MCS-012

MCA (Revised)

Term-End Examination

December, 2007

MCS-012 : COMPUTER ORGANISATION & ASSEMBLY LANGUAGE PROGRAMMING

Time : 3 hours *Maximum Marks : 100*

(Weightage 75%)

Note : *Question no. 1 is* ***compulsory*** *and carries 40 marks. Attempt any* ***three*** *questions from the rest.*

1. (a) Simplify the boolean function in SOP & POS forms by means of K-maps and also draw the logic diagram $F(A, B, C, D) = \Sigma (0, 2, 8, 9, 10, 11, 14, 15)$ *16*

(b) Discuss the operation of Programmed I/O and Interrupt driven I/O techniques using flow chart. Compare them briefly. *8*

(c) Write an Assembly Language program to search a given number in a group of 50 numbers stored in the memory. Display the result in a convenient form. *8*

(d) Design and explain a 4 bit ring counter using suitable flip-flops. *8*

2. (a) Assume a computer having 64 Word RAM (1 Word = 16 bits) and Cache memory of 8 blocks (block size = 32 bits). How can we find Main Memory Location '25' in cache if (a) Associative Mapping, (b) Direct Mapping, and (c) 2-way Set Associative mapping is used ? *10*

(b) Discuss the differences between *10*

(i) SDRAM & RDRAM

(ii) SIMM & DIMM

3. (a) What are the functions of an I/O interface ? *5*

(b) What is a device driver ? Differentiate between device controllers and device drivers. *5*

(c) Explain the use of the following registers for a computer system : *10*

(i) MAR

(ii) MBR

(iii) PC

(iv) IR

(v) AC

Take an example instruction and break the fetch & execution of this instruction to indicate the usage of these registers stepwise.

4. (a) Discuss the various Addressing schemes used in 8086, with the help of examples. *10*

(b) What do you understand by micro-programming ? Discuss about micro-programmed control unit, using a block diagram. Compare it with the hardwired control unit. *10*

5. (a) Explain the structure of 8086 CPU with BUS Interface unit and Execution unit. *10*

(b) Write a short note on programming, in Assembly Language, with loops and comparison operations. *10*