

Peperiksaan Akhir Sesi Disember 2016

Soalan 1

a i) Next year is 2018

- Proposition

ii) Perak is the biggest state in Peninsular Malaysia

- Proposition

iii) What is your name?

- not proposition

iv) Don't miss me too much!

- not proposition.

v) Potato chip is the most delicious food in the world

- proposition

b. i) Prepare a truth table for the proposition $(P \vee \neg q) \rightarrow (q \wedge r)$ and show whether the proposition is tautology or not.

P	q	r	$\neg q$	$P \vee \neg q$	$q \wedge r$	$(P \vee \neg q) \rightarrow (q \wedge r)$
T	T	T	F	T	T	T
T	T	F	F	T	F	F
T	F	T	T	T	F	F
T	F	F	T	T	F	F
F	T	T	F	F	T	T
F	T	F	F	F	F	T
F	F	T	T	T	F	F
F	F	F	T	F	F	F

$\therefore$ not tautology

ii) $f(x)$ = x is out of service

$B(x)$ = x is busy

$L(y)$ = y is lost

$Q(y)$ = y is queued

x = all printer

$$ii. a.) \forall x B(x) \leftrightarrow \exists y a(y)$$

= if all print is busy it and only if some printer is queues

$$b) \exists y (a(y) \wedge L(y)) \rightarrow \sim \forall x F(x) \text{ iff}$$

= if some printer jobs is queued then some printer jobs is lost

$$c) \forall x B(x) \vee (\forall y a(y) \rightarrow \exists y L(y))$$

= if all printer is busy or all printer jobs are queued then some printer job are lost

iii) Let u = siti studies hard alone

v = Siti is a lonely girl

w = will have many friend

u

$u \rightarrow v$

$u \rightarrow \sim w$

$\sim w$

step

u

$u \rightarrow w$

v

v

$v \rightarrow \sim w$

$\sim w$

Rule

premise

premise

modus ponens

premise

modus ponens

Strongly advise you to write properly!