



YOGYAKARTA STATE UNIVERSITY
FACULTY OF MATHEMATICS AND NATURAL SCIENCES

FINAL EXAM

COURSE	: LOGIC AND SET	LECTURER	: MUSTHOFA, M.Sc
CODE	: MAA 301	DAY & DATE	: TUESDAY/ 10 JAN 2012
CLASS	: P MAT INT 2011	DURATION	: 100 ' (07.30-09.10)
SEMESTER	: 1	ROOM	: D07 310

1. Without truth table, prove that the following sentence is tautology :

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

2. One day, Iwan lost his math book, but he is sure that :

- ❖ If he reads magazine in bedroom, then his math book under the pillow.
- ❖ When he reads magazine, he doesn't see his math book
- ❖ If he reads magazine in the kitchen, then his math book is on the computer table
- ❖ He reads magazine in bedroom or he reads magazine in the kitchen
- ❖ If his math book under the pillow then he sees his math book when he reads magazine.

Please help Iwan to find his math book.

3. In survey of 60 people, it was found that :

25 read *Soccer* magazine, 26 read *Kompas*, 26 read *Tempo*,

9 read both *Soccer* and *Tempo*, 11 read both *Soccer* and *Kompas*, 8 read both *Kompas* and *Tempo*,

3 read all three magazines.

Find the number of people who read exactly one magazine.

4. Prove that $A - B \subseteq A \cup B$

5. If a function $f: A \rightarrow B$ and $g: B \rightarrow C$ both are injective, prove that $g \circ f$ is also injective.

GOOD LUCK

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