Video Solution

77. The converse of "if in a triangle ABC,

$AB > AC$ then $\angle C > \angle B$ " is

A. If in a triangle ABC, $\angle C > \angle B$ then

$$AB > AC$$

B. If in a triangle ABC , $AB > AC$, then

$$\angle C > \angle B$$

C. If in a triangle ABC , $\angle C > \angle B$, then

$$AB > AC$$

D. If in a triangle ABC , $\angle C > \angle B$, then

$$AB > AC$$

Answer: A



Watch Video Solution

78. The inverse of "if in a triangle ABC, $AB > AC$ then $\angle C > \angle B$ " is

A. If in a triangle ABC, $\angle C > \angle B$ then

$$AB > AC$$

B. If in a triangle ABC, $AB < AC$, then

$$\angle C < \angle B$$

C. If in a triangle ABC, $\angle C > \angle B$, then

$$AB > AC$$

D. If in a triangle ABC , $\angle C > \angle B$, then

$$AB > AC$$

Answer: B



Watch Video Solution

79. The contrapositive of "if in a triangle ABC ,

$AB > AC$ then $\angle C > \angle B$ " is

A. If in a triangle ABC , $\angle C > \angle B$ then

$$AB > AC$$

B. If in a triangle ABC, $AB < AC$, then

$$\angle C < \angle B$$

C. If in a triangle ABC, $\angle C < \angle B$, then

$$AB < AC$$

D. If in a triangle ABC, $\angle C < \angle B$, then

$$AB > AC$$

Answer: C



Watch Video Solution

80. The converse of "if a triangle is equilateral then it is isosceles" is

A. If a triangle is isosceles then it is equilateral

B. If a triangle is not equilateral then it is not isosceles

C. If a triangle is not isosceles then it is not equilateral

D. if a triangle is not isosceles then it is
equilateral

Answer: A



Watch Video Solution

81. The inverse of "if a triangle is equilateral
then it is isosceles" is

A. If a triangle is isosceles then it is
equilateral

B. If a triangle is not equilateral then it is not isosceles

C. If a triangle is not isosceles then it is not equilateral

D. if a triangle is not isosceles then it is equilateral

Answer: B



Watch Video Solution

82. The contrapositive of "if a triangle is equilateral then it is isosceles" is

A. If a triangle is isosceles then it is equilateral

B. If a triangle is not equilateral then it is not isosceles

C. If a triangle is not isosceles then it is not equilateral

D. if a triangle is not isosceles then it is
equilateral

Answer: C



Watch Video Solution

83. The converse of "if a polygon is a square
then it is a rectangular" is

A. If a polygon is a rectangle then it is a
square

B. If a polygon is not a square then it is not a rectangle

C. If a polygon is not a rectangle then it is not a square

D. If a polygon is not a rectangle then it is a square

Answer: A



Watch Video Solution

84. The inverse of "if a polygon is a square then it is rectangle" is

A. If a polygon is a rectangle then it is a

square

B. If a polygon is not a square then it is not

a rectangle

C. If a polygon is not a rectangle then it is

not a square

D. If a polygon is not a rectangle then it is a square

Answer: B



Watch Video Solution

85. The contrapositive of "if a polygon is a square then it is a rectangle" is

A. If a polygon is a rectangle then it is a square

B. If a polygon is not a square then it is not a rectangle

C. If a polygon is not a rectangle then it is not a square

D. If a polygon is not a rectangle then it is a square

Answer: C



Watch Video Solution

86. The converse of the statement "If $x \in A \cup B$ then $x \in A$ or $x \in B$ " is

A. if $x \in A$ or $x \in B$ then $x \in A \cup B$

