Day: M T W T F S PO Date: —/—/—

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Bs (SE) Section (B)

Q.1

Which of the following are Proposition?

Ans

(a) Commands are not statement.
(b) False
(c) True
(d) Not a statement
(e) False
(f) Not a statement.

Q.No2

P is $x < 50$: P is $x > 40$

Write Simply as you Can.

(a) x is not < (less than) 50.
(b) x is not > (greater than) 40.
(c) x is < 50 and x is > 40
~~(d) x is not~~
(d) x is < 50 or x is > 40
(e) x is not < 50 and x is > 40
(f) x is not < 50 and x is not > 40.

Q.3 in each part of this Question a proposition p is defined. Which of the statements that follow the definition correspond to the proposition $\neg p$? (There may be more than one correct answer.)

(a)

a Some people dislike Maths

(b)

b The answer is not 2 or it is is not 3.

(c)

b No-one in my class is tall and thin.

Q.4

Construct truth tables for.

(a) [redacted] $(\sim P \vee \sim q)$

P	q	~P	∨q	~p∨~q
T	T	F	F	F
T	F	F	T	T
F	T	T	F	T
F	F	T	T	T

(b) $q \wedge (\sim P \vee q)$

P	q	~P	~p∨q	q∧(~p∨q)
T	T	F	T	T
T	F	F	F	F
F	T	T	T	T
F	F	T	T	F

~~(c) $P \wedge (q \vee r)$~~

(c) $p \wedge (q \vee r)$

p	q	r	$q \vee r$	$p \wedge (q \vee r)$
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) $(p \wedge q) \vee r$

p	q	r	$(p \wedge q)$	$(p \wedge q) \vee r$
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

Day: M T W T F S

P.5

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Q.5 Use truth tables to show that:

p	q	r	~p	q∨~q	p∨~q	r∧(p∨~q)	(p∨~q)∨(p∨q)	(p∨~q)∨(p∨q)
T	T	T	F	F	T	T	T	F
T	T	T	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	T	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

in each case the result is F, F, F, F, T, T, F, F

Checked By: ____ Points: ____ Excellent ☐ Good ☐ Need Improvement

Q.6 (P.6)

$(Z \wedge W) \vee (\sim Z \wedge W) \vee (Z \wedge \sim W)$

$= (Z \wedge W) \vee (Z \wedge \sim W) \vee (\sim Z \wedge W)$ Commutative law

$= (Z \wedge (W \vee \sim W)) \vee (\sim Z \wedge W)$ Distributive law

$= (Z \wedge T) \vee (\sim Z \wedge W)$ Complement law

$= Z \vee (\sim Z \wedge W)$ Identity law

$= (Z \vee \sim Z) \wedge (Z \vee W)$ Distributive law

$= T \wedge (Z \vee W)$ Complement law

$= (Z \vee W) \wedge T$ Commutative law

$= Z \vee W$ Identity law

The end

Checked By:.....Parents:.....Excellent ☐ Good ☐ Need Impro