Total No. of Pages : 04 Roll No. .....

MCA-05/PGDCA-05/M.Sc. (IT)-05

Computer Organization and Architecture

Second Semester, Examination-2019

Time : 3 *Hours* *[Maximum Marks : 80*

Note : This paper is of Eighty (80) marks divided into two (02) Sections A and B. Attempt the questions contained in these sections according to the detailed instructions given therein.

Section–A

Long Answer Types Questions

Note : Section 'A' contains Five (05) long-answer-type questions of Fifteen (15) marks each. Learners are required to answer any three (03) questions only. **(3×15=45)**

1. What is the difference between isolated I/O and memory-mapped I/O? Write the advantages and disadvantages of each in detail.

2. What is Virtual Memory? Explain the address translation mechanism of any typical processor used in contemporary computer system.

3. A computer uses a memory unit with 256 K words of 32 bits each. A binary instruction code is stored in one word o memory. The instruction has four parts : an indirect bit, an operation code, a register code part to specify one of 64 registers, and an address part. Answer the following questions :

   (a) How many bits are there in the operation code, the register code part, and address part ?

   (b) Draw the instruction word format and indicate the number of bits in each part.

   (c) How many bits are there in the data and address inputs of the memory?

4. Give five examples of external interrupts and five examples of internal interrupts. What is the difference between a software interrupt and a subroutine call?

5. Write short notes on any three from the following :

   (a) Cache Memory

   (b) Addressing Modes

   (c) CPU registers

   (d) Data Path

Section–B

Short Answer Types Questions

Note : Section 'B' contains Eight (08) short-answer-type questions of Seven (07) marks each. Learners are required to answer any Five (05) questions only. **(5×7=35)**

1. Briefly describe the hardware organization of associative memory. Also discuss the read and write operation for the associative memory.

2. Write about memory hierarchy in a computer system.

3. Explain the procedure to initiate DMA by CPU.

4. Explain the differences between sequential access and direct access storage devices with the help of example.

5. Draw a diagram of a bus system with the use of three state buffers and a decoder.

6. Draw a flow chart that explains the complete operations of how an instruction is fetched, decoded & executed in a computer.

7. Compare RISC and CISC processors.

8. Explain the term Instruction Pipelining in computer organization and architecture.