B. If $x \notin A \cup B$ then $x \notin A$ and $x \notin B$

C. If $x \notin A$ and $x \notin B$ then $x \notin A \cup B$

D. If $x \notin A$ and $x \notin B$ then $x \in A \cup B$

Answer: A



Watch Video Solution

87. The inverse of "if $x \in A \cup B$ then $x \in A$ or $x \in B$ ", is

A. if $x \in A$ or $x \in B$ then $x \in A \cup B$

B. If $x \notin A \cup B$ then $x \notin A$ and $x \notin B$

C. If $x \notin A$ and $x \notin B$ then $x \notin A \cup B$

D. If $x \notin A$ and $x \notin B$ then $x \in A \cup B$

Answer: B



Watch Video Solution

88. The contrapositive of "if $x \in A \cup B$ then $x \in A$ or $x \in B$ ", is

A. if $x \in A$ or $x \in B$ then $x \in A \cup B$

B. If $x \notin A \cup B$ then $x \notin A$ or $x \notin B$

C. If $x \notin A$ and $x \notin B$ then $x \notin A \cup B$

D. If $x \notin A$ and $x \notin B$ then $x \in A \cup B$

Answer: C



Watch Video Solution

89. The converse of "if $x \in A \cap B$ then $x \in A$ and $x \in B$ ", is

A. if $x \in A$ and $x \in B$ then $x \in A \cap B$

B. If $x \notin A \cap B$ then $x \notin A$ and $x \notin B$

C. If $x \notin A$ or $x \notin B$ then $x \notin A \cap B$

D. If $x \notin A$ or $x \notin B$ then $x \in A \cap B$

Answer: A



Watch Video Solution

90. The inverse of ct^2 "if $x \in A \cap B$ then $x \in A$ and $x \in B$ ", is

A. if $x \in A$ or $x \in B$ then $x \in A \cap B$

B. If $x \notin A \cap B$ then $x \notin A$ or $x \notin B$

C. If $x \notin A$ or $x \notin B$ then $x \notin A \cap B$

D. If $x \notin A$ or $x \notin B$ then $x \in A \cap B$

Answer: B



Watch Video Solution

91. The contrapositive of "if $x \in A \cap B$ then $x \in A$ and $x \in B$ ", is

A. if $x \in A$ or $x \in B$ then $x \in A \cap B$

B. If $x \notin A \cap B$ then $x \notin A$ and $x \notin B$

C. If $x \notin A$ or $x \notin B$ then $x \notin A \cap B$

D. If $x \notin A$ or $x \notin B$ then $x \in A \cap B$

Answer: C



Watch Video Solution

92. The converse of "if $x^2 = 1$ then $x = 1$ " is

A. If $x = 1$ then $x^2 = 1$

B. If $x^2 \neq 1$ then $x \neq 1$

C. If $x \neq 1$ then $x^2 \neq 1$

D. If $x \neq 1$ then $x^2 = 1$

Answer: A



Watch Video Solution

93. The inverse of "if $x^2 = 1$ then $x = 1$ " is

A. If $x = 1$ then $x^2 = 1$

B. If $x^2 \neq 1$ then $x \neq 1$

C. If $x \neq 1$ then $x^2 \neq 1$

D. If $x \neq 1$ then $x^2 = 1$

Answer: B



Watch Video Solution

94. The contrapositive of "if $x^2 = 1$ then $x = 1$ " is

A. If $x = 1$ then $x^2 = 1$

B. If $x^2 \neq 1$ then $x \neq 1$

C. If $x \neq 1$ then $x^2 \neq 1$

D. If $x \neq 1$ then $x^2 = 1$

Answer: C



Watch Video Solution

95. The converse of "if x has courage then x will win", is

- A. If x will win then x has courage
- B. If x has no courage then x will not win
- C. If x will not win then x has no courage
- D. If x will not win then x has courage

Answer: A



Watch Video Solution

96. The inverse of "if x has courage then x will win", is

- A. If x will win then x has courage
- B. If x has no courage then x will not win
- C. If x will not win then x has no courage
- D. If x will not win then x has courage

Answer: B



Watch Video Solution

97. The contrapositive of "if x has courage then x will win", is

- A. If x will win then x has courage
- B. If x has no courage then x will not win
- C. If x will not win then x has no courage
- D. If x will not win then x has courage

