DPP

DAILY PRACTICE PROBLEMS

CLASS : XIth **SUBJECT : MATHS**
DATE : **DPP NO. :4**

Topic :-MATHEMATICAL REASONING

1. If p and q are two statements, then $(p \Rightarrow q) \Leftrightarrow (\sim q \Rightarrow \sim p)$ is a
   a) Contradiction b) Tautology c) Neither (a) nor (b) d) None of these

2. The logically equivalent proposition of $p \rightarrow q$ is
   a) $(p \rightarrow q) \vee (q \rightarrow p)$ b) $(p \vee q) \rightarrow (p \vee q)$ c) $(p \wedge q) \wedge (p \vee q)$ d) $(p \rightarrow q) \wedge (q \rightarrow p)$

3. If p and q are statements, then $\sim (p \wedge q) \vee \sim (q \Leftrightarrow p)$ is
   a) Tautology b) Contradiction
   c) Neither tautology nor contradiction d) Either tautology or contradiction

4. Consider the proposition : " If the pressure increases, the volume decreases:. The negation of this proposition is
   a) If the pressure does not increase the volume does not decrease
   b) If the volume increases, the pressure decreases
   c) If the volume does not decreases, the pressure does not increase
   d) If the volume decreases, then the pressure does not increase

5. The dual of the statement $[p \vee (\sim q)] \wedge (\sim p)$ is
   a) $p \vee (\sim q) \vee \sim p$ b) $(p \wedge \sim q) \vee \sim p$ c) $p \wedge \sim (q \vee \sim p)$ d) None of these

6. Which of the following is logically equivalent to $(p \wedge q)$?
   a) $p \rightarrow q$ b) $\sim p \wedge \sim q$ c) $p \wedge \sim q$ d) $\sim (p \rightarrow \sim q)$

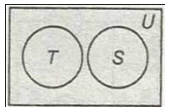
7. The proposition $p \rightarrow \sim (p \wedge \sim q)$ is
   a) A contradiction
   b) A tautology
   c) Either a tautology or a contradiction
   d) Neither a tautology nor a contradiction

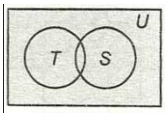
8. Which of the following statement has the truth value 'F'?
   a) A quadratic equation has always a real root
   b) The number of ways of seating 2 persons in two chairs out of n persons is $P(n, 2)$

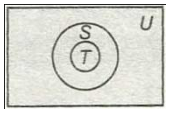
c) The cube roots of unity are in GP
d) None of the above

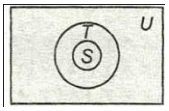
9. The negative of the proposition : "If a number is divisible by 15, then it is divisible by 5 or 3"
   a) If a number is divisible by 15, then it is not divisible by 5 and 3
   b) A number is divisible by 15 and it is not divisible by 5 and 3
   c) A number is divisible by 15 and it is not divisible by 5 or 3
   d) A number is not divisible by 15 or it is not divisible by 5 and 3

10. $p \wedge q \rightarrow p$is
    a) A tautology
    b) A contradiction
    c) Neither a tautology $n$or a contradiction
    d) None of these

11. All teachers are scholar, Identify the Venn diagram
    a) 

    b) 

    c) 

    d) 

12. the negation of the statement "he is rich and happy" is given by
    a) he is not rich and not happy
    b) he is not rich or not happy
    c) he is rich and happy
    d) he is not rich and happy

13. The property $\sim(p \wedge q) \equiv \sim p \vee \sim q$ is called
    a) Associative law
    b) De morgan's law
    c) Commutative law
    d) Idempotent law

14. The negation of the compound proposition $p \vee (\sim p \vee q)$ is
    a) $(p \wedge \sim q) \wedge \sim p$
    b) $(p \wedge \sim q) \vee \sim p$
    c) $(p \wedge \sim q) \vee \sim p$
    d) None of these

15. The negation of $q \vee \sim(p \wedge r)$ is
    a) $\sim q \vee \sim(p \wedge r)$
    b) $\sim q \vee (p \wedge r)$
    c) $\sim q \wedge (p \wedge r)$
    d) $\sim q \wedge \sim(p \wedge r)$

16. $\sim(\sim p) \leftrightarrow p$is
    a) A tautology
    b) A contradiction
    c) Neither a contradiction nor a tautology
    d) None of these

17. The contrapositive of $2x + 3 = 9 \Rightarrow x \neq 4$ is
    a) $x = 4 \Rightarrow 2x + 3 \neq 9$
    b) $x = 4 \Rightarrow 2x + 3 = 9$
    c) $x \neq 4 \Rightarrow 2x + 3 \neq 9$
    d) $x \neq 4 \Rightarrow 2x + 3 = 9$

18. Negation of the conditional, "If it rains, I shall go to school" is
    a) It rains and I shall go to school
    b) It rains and I shall not go to school
    c) It does not rains and I shall go to school
    d) None of the above

19. If a compound statement r is contradiction, then the truth value of $(p \Rightarrow q) \wedge r \wedge p[p \Rightarrow \sim r]$ is
    a) TM b) F c) T or F d) None of these

20. The statement $p \vee \sim p$ is
    a) Tautology b) Contradiction
    c) Neither a tautology nor a contradiction d) None of the above