2107

Subject Code—7278

M.C.A. (Second Year) EXAMINATION

COMPUTER ORGANIZATION AND ARCHITECTURE

MCA-204

Time : 3 *Hours* *Maximum Marks* : 100

Note : Attempt any *Five* questions. All questions carry equal marks.

1. (a) Design 4-bit adder-subtractor circuit using four full adder circuit. **10**

   (b) Explain memory operation in the following statements :

   (i) $R_2 \leftarrow M[AR]$

   (ii) $M[AR] \leftarrow R_3$

   (iii) $R_5 \leftarrow M[R_5]$. **10**

2. What is Instruction ? How does it differ from microinstruction ? Discuss instruction cycle along with its flow chart in detail. **20**

3. Design a microprogrammed control unit along with microprogrammed sequences. **20**

4. (a) What is addressing ? Discuss various addressing modes. **10**

   (b) What must the Address field of an indexed addressing mode instruction be to make it same as a register indirect mode instruction ? **10**

5. (a) Discuss data transfer and control instructions. **10**

   (b) What is Interrupt ? Discuss its various types. **10**

6. (a) What is associative memory ? How read and write operations are performed in it ? **10**

   (b) Discuss various mapping techniques used in cache memory system. **10**

7. Explain various modes of data transfer techniques in CPU. **20**

8. Write short notes on the following :

   (a) Stack Organization

   (b) Microprogrammed Control Unit. **20**