Answer: C



Watch Video Solution

98. The converse of "if x is healthy then x is wealthy", is

- A. If x is wealthy then x healthy
- B. If x is not wealthy then x is not healthy
- C. If x is not healthy then x is not wealthy
- D. If x is not healthy then x is wealthy

Answer: A



Watch Video Solution

99. The inverse of "if x is healthy then x is wealthy", is

- A. If x is wealthy then x healthy
- B. If x is not wealthy then x is not healthy
- C. If x is not healthy then x is not wealthy
- D. If x is not healthy then x is wealthy

Answer: C



Watch Video Solution

100. The contrapositive of "if x is healthy then x is wealthy", is

- A. If x is wealthy then x healthy
- B. If x is not wealthy then x is not healthy
- C. If x is not healthy then x is not wealthy
- D. If x is not healthy then x is wealthy

Answer: B



Watch Video Solution

101. The converse of "if x is old then x is clever",
is

A. If x is clever then x is old

B. If x is not old then x is not clever

C. If x is not clever then x is not old

D. If x is not clever then x is old

Answer: A



Watch Video Solution

102. The inverse of "if x is old then x is clever",
is

- A. If x is clever then x is old
- B. If x is not old then x is not clever
- C. If x is not clever then x is not old
- D. If x is not clever then x is old

Answer: B



Watch Video Solution

103. The contrapositive of "if x is old then x is clever", is

- A. If x is clever then x is old
- B. If x is not old then x is not clever
- C. If x is not clever then x is not old
- D. If x is not clever then x is old

Answer: C



Watch Video Solution

104. p : he is hard working , q : he will win. The symbolic form of " he is hard working but not going to win", is

A. $p \wedge q$

B. $p \wedge (\sim q)$

C. $p \vee (\sim q)$

D. $(\sim p) \wedge q$

Answer: B



Watch Video Solution

105. p : he is hard working, q : he will win. The symbolic form of "if he is hard working then he will win", is

A. $p \vee q$

B. $p \wedge q$

C. $p \Rightarrow q$

D. $q \Rightarrow p$

Answer: C



Watch Video Solution

106. p : he is hard working, q : he will win. The symbolic form of "if he will not win then he is not working" is

A. $p \Rightarrow q$

B. $(\sim p) \Rightarrow (\sim q)$

C. $(\sim q) \Rightarrow (\sim p)$

D. $(\sim q) \Rightarrow p$

Answer: C



Watch Video Solution

107. p : She is beautiful, q : she is intelligent.

The symbolic form of " she is neither beautiful nor intelligent", is

A. $p \wedge q$

B. $(\sim p) \wedge q$

C. $p \wedge (\sim q)$

D. $(\sim p) \wedge (\sim q)$

Answer: D



Watch Video Solution

108. p : She is beautiful, q : she is intelligent.

The symbolic form of "if she is intelligent then she is beautiful, is

A. $p \Rightarrow q$

B. $q \Rightarrow p$

C. $p \Rightarrow \sim q$

D. $(\sim q) \Rightarrow (\sim p)$

Answer: B



Watch Video Solution

109. p : she is beautiful, q : she is intelligent.

The symbolic form of "if she is not beautiful then she is not intelligent", is

A. $p \Rightarrow (\sim q)$

B. $(\sim p) \Rightarrow q$

C. $(\sim p) \Rightarrow (\sim q)$

D. $(\sim q) \Rightarrow (\sim p)$

Answer: C



Watch Video Solution

110. p : she is beautiful, q : she is happy. The symbolic form of "if she is not happy then she is not beautiful" is

A. $p \Rightarrow (\sim q)$

B. $(\sim p) \Rightarrow q$

C. $(\sim p) \Rightarrow (\sim q)$

D. $(\sim q) \Rightarrow (\sim p)$

Answer: D



Watch Video Solution

111. p : he is hard working , q : he is intelligent.

Then $(\sim q) \Rightarrow (\sim p)$ means

A. If he is hard working then he is not

intelligent

B. If he is not hard working then he is

intelligent

C. If he is not intelligent then he is not

hard working

D. If he is not intelligent then he is hard working

Answer: C



Watch Video Solution

112. p : she is beautiful, q : she is intelligent.

