

EASTERN UNIVERSITY, SRI LANKA

FIRST YEAR SECOND SEMESTER EXAMINATION IN SCIENCE (2005/2006 & 2006/2007))

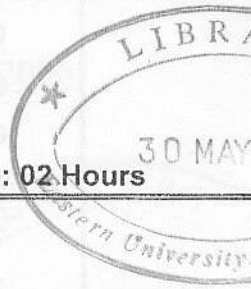
(MARCH/ APRIL, 2008)

CS 106 – COMPUTER ORGANIZATION

(PROPER & REPEAT)

Answer all Questions

Time: 02 Hours



Question (01)

- (i) What is computer Architecture? Explain Von Neumann Architecture .
- (ii) Explain Memory registers, Instruction register and Accumulators.
- (iii) Explain multilevel Architecture.
- (iv) Explain the operations of a typical computer system.

Question (02)

- (i) Explain primary storage ,secondary storage, off-line storage and Tertiary storage with diagram.

What is the purpose of having a cache memory in a computer system?

- (ii) What is a bus? What are the functions of the following buses?

Data bus, Address bus, Control bus

Question (03)

- (i) State the distributive law in Boolean algebra and verify the law using truth table.
- (ii) State and prove the *absorption law* algebraically.
- (iii) Represent the Boolean expression $(X + Y) (Y + Z) (X + Z)$ using NOR gate only.
- (iv) State *DeMorgan's Laws*. Verify one of the *DeMorgan's laws* using *truth tables*.
- (v) Write the dual of the *Boolean expressions* $(U + W) (V' U + W)$ and $A + B' . C$.
- (vi) Write the Product of Sum form of the function $H(U, V, W)$, truth table representation of H is as follows.

U	V	W	H
0	0	0	1
0	0	1	0
0	1	0	1
0	1	1	0
1	0	0	0
1	0	1	1
1	1	0	0
1	1	1	1

Question 04

- (i) Given the following truth table, derive a sum of product (SOP) and Product of Sum (POS) form of Boolean expression from it.

A	B	C	F (A. B. C)
0	0	0	1
0	0	1	1
0	1	0	0
0	1	1	1
1	0	0	0
1	0	1	1
1	1	0	1
1	1	1	0

- (ii) Obtain a simplified form for the following Boolean Expression using Karnaguth Map :
- $$F(a, b, c, d) = \sum (0, 1, 2, 4, 5, 7, 8, 9, 10, 11, 14).$$
- (iii) Draw the logic circuit for a Half Adder using NAND gates only.
- (iv) Interpret the following Logic Circuit as Boolean Expression :

