

Name :: Tufail Shehzad

ID :: 15824

instructor :: Saif Ullah Jan

subject :: Discrete structure

Department :: BS (CS)

MID Term Assignment

①

- is Disjunctive Predicate.

Q1) (A). Let  $P$  be statement  
"Interrupted FLAG is off."  
 $Q$  The statement Error "0"  
if  $\wedge$  the statement "Sum  
is less than 1,000 Express."  
The following sentences in  
Symbolic Notation.

(a)

1) Interrupted FLAG is off,  
Error equals 0.  $E$  Sum is  
less than 1,000

Ans:  $P \wedge Q \wedge A$

(b) Interrupted FLAG is off but  
Error is not equal to zero 0.

Ans:  $P \wedge \neg Q$

(c) Interrupted FLAG is off,  
however, Error is not 0 or  
Sum is greater than or equal  
to 1,000.

Ans:  $P \wedge (Q \vee \neg P)$

(3)

R.H.S

P	Q	r	$P \rightarrow r$	$(P \rightarrow r) \wedge (Q \rightarrow r)$
F	F	F	T	F
F	F	T	T	T
F	T	F	F	F
F	T	T	T	T
T	F	F	T	F
T	F	T	T	T
T	T	F	F	F
T	T	T	T	T

$\Rightarrow$  L.H.S = R.H.S, Satisfied.

Q2) Write the converse, inverse & Contrapositive of the following

(a) If horizontal line starts across the lake, the horizontal line swims to the island.

Conversion of (a)

(a) If horizontal line swims to the island then horizontal line starts across the lake.

Inversion of (a)

Horizontal line swims to across the lake if horizontal line not swims to island.

(4)

Continue / Position of a  
Horizontal Curve Swim to the  
island if horizontal Curve  
Swim across the lake.

(b) - If lake is Euter,  
then horizontal is monetary.

∴ Conversion (b)

If horizontal is monetary  
then lake is Euter.

∴ Inversion (b)

if lake is not euter  
then horizontal

if lake is not Euter,  
then horizontal is not monetary.

∴ Continue Position.

horizontal is not monetary  
if lake is not euter.

(2)

(d)

1. Deliberate filing is on  $\epsilon_1$   
error equal 0 but sum  
is greater than or equal  
to 1,000.

Ans:  $(\neg P \wedge Q) \rightarrow Y$ .

(e) Either 1. Deliberate filing is  
on or it's the case that  
both error equals 0.  $\epsilon_1$  sum  
less than 1,000.

Ans:  $\rightarrow P \vee Q \wedge Y$   
 $\rightarrow P \vee \neg Q \wedge Y$ .

(B) Show that  $P \vee Q \rightarrow Y$   
 $Y \equiv (P \rightarrow Y) \wedge (Q \rightarrow Y)$

5+5 Marks.

Solution:-

L.H.S

P	Q	Y	$P \vee Q$	$P \rightarrow Y$	$Q \rightarrow Y$
F	F	F	F	F	F
F	F	T	F	F	T
F	T	F	T	T	F
F	T	T	T	T	T
T	F	F	T	F	F
T	F	T	T	T	T
T	T	F	T	F	F
T	T	T	T	T	T