DPP

DAILY PRACTICE PROBLEMS

CLASS : XIth **SUBJECT : MATHS**
DATE : **DPP NO. :3**

Topic :-MATHEMATICAL REASONING

1. The contrapositive of $(\sim p \wedge q) \rightarrow \sim r$ is
   a) $(p \wedge q) \rightarrow r$ b) $(p \vee q) \rightarrow r$ c) $r \rightarrow (p \vee \sim q)$ d) None of these

2. $\sim p \wedge q$is logically equivalent to
   a) $p \rightarrow q$ b) $q \rightarrow p$ c) $\sim(p \rightarrow q)$ d) $\sim(q \rightarrow p)$

3. $p \wedge (q \wedge r)$is logically equivalent to
   a) $p \vee (q \wedge r)$ b) $(p \wedge q) \wedge r$ c) $(p \vee q) \vee r$ d) $p \rightarrow (q \wedge r)$

4. If p = He is intelligent
q =He is strong
Then, symbolic form of statement
"It is wrong that he is intelligent or strong," is
   a) $\sim p \vee \sim p$ b) $\sim(p \wedge q)$ c) $\sim(p \vee q)$ d) $p \vee \sim q$

5. Which of the following is a contradiction?
   a) $(p \wedge q) \wedge (\sim(p \vee q))$ b) $p \vee (\sim p \wedge q)$ c) $(p \rightarrow q) \rightarrow p$ d) None of these

6. The statement $p \vee q$ is
   a) A tautology b) A contradiction c) Contingency d) None of these

7. When does the value of the statement $p(\wedge r) \Leftrightarrow (r \wedge q)$ become false?
   a) $p$is$T$, q is F b) p is, r is F c) p is F, q is $F$and r is F d) None of these

8. $(p \wedge \sim q) \wedge (\sim p \wedge q)$is
   a) a tautology b) a contradiction c) tautology and contradiction d) neither a tautology not a contradiction

9. If p always speaks against q, then $p \Rightarrow p \vee \sim q$ is
   a) A tautology b) Contradiction c) Contingency d) None of these

10. If p, q, r have truth values T, F, T respectively, which of the following is true?
   a) $(p \rightarrow q) \wedge r$ b) $(p \rightarrow q) \wedge \sim r$ c) $(p \wedge q) \wedge (p \vee r)$ d) $q \rightarrow (p \wedge r)$

11. Dual of $\left(x' \vee y'\right)' = x \wedge y$ is

a) $\left(x' \vee y'\right) = x \vee y$ b) $\left(x' \wedge y'\right)' = x \vee y$ c) $\left(x' \wedge y'\right)' = x \wedge y$ d) None of the above

12. $p \vee q$ is true when

a) Both p and q are true b) p is true and q is false c) p is false and q is true
d) All of these

13. Which of the following propositions is a tautology?

a) $(\sim p \vee \sim q) \vee (p \vee \sim q)$
b) $(\sim p \vee \sim q) \wedge (p \vee \sim q)$
c) $\sim p \wedge (\sim p \vee \sim q)$
d) $\sim q \wedge (\sim p \vee \sim q)$

14. For any two statements $p$and q, $\sim(p \vee q) \vee (\sim p \wedge q)$is logically equivalent to

a) p b) $\sim p$ c) q d) $\sim q$

15. Identify the false statement

a) $\sim[p \vee (\sim q)] \equiv (\sim p) \wedge q$ b) $[p \vee q] \vee (\sim p)$ is a tautology
c) $[p \wedge q] \wedge (\sim p)$is a contradiction d) $\sim(p \vee q) \equiv (\sim p) \vee (\sim q)$

16. $\sim[p \leftrightarrow q]$is

a) Tautology b) Contradiction c) neither (a) nor (b) d) either (a) or (b)

17. Let truth values of p be F and $q$be T. Then, truth value of $\sim(\sim p \vee q)$ is

a) T b) F c) Either T or F d) Neither T nor F

18. Which of the following statements is a tautology?

a) $(\sim q \wedge p) \wedge q$ b) $(\sim q \wedge p) \wedge (p \wedge \sim p)$ c) $(\sim q \wedge p) \vee (p \vee \sim p)$ d) $(p \wedge q) \wedge (\sim(p \wedge q))$

19. Consider the proposition : "If we control population growth, we prosper". Negative of this proposition is

a) If we do not control population growth, we prosper
b) If we control population, we do not prosper
c) We control population but we do not prosper
d) We do not control population but we prosper

20. Which of the following is not a proposition?

a) 3 is prime b) $\sqrt{2}$ is irrational
c) Mathematics is interesting d) 5 is an even integer