Then $(\sim p) \vee (\sim q)$ means

A. She is beautiful but not intelligent

B. She is intelligent but not beautiful

C. She is neighter beautiful noe intelligent

D. She is not beautiful or she is not intelligent

Answer: C



Watch Video Solution

113. p : she is beautiful, q : she is happy. Then

$(\sim p) \Rightarrow (\sim q)$ means

A. If she is beautiful she is not happy

B. if she is not beautiful then she is happy

C. If she is not beautiful then she is not
happy

D. If she is not happy then she is not
beautiful

Answer: C



Watch Video Solution

114. p : she is beautiful , q : she is happy. Then

$q \Rightarrow (\sim p)$ means

A. If she is beautiful she is happy

B. if she is beautiful then she is not happy

C. If she is happy then she is not beautiful

D. If she is happy then she is beautiful

Answer: C



Watch Video Solution

115. The truth table of $\sim(\sim p)$ is

A.

p	$\sim p$	$\sim(\sim p)$
F	F	T
T	T	F

B.

p	$\sim p$	$\sim(\sim p)$
F	F	T
T	T	F

C.

p	$\sim p$	$\sim(\sim p)$
T	F	T
F	T	F

D.

p	$\sim p$	$\sim(\sim p)$
T	F	F
F	T	T

Answer: C



Watch Video Solution

116. The truth table of $p \vee q$ is

A.

p	q	$p \vee q$
T	T	T
T	F	F
F	T	T
F	F	T

B.

p	q	$p \vee q$
T	T	T
T	F	T
F	T	T
F	F	F

C.

p	q	$p \vee q$
T	T	T
T	F	F
F	T	F
F	F	F

D.

p	q	$p \vee q$
T	T	T
T	F	F
F	T	F
F	F	T

Answer: B



Watch Video Solution

117. The truth table of $p \wedge q$ is

A.

p	q	$p \wedge q$
T	T	T
T	F	F
F	T	T
F	F	T

B.

p	q	$p \wedge q$
T	T	T
T	F	T
F	T	T
F	F	F

C.

p	q	$p \wedge q$
T	T	T
T	F	F
F	T	F
F	F	F

D.

p	q	$p \wedge q$
T	T	T
T	F	F
F	T	F
F	F	T

Answer: C



Watch Video Solution

118. The truth table of $p \Rightarrow q$ is

A.

p	q	$p \Rightarrow q$
T	T	T
T	F	F
F	T	T
F	F	T

B.

p	q	$p \Rightarrow q$
T	T	T
T	F	T
F	T	T
F	F	F

C.

p	q	$p \Rightarrow q$
T	T	T
T	F	F
F	T	F
F	F	F

D.

p	q	$p \Rightarrow q$
T	T	T
T	F	F
F	T	F
F	F	T

Answer: A



Watch Video Solution

119. The truth table of $p \Leftrightarrow q$ is

A. 

p	q	$p \Leftrightarrow q$
T	T	T
T	F	T
F	T	T
F	F	F

B.

p	q	$p \Leftrightarrow q$
T	T	T
T	F	F
F	T	F
F	F	F

C.

p	q	$p \Leftrightarrow q$
T	T	T
T	F	F
F	T	F
F	F	T

D.

Answer: D



Watch Video Solution

120. The truth table of $(\sim p) \wedge q$ is

A.

p	q	$(\sim p) \wedge q$
T	T	F
T	F	F
F	T	T
F	F	F

B.

p	q	$(\sim p) \wedge q$
T	T	F
T	F	T
F	T	F
F	F	F

C.

p	q	$(\sim p) \wedge q$
T	T	F
T	F	F
F	T	F
F	F	T

D.

p	q	$(\sim p) \wedge q$
T	T	T
T	F	F
F	T	F
F	F	F

Answer: A



Watch Video Solution

121. The truth table of $p \wedge (\sim q)$ is

A.

