

2) Let P: This is a great website, Q: You should not come back here. Then 'This is a great website and you should come back here.' is best represented by?

a) $\sim P \vee \sim Q$

b) $P \wedge \sim Q$

c) $P \vee Q$

d) $P \wedge Q$

$$P \wedge \sim Q$$

If the truth value of A \vee B is true, then truth value of $\sim A \wedge B$ can be

a) True if A is false

b) False if A is false

c) False if B is true and A is false

d) None of the mentioned

		<u>A \vee B</u>			
		<u>A</u>	<u>B</u>	<u>A \vee B</u>	<u>$\sim A$</u>
		T	T	T	F
		T	F	T	F
		<u>F</u>	T	T	T
		<u>F</u>	<u>F</u>	<u>F</u>	<u>F</u>

$$\sim A \wedge B$$

Let p and q be the propositions

p : It is below freezing.

q : It is snowing.

but \rightarrow and

Write these propositions using p and q and logical connectives (including negations).

a) It is below freezing and snowing. \rightarrow

$$p \wedge q$$

b) It is below freezing but not snowing. \rightarrow

$$p \wedge \sim q$$

c) It is not below freezing and it is not snowing. \rightarrow

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

d) It is either snowing or below freezing (or both). \rightarrow

$$p \vee q$$

e) If it is below freezing, it is also snowing.

$$p \rightarrow q$$

Let p , q , and r be the propositions

p : You have the flu.

q : You miss the final examination.

r : You pass the course

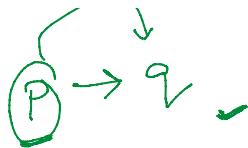
$$(p \rightarrow q) \rightarrow r$$

Let p , q , and r be the propositions

p : You have the flu.

q : You miss the final examination.

r : You pass the course.



Express each of these propositions as an English sentence.

a) $p \rightarrow q$ ✓

b) $\neg q \leftrightarrow r$

c) $q \rightarrow \neg r$

d) $p \vee q \vee r$ ✓

e) $(p \rightarrow \neg r) \vee (q \rightarrow \neg r)$

- (a) If you have the flu then you miss the final examination.
- (b) You will not miss the final examination if and only if you pass the course.
- (c) If you miss the final examination then you will not pass the course.

Q4. The number of rows in the truth table of a compound statement having 4 distinct primary statements is

(a) 8

(b) 4

✓(c) 16

(d) 32

P	q	r	s
T	T		
T	F		
F	T		
F	F		

$$\begin{array}{cccc}
 p & q & r & s \\
 \text{---} & \text{---} & \text{---} & \text{---} \\
 T & F & T & F \\
 \text{---} & \text{---} & \text{---} & \text{---} \\
 T & T & F & T \\
 T & F & T & F \\
 T & F & F & T \\
 T & F & F & F \\
 T & T & F & T \\
 T & T & F & F \\
 T & F & T & T \\
 T & F & T & F \\
 T & F & F & T \\
 T & F & F & F \\
 \end{array}
 2 \times 2 \times 2 \times 2 = 2^4 = 16$$

P	q	r	s
T	T	T	T
T	T	T	F
T	T	F	T
T	T	F	F
T	F	T	T
T	F	T	F
T	F	F	T
T	F	F	F
F	T	T	T
F	T	T	F
F	T	F	T
F	T	F	F
F	F	T	T
F	F	T	F
F	F	F	T
F	F	F	F

16

$$\begin{array}{l}
 P = 2 \\
 q = 2 \\
 r = 2 \\
 s = 2
 \end{array}$$

F | F | F | T |

Truth Table for Compound proposition :-

$\neg P \wedge q$

2^n

P	q	$\neg P$	$\neg P \wedge q$
T	T	F	F
T	F	F	F
F	T	T	T
F	F	T	F

$2^n = 4$

$P \rightarrow q$

$T \rightarrow F = F$ ✓
 $T \rightarrow T = T$
 $F \rightarrow F = T$
 $F \rightarrow T = T$

(Q)

		$(P \vee \neg q) \rightarrow q$			
		$\neg q$	$P \vee \neg q$	$(P \vee \neg q) \rightarrow q$	
		T	F	T	T
T	T	F	T	T	✓
T	F	T	T	F	✓
F	T	F	F	T	✓
F	F	T	T	F	✓

(3)
2³

16) Give the number of rows in the truth table for the compound statement.

$(p \vee q) \wedge (\neg r \vee s) \vee \neg t$

$2^5 = 32$

- A) 25 B) 10 C) 8 D) 32

$2^3 = 8$

18) If the statement None but the brave wins the race is false which of the following statements can be claimed to be true?

Select the correct code:

(A) All brave persons win the race.

(B) Some persons who win the race are not brave.

(C) Some persons who win the race are brave.

~~(A)~~ Some persons who win the race are not brave.

~~(C)~~ Some persons who win the race are brave.

(D) No person who wins the race is brave.