DPP
DAILY PRACTICE PROBLEMS

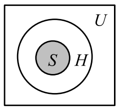
CLASS : XIth
DATE :

Solutions

SUBJECT : MATHS
DPP NO. :1

Topic :-MATHEMATICAL REASONING

1 **(c)**
The required Venn diagram of given statement is given below

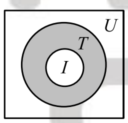


2 **(a)**
$(p \vee q) \wedge (p \vee \sim q)$
$= p \vee (q \wedge \sim q)$ (distributive law)
$= p \vee 0$ (complement law)
$= p$ (0 is identify for v)

4 **(c)**
We have
$p \rightarrow q \cong \sim p \vee q$
and, $\sim q \rightarrow \sim p \cong \sim (\sim q) \vee \sim p \cong q \vee \sim p \cong \sim p \vee q \cong p \rightarrow q$

5 **(c)**
We have,
$p \rightarrow q \cong \sim p \vee q$
$\therefore p \rightarrow \sim q \cong \sim p \vee \sim q \cong \sim (p \wedge q)$
So, option (a) is not correct
$\sim p \vee \sim q = \sim (p \wedge q)$
So, option (b) is not correct
$\sim (p \rightarrow \sim q) = \sim (\sim p \vee \sim q) = p \wedge q$
So, option (c) is incorrect

6 **(b)**
Some triangles are not isosceles.



8 **(a)**
$\sim (p \vee q) \vee (\sim p \wedge q)$
$\cong (\sim p \wedge \sim q) \vee (\sim p \wedge q)$
$\cong \sim p \wedge (\sim q \vee q) \cong \sim p \vee t \cong \sim p$

9 **(b)**
A compound sentence formed by two simple statements p and q using connective 'or' is called disjunction

12 **(c)**
By truth table

p	q	$\sim q$	$q \wedge \sim q$	$p \Rightarrow q \wedge \sim q$

T	T	F	F	F
T	F	T	F	F
F	T	F	F	T
F	F	T	F	T

Hence, it is neither a tautology nor contradiction

13 **(d)**

We have,

$p \rightarrow q \cong \sim p \vee q$

$\therefore \sim (\sim p \rightarrow q) \cong \sim (p \vee q) \cong \sim p \wedge \sim q$

16 **(d)**

$\sim (p \vee q) \equiv \sim p \wedge \sim q$

$\therefore$ 7 is greater than 4 and Paris is not in France.

17 **(c)**

From the truth table of $p \leftrightarrow q$ it is evident that $p \leftrightarrow q$ is true when p and q both are true or both are false

$\therefore$ $p \leftrightarrow \sim q$ is true when p is false and $\sim q$ is false

i. e. p is false and q is true

18 **(b)**

Let p:Pairs is in France and q: London is in England

Given, $p \wedge q$

Its negation is $\sim (p \wedge q) \equiv \sim p \vee \sim q$

Hence, paris is not in France or London is not in England.

20 **(b)**

$(p \Rightarrow q) \wedge (q \Rightarrow p)$ means $p \Leftrightarrow q$

ANSWER-KEY

Q.	1	2	3	4	5	6	7	8	9	10
A.	C	A	A	C	C	B	C	A	B	B
Q.	11	12	13	14	15	16	17	18	19	20
A.	D	C	D	A	A	D	C	B	A	B