Roll No. .....

Subject Code—669-X

M.C.A. (Second Year) EXAMINATION

(5 Years Integrated Course)

(Re-appear)

MCA-204

COMPUTER ORGANIZATION & ARCHITECTURE

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

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

1. (a) Draw the block diagram of the hardware that implement the following register transfer statement : **10**

$$yT_2 : R_2 \leftarrow R_1,\ R_1 \leftarrow R_2.$$

(b) Discuss various shift micro operations. Consider the value of R = 11011101, determine the sequence of binary values in R after a logical shift left, followed by a circular shift right, followed by logical shift right and a circular shift left. **10**

2. (a) What are memory reference instructions and how are these different from register reference instructions ? Give examples for both. **10**

(b) What is microprogram sequences ? Explain. **10**

3. (a) Explain the hand wired control with design by sequence counter. **10**

(b) Draw the circuit diagram of micro-programmed control unit for two's complement multiplies and explain its operations. **10**

4. (a) Explain the write through and write back method to write into Cache memory. **10**

(b) A two way set associative cache memory uses block of four words. The Cache can accommodate a total of 2048 words from main memory. The main memory size is 128k×32.

(i) Formulate all pertinent information required to construct the Cache memory.

(ii) What is the size of Cache memory ? **10**

5. (a) Draw the flow chart of instruction cycle including interrupt cycle and explain it. **10**

(b) Describe CISC and RISC characteristics in detail. **10**

6. Explain various types of addressing modes with help of examples. **20**

7. (a) Draw and explain the working of DMA transfer in a computer system. **10**

(b) Define the term hit ratio ? Explain different mapping techniques in organization of cache memory. **10**

8. Write short notes on the following :

(a) Macros

(b) Interleaved memory

(c) Stack organization

(d) Types of interrupt. 20