p	q	$p \wedge (\sim q)$
T	T	F
T	F	F
F	T	T
F	F	F

B.

p	q	$p \wedge (\sim q)$
T	T	F
T	F	T
F	T	F
F	F	F

C.

p	q	$p \wedge (\sim q)$
T	T	F
T	F	F
F	T	F
F	F	T

D.

p	q	$p \wedge (\sim q)$
T	T	T
T	F	F
F	T	F
F	F	F

Answer: B



Watch Video Solution

122. The truth table of $(\sim p) \wedge (\sim q)$ is

A.

p	q	$(\sim p) \wedge (\sim q)$
T	T	F
T	F	F
F	T	T
F	F	F

B.

p	q	$(\sim p) \wedge (\sim q)$
T	T	F
T	F	T
F	T	F
F	F	F

C.

p	q	$(\sim p) \wedge (\sim q)$
T	T	F
T	F	F
F	T	F
F	F	T

D.

p	q	$(\sim p) \wedge (\sim q)$
T	T	T
T	F	F
F	T	F
F	F	T

Answer: C



Watch Video Solution

123. The truth table of $\sim p) \vee q$ is

A.

p	q	$(\sim p) \vee q$
T	T	T
T	F	F
F	T	T
F	F	T

B.

p	q	$(\sim p) \vee q$
T	T	T
T	F	T
F	T	F
F	F	T

C.

p	q	$(\sim p) \vee q$
T	T	F
T	F	T
F	T	T
F	F	T

D.

p	q	$(\sim p) \vee q$
T	T	T
T	F	T
F	T	T
F	F	F

Answer: A



Watch Video Solution

124. The truth table of $p \vee (\sim q)$ is

A.

p	q	$p \vee (\sim q)$
T	T	T
T	F	F
F	T	T
F	F	T

B.

p	q	$p \vee (\sim q)$
T	T	T
T	F	T
F	T	F
F	F	T

C.

p	q	$p \vee (\sim q)$
T	T	F
T	F	T
F	T	T
F	F	T

D.

p	q	$p \vee (\sim q)$
T	T	T
T	F	T
F	T	T
F	F	F

Answer: B



Watch Video Solution

125. The truth table of $(\sim p) \vee (\sim q)$ is

A.

p	q	$(\sim p) \vee (\sim q)$
T	T	T
T	F	F
F	T	T
F	F	T

B.

p	q	$(\sim p) \vee (\sim q)$
T	T	T
T	F	T
F	T	F
F	F	T

C.

p	q	$(\sim p) \vee (\sim q)$
T	T	F
T	F	T
F	T	T
F	F	T

D.

p	q	$(\sim p) \vee (\sim q)$
T	T	T
T	F	T
F	T	T
F	F	F

Answer: C



Watch Video Solution

126. The truth table of $p \Rightarrow \sim q$

A.

p	q	$p \Rightarrow \sim q$
T	T	F
T	F	T
F	T	T
F	F	T

B.

p	q	$p \Rightarrow \sim q$
T	T	T
T	F	T
F	T	T
F	F	F

C. 

D.

p	q	$p \Rightarrow \sim q$
T	T	T
T	F	F
F	T	T
F	F	T

Answer: A



Watch Video Solution

127. The truth table of $(\sim p) \Rightarrow q$ is

A.

p	q	$(\sim p) \Rightarrow q$
T	T	F
T	F	T
F	T	T
F	F	T

B.

p	q	$(\sim p) \Rightarrow q$
T	T	T
T	F	T
F	T	T
F	F	F

C.

p	q	$(\sim p) \Rightarrow q$
T	T	F
T	F	T
F	T	F
F	F	T

D.

p	q	$(\sim p) \Rightarrow q$
T	T	T
T	F	F
F	T	T
F	F	T

Answer: B



Watch Video Solution

128. The truth table of $(\sim p) \Rightarrow (\sim q)$ is

A.

p	q	$(\sim p) \Rightarrow (\sim q)$
T	T	F
T	F	T
F	T	T
F	F	T

B.

