P-883

Total Pages : 4   Roll No. ....

MCS-602

Computer System Architecture

Master of Computer Application (MCA)

3rd Semester Examination, 2023 (June)

Time : 2 Hours]   **Max. Marks : 70**

Note : This paper is of Seventy (70) marks divided into two (02) Sections A and B. Attempt the questions contained in these sections according to the detailed instructions given therein. Candidates should limit their answer to the questions on the given answer sheet. No additional (B) answer sheet will be issued.

SECTION–A

(Long Answer Type Questions)

Note : Section 'A' contains Five (05) long answer type questions of Nineteen (19) marks each. Learners are required to answer any Two (02) questions only.

(2×19=38)

1. Answer the following:

 (a) Design an adder to add two 4-bit numbers.

 (b) With block diagram show how a full adder can be designed by using two half adders and one OR gate.

2. Write a short note on the following:

 (a) ASCII coding scheme. (6)

 (b) EBCDIC coding scheme. (6)

 (c) UNICODE coding scheme. (7)

3. Answer the following:

 (a) Define memory hierarchy?

 (b) Why removable media is used?

 (c) What is Main Memory? How it can be classified?

 (d) Define word length in a computer.

 (e) What is a binary storage cell? Explain.

4. Answer the following:

 (a) What is virtual memory? Explain the need for virtual memory?

 (b) What is physical address and logical address ? Explain.

 (c) Explain with the help of a diagram how virtual address can be mapped into physical address using mapping.

5. Answer the following :

(a) What is an instruction format? Explain different types of instruction formats in detail.

(b) What is the Processor Status Word (PSW)? Discuss common fields or flags of PSW.

(c) Discuss about the hardwired implementation of the control unit.

(d) How an interrupt mechanism works- explain briefly?

SECTION–B
(Short Answer Type Questions)

Note : Section 'B' contains Eight (08) short answer type questions of Eight (08) marks each. Learners are required to answer any Four (04) questions only.   (4×8=32)

1. Answer the following :

(a) Differentiate between an analog and a digital signal.

(b) What are the functions of programmed control unit?

2. What are the technologies used in the first four generations of the computer?

3. What are replacement algorithms? What are the two strategies for handling write requests by the cache memory?

4. What is a mapping function? Explain various types of mapping function for cache memory.

5. What are the five states of a process? Explain with the help of a diagram.

6. Explain in detail about different instruction types and instruction sequencing.

7. Explain the working of 16-bit common bus.

8. Briefly explain the techniques for performing I/O.

————————