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Total Pages : 4

Roll No.

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

Computer Organization and Architecture

Master of Computer Applications/ P.G. Diploma in Computer Applications/Master of Science in Information Technology
(MCA/PGDCA/MSc.IT-11/12/16/17)

Second Semester Examination, 2022 (June)

Time : 2 Hours]

Max. 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 Type Questions)

Note : Section 'A' contains Five (05) long answer type questions of Twenty (20) marks each. Learners are required to answer any Two (02) questions only.

(2×20=40)

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

2. What is the difference between isolated I/O and memory-mapped I/O? Write the advantages and disadvantages of each in detail.
3. Give five examples of external interrupts and five examples of internal interrupts. What is the difference between a software interrupt and a subroutine call?
4. A computer uses a memory unit with 256K words of 32 bits each. A binary instruction code is stored in one word of 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 the 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?
5. Write short notes on any *three* from the following :
- (a) Paging.
 - (b) Direct Mapping.
 - (c) Multiplexer.
 - (d) Parallel Processing.

SECTION-B

(Short Answer Type Questions)

Note : Section 'B' contains Eight (08) short answer type questions of Ten (10) marks each. Learners are required to answer any Four (04) questions only. (4×10=40)

1. What are the building blocks of Central Processing Unit? Briefly discuss the functions of each unit.
2. Write about memory hierarchy in a computer system.
3. What is a Device driver? Differentiate between Device Controllers and Device drivers.
4. What do you understand by the terms BIOS? Explain simple function of BIOS.
5. Explain in detail the different mappings used for cache memory. Compare them.
6. Draw a diagram of a bus system with the use of three state buffers and a decoder.
7. Draw a flow chart that explains the complete operations of how an instruction is fetched, decoded & executed in a computer.

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