p	q	$(\sim p) \Rightarrow (\sim q)$
F	T	T
T	F	T
F	T	T
F	F	F

C.

p	q	$(\sim p) \Rightarrow (\sim q)$
T	T	F
T	F	T
F	T	F
F	F	T

D.

p	q	$(\sim p) \Rightarrow (\sim q)$
T	T	T
T	F	F
F	T	T
F	F	T

Answer: C



Watch Video Solution

129. The truth table of $q \Rightarrow (\sim p)$ is

A.

p	q	$q \Rightarrow \sim p$
T	T	T
T	F	T
F	T	F
F	F	T

B.

p	q	$q \Rightarrow \sim p$
T	T	F
T	F	T
F	T	T
F	F	T

C.

p	q	$q \Rightarrow \sim p$
T	T	T
T	F	T
F	T	T
F	F	F

p	q	$q \Rightarrow \sim p$
T	T	T
T	F	F
F	T	T
F	F	T

D.

Answer: B



Watch Video Solution

130. The truth table of $(\sim q) \Rightarrow \sim p$ is

A. 

p	q	$(\sim q) \Rightarrow \sim p$
T	T	F
T	F	T
F	T	T
F	F	T

B.

C.

p	q	$(\sim q) \Rightarrow p$
T	T	T
T	F	T
F	T	T
F	F	F

D.

p	q	$(\sim q) \Rightarrow p$
T	T	T
T	F	F
F	T	T
F	F	T

Answer: C



Watch Video Solution

131. The truth table of $(\sim q) \Rightarrow \sim p$ is

A.

p	q	$(\sim q) \Rightarrow (\sim p)$
T	T	T
T	F	T
F	T	F
F	F	T

B.

p	q	$(\sim q) \Rightarrow (\sim p)$
T	T	F
T	F	T
F	T	T
F	F	T

C.

p	q	$(\sim q) \Rightarrow (\sim p)$
T	T	T
T	F	T
F	T	T
F	F	F

D.

p	q	$(\sim q) \Rightarrow (\sim p)$
T	T	T
T	F	F
F	T	T
F	F	T

Answer: D



Watch Video Solution

132. The truth table of $(\sim p) \wedge q \Rightarrow p$ is

A.

p	q	$p \wedge (\sim q) \Rightarrow p$
T	T	T
T	F	T
F	T	T
F	F	T

B. 

C.

p	q	$p \wedge (\sim q) \Rightarrow p$
T	T	T
T	F	T
F	T	T
F	F	F

D.

p	q	$p \wedge (\sim q) \Rightarrow p$
T	T	T
T	F	T
F	T	F
F	F	F

Answer: A



Watch Video Solution

133. The truth table of $p \vee (\sim q) \Rightarrow p$ is

A.

p	q	$(\sim p) \wedge q \Rightarrow p$
T	T	T
T	F	T
F	T	T
F	F	T

B.

p	q	$(\sim p) \wedge q \Rightarrow p$
T	T	T
T	F	T
F	T	F
F	F	T

C.

p	q	$(\sim p) \wedge q \Rightarrow p$
T	T	T
T	F	T
F	T	T
F	F	F

D.

p	q	$(\sim p) \wedge q \Rightarrow p$
T	T	T
T	F	T
F	T	F
F	F	F

Answer: B



Watch Video Solution

134. The truth table of $p \vee (\sim q) \Rightarrow p$ is

A.

p	q	$p \vee (\sim q) \Rightarrow p$
T	T	T
T	F	T
F	T	T
F	F	T

B.

p	q	$p \vee (\sim q) \Rightarrow p$
T	T	T
T	F	T
F	T	F
F	F	T

C.

p	q	$p \vee (\sim q) \Rightarrow p$
T	T	T
T	F	T
F	T	T
F	F	F

D.

p	q	$p \vee (\sim q) \Rightarrow p$
T	T	T
T	F	T
F	T	F
F	F	F

Answer: C



Watch Video Solution

135. The truth table of $(\sim p) \vee q \Rightarrow p$ is

A.

p	q	$(\sim p) \vee q \Rightarrow p$
T	T	T
T	F	T
F	T	T
F	F	T

B.

p	q	$(\sim p) \vee q \Rightarrow p$
T	T	T
T	F	T
F	T	F
F	F	T

C.



