

Y 1502

M.C.A. DEGREE EXAMINATION, AUGUST/SEPTEMBER 2008.

First Semester

DMC 1601 COMPUTER ORGANIZATION

Time : Three hours

Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. Give the Truth Table for XOR with its algebraic function.
2. What is gray code?
3. Define de multiplexer.
4. Describe the selective complement operation.
5. Differentiate a register from buffer.
6. What is an assembler pseudo instruction?
7. What are the modes of data transfer in peripheral devices.
8. List the steps involved in interrupt cycle.
9. Write short notes on magnetic disc.
10. What is a control word?

PART B — (5 × 16 = 80 marks)

11. (a) (i) Simplify the following Boolean function using K-map.
- (1) sum of products form and
 - (2) product of sums form with their logic diagrams and the
- $$F(A, B, C, D) = \Sigma(0, 1, 2, 5, 8, 9) \quad (8)$$
- (ii) Derive the truth table for a half adder circuit and draw the circuit diagram. (8)

Or

- (b) (i) Explain the operation of RS flip flop with the logical diagram and characteristic table. (8)
- (ii) Draw and explain the state diagram for binary counter and give its excitation table. (8)
12. (a) (i) Draw the block diagram for a 4 bit bi-directional shift register with parallel load using NOR gates. (8)
- (ii) Show the external connections of four IC binary counters with parallel load to produce a 16 bit register with increment and load capabilities. (8)

Or

- (b) (i) Design a typical stage that implements the following operations when the destination is also the source register :
- (1) Complement
 - (2) OR
 - (3) AND
 - (4) XOR. (8)
- (ii) Draw and explain the 4 bit binary parallel adder with an example that demonstrates the operation. (8)
13. (a) (i) What is an interrupt? Explain the interrupt cycle with a flow chart. (10)
- (ii) Explain the steps involved in fetch cycle. (6)

Or

- (b) Write an assembly language program for the multiplication of two positive numbers, explain it with a flow chart. (16)

(a) Explain asynchronous serial transfer with necessary diagrams. (16)

Or

(b) Explain the DMA operation with the flowchart and register configuration. (16)

(a) Explain cache memory with the mapping functions. (16)

Or

(b) Explain various addressing mode with example. (16)