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DEPARTMENT : COMPUTER SCIENCE

PROGRAM : SOFTWARE ENGG

SEMESTER : 2ND

SECTION : A

SUBJECT : DISCRETE STRUCTURE

Question no 1

Which of the following are propositions ?

(a) is not a proposition. (It is a command, or imperative.)

(b) and

(c) yes, this is propositions.

(d) is not a proposition.

(e) yes this is proposition.

(f) is not a proposition

Question no 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 $x > 40$. true.
(e) $x \geq 50$ Don't need to say
(b) (f) ***in*** *addition , that* $x > 40$ $x \geq 50$ and $x > 40$

QUESTION NO 3

(A)

(a) some people dislike maths

(B)

(b) The answer is not 2 or it is not 3

© The answer is not 2 and not 3

(C)

(d) No one in my class is tell and thin

Question no 4

Construct truth tables for:

(A) $\neg p \vee \neg q$

$\neg p$	q	$\neg p$	$\neg q$	$\neg p \vee \neg q$
T	T	F	F	F
T	F	F	T	T
F	T	T	F	T
F	F	T	T	T

(B) $q \wedge (\neg p \vee q)$

p	q	~p	~p v q	q^(~p v q)
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^ (q v r)
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) v r
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 no 5

Use truth tables to show that:

¬((*p* ∨ ¬*q*) ∨ (r ^ (*p* ∨ ¬*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	T	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

Question no 6

Use the laws of logical propositions to prove that:
$(z \wedge w) \vee (\neg z \ w) \vee (z \wedge \neg w) \equiv z \vee w$
State carefully which law you are using at each stage

= (z^w) v(z^w)v(z^~w(~x^w) commutative law

=(z^(wv~w))v (~z^w) Distributive law

=(x^T)v(~z^w) complement law

=xv(~z^w) identity law

=(zv~z)^(z v w) distributive law

=T^(z v w) complement law

=(z v w)^T commutative law

= z v w identity law

THE END