D.

p	q	$(\sim p) \vee q \Rightarrow p$
T	T	T
T	F	T
F	T	F
F	F	F

Answer: D



Watch Video Solution

136. $p \vee (\sim p)$ is

A. a tautology

B. a contradiction

C. a tautology and a contradiction

D. neither a tautology nor a contradiction

Answer: A



Watch Video Solution

137. $p \wedge (\sim p)$ is

A. a tautology

B. a contradiction

C. a tautology and a contradiction

D. neither a tautology nor a contradiction

Answer: B



Watch Video Solution

138. $p \wedge (\sim q) \Rightarrow p$ is

A. a tautology

B. a contradiction

C. a tautology and a contradiction

D. neither a tautology nor a contradiction

Answer: A



Watch Video Solution

139. $p \Rightarrow p \vee q$ is

A. a tautology

B. a contradiction

C. a tautology and a contradiction

D. neither a tautology nor a contradiction

Answer: A



Watch Video Solution

140. $(p \Rightarrow q) \wedge (q \Rightarrow r) \Rightarrow (p \Rightarrow r)$ is

A. a tautology

B. a contradiction

C. a tautology and a contradiction

D. neither a tautology nor a contradiction

Answer: A



Watch Video Solution

141. $[(\sim p) \Rightarrow p] \wedge [p \Rightarrow (\sim p)]$ is

A. a tautology

B. a contradiction

C. a tautology and a contradiction

D. neither a tautology nor a contradiction

Answer: B



Watch Video Solution

142. $(\sim q) \wedge p \wedge (p \Rightarrow q)$ is

A. a tautology

B. a contradiction

C. a tautology and a contradiction

D. neither a tautology nor a contradiction

Answer: B



Watch Video Solution

143. $(p \Rightarrow q) \rightarrow [(r \vee p) \Rightarrow (r \vee q)]$ is

A. a tautology

B. a contradiction

C. a tautology and a contradiction

D. neither a tautology nor a contradiction

Answer: B



Watch Video Solution

144. $(p \Rightarrow q) \rightarrow [(r \vee p) \Rightarrow (r \vee q)]$ is

A. a tautology

B. a contradiction

C. a tautology and a contradiction

D. neither a tautology nor a contradiction

Answer: A



Watch Video Solution

145. $[p \wedge (\sim q)] \wedge [(\sim p) \vee q]$ is

A. a tautology

B. a contradiction

C. a tautology and a contradiction

D. neither a tautology nor a contradiction

Answer: B



Watch Video Solution

146. $p \Rightarrow p'$ is

A. a tautology

B. a contradiction

C. a tautology and a contradiction

D. neither a tautology nor a contradiction

Answer: D



Watch Video Solution

147. The statement $\sim(p \leftrightarrow \sim q)$ is

A. a tautology

B. a fallacy

C. equivalent to $p \leftrightarrow q$

D. equivalent to $\sim p \leftrightarrow q$

Answer: D



Watch Video Solution

148. Statement - I : $(p \wedge \sim q) \wedge (\sim p \wedge q)$ is a fallacy.

Statement - II : $(p \rightarrow q) \leftrightarrow (\sim q \rightarrow \sim p)$ is a tautology.

A. Statement - I is true, statement-II is false

B. Statement - I is false, Statement - II is true.

C. Statement - I is true, Statement - II is true, Statement - II is a correct explanation for Statement - I

D. Statement-I is true, Statement-II is true,
Statement-II is not a correct explanation
for statement-I

Answer: C



Watch Video Solution

149. Which of the following is the universal quantifier ?

A. \in

B. \subset

C. \forall

D. \exists

Answer: C



Watch Video Solution

150. Which of the following is the existential quantifier ?

A. \in

B. \subset

C. \forall

D. \exists

Answer: D



Watch Video Solution