Register Number :

Name of the Candidate :

8 0 9 7

M.C.A. DEGREE EXAMINATION, 2007

(SECOND SEMESTER)

(PAPER - IX)

220. DIGITAL LOGIC AND COMPUTER ORGANISATION

May] [Time : 3 Hours

Maximum : 100 Marks

Answer any FIVE questions.
All questions carry equal marks.
(5 × 20 = 100)

1. (a) Convert the following :

(i) $(F2EC)_{16}$ = $(\ )_2$.

(ii) $(6747)_{10}$ = $(\ )_{16}$.

(iii) $(637)_8$ = $(\ )_{10}$.

(iv) $(5A3)_{16}$ = $(\ )_8$.

(v) $(110111011)_2$ = $(\ )_{10}$.

Turn over

(b) State and prove Demorgan's theorem.

2. (a) What is full - adder ? How is a full - adder built using half - adders ? Write the truth table for a full - adder and develop its logic network.

(b) Draw the schematic diagram of a master - slave J - K flip - flop. Discuss its working principle. What are its advantage over other type of flip - flop ?

3. (a) Give a short note about :

(i) Cache memory.

(ii) Virtual memory.

(b) What is meant by ROM ? Explain in detail about different types of ROM.

4. (a) Explain with suitable example the various addressing modes used in a computer.

(b) State the advantages of parameters to subroutines. Explain it using assembly language programs.

5. (a) Explain the following :

(i) Stacks and queues.

(ii) Instructions and instruction sequencing.

(b) Discuss in detail about dynamic RAM and static RAM.

6. (a) Explain in detail about the fundamental concepts of a processing unit.

(b) Describe the execution of a complete instruction with an example.

7. (a) Describe the working of micro programmed control unit.

(b) What are interrupt ? Why are they used ? Explain what happens when a computer recognizes an interrupt.

8. (a) Define DMA. Explain the working procedure of DMA with the help of diagram.

(b) Discuss in detail about the standard I/O interfaces.