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Section :> A

Subject :> Discrete Structure

Question Number 1

Which of the following are propositions ?

(a) Not a Propositons.it is a command or imperative

(b) and

(c) are both Proposition

(d) Not a Proposition. It is a question.

(e) Strickly speaking is a proposition function. But may people would say it is a proposition.

(f) Not a proposition ; because the result can be either true or false.

Question Number 2

P is "x"<50";q is "x>40".

Write as simply as you can.

(a) $X \geq 50$.

(b) $X \leq 40$.

(c) $40 < X < 50$

(d) $X<50$ or $X>40$ this true for all value of X

(e) $X \geq 50$

(f) $X \geq 50$ and $X \leq 40$ this can never be true whatever the value of X

Question Number 3

(A)

(a) Everybody dislike maths.

(B)

(a) Neither 2 nor 3 is the answer.

(c) the answer is not 2 and it is not 3.

(C)

(c) someone in my class is short or fat.

Question Number 4

Construct truth table for;

(A) ~p v ~q

p	q	~p	~q	~p v ~q
T	T	F	F	F
T	F	F	T	T
F	T	T	F	T
F	F	T	T	T

(B) q^(~p v q)

p	q	~p	~p v q	q^(~pvq)
T	T	F	T	T
T	F	F	F	F
F	T	T	T	T
F	F	T	T	F

(c) p^(q v r)

p	q	r	q v r	p^(qvr)
T	T	T	T	T
T	T	F	T	T
T	F	T	T	T
T	F	F	F	F
F	T	T	T	F
F	T	F	T	F
F	F	T	T	F
F	F	F	F	F

(D) (p^q) v r

p	q	r	(p^q)	(p^q)vr
T	T	T	T	T
T	T	F	T	T
T	F	T	F	T
T	F	F	F	F
F	T	T	F	T
F	T	F	F	F
F	F	T	F	T
F	F	F	F	F

Question Number 5

~((P v ~q) v (r^(pv~q))) ≡~p^q

p	q	r	~p	~q	(pv~q)	r^(pv~q)	(pv~q)v(r^(pv~q)	~((pv~q)v(r^(pv~q)))
T	T	T	F	F	T	T	T	F
T	T	F	F	F	T	F	T	F
T	F	T	F	T	T	T	T	F
T	F	F	F	T	T	F	T	F
F	T	T	T	F	F	F	F	T
F	T	F	T	F	F	F	F	T
F	F	T	T	T	T	T	T	F
F	F	F	T	T	T	F	T	F

p	q	~p	~p^q
T	T	F	F
T	T	F	F
T	F	F	F
T	F	F	F
F	T	T	T
F	T	T	T
F	F	T	F
F	F	T	F

NOTE:> Hence the L.H.S = R.H.S because the last column of both side are same

Question Number 6

Use the Laws of logical propositions to prove that.

(z^w)v(~z^w)v(z^~w)≡z v w

= (z ^ w) v (z^ ~w) v (~z ^ w)	using commutative Law
= (z ^ (w v ~w)) v (~z ^ w)	using Distributive Law
= (z^ T) v (~z ^ w)	using Complement Law
= z v (~z ^ w)	using Identity Law
= (z v ~z) ^ (z v w)	using Distributive Law
= T ^ (z v w)	using Complement Law
= (z v w) ^ T	using Commutative Law
= z v w	using Identity Law

THE END