

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–11/16,
PGDCA–11/16, M.Sc.(IT)–12/16)
Second Semester, Examination, 2018

Time : 3 Hours

Max. Marks : 80

Note : This paper is of **eighty (80)** marks containing **three (03)** Sections A, B and C. Learners are required to attempt the questions contained in these Sections according to the detailed instructions given therein.

Section–A

(Long Answer Type Questions)

Note : Section ‘A’ contains four (04) long answer type questions of nineteen (19) marks each. Learners are required to answer *two* (02) questions only.

1. (a) Explain *four* possible hardware schemes that can be used in an instruction pipeline in order to minimize the performance degradation caused by instruction branching.

(B-86) P. T. O.

- (b) Explain Memory hierarchy in computer system.
2. (a) A system uses a control memory of 1024 word of 32 bits each. The microinstruction has three fields of total size 16 bits.
- (1) How many bits are there in the branch address field and the select field ?
 - (2) If there are 16 status bits in the system, how many bits of the branch logic are used to select a status bit ?
 - (3) How many bits are left to select an input for the multiplexer ?
- (b) What is the difference between Full-Adder and Half-Adder ? Explain.
3. (a) What is the difference between virtual and associative memory ? Explain.
- (b) Several microcomputer come with basic 256-K word 8 bit memory. How many flip-flops are in (1) The memory registers and (2) The memory buffer register ?
4. (a) What do you mean by inter-register transfer ? Also discuss bus transfer.
- (b) Discuss different types of RAM. How many 128 bytes RAM chips are required to provide a memory of 2048 bytes ?

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 *four* (04) questions only.

1. What do you understand by Multi-Processor Organization ?
2. What are the basic computer registers ? Explain each of them.
3. What is full subtractor ? Explain.
4. What are the major characteristics of RISC and CISC computers ? Explain.
5. What is the difference between a direct and indirect address instruction ?
6. What is the difference between SISD and SIMD ? Explain.
7. What is Magnitude Comparator ? Explain.
8. What is time space diagram ? Explain.

Section-C

(Objective Type Questions)

Note : Section 'C' contains ten (10) objective type questions of one (01) mark each. All the questions of this Section are compulsory.

Choose the correct answer :

1. The Digital Computer use the _____.
 - (a) Binary number system
 - (b) Octal number system
 - (c) ASCII code
 - (d) None of the above

2. The manipulation of binary information is done by logic circuits called _____.
 - (a) Control unit
 - (b) Memory
 - (c) Logic gates
 - (d) None of these

3. The simplification of Boolean expression is done by and _____.
 - (a) Algebraic method
 - (b) K-map
 - (c) Both (a) and (b)
 - (d) None of these

4. A register is a group of _____ capable of storing one bit of information.
 - (a) Logic gates
 - (b) Memory
 - (c) Flip-flops
 - (d) PLA

5. Virtual memory consists of :
 - (a) Dynamic RAM
 - (b) Static RAM
 - (c) SODIMM
 - (d) DDR2

6. A memory unit accessed by content is called an _____ memory.
 - (a) Direct

- (b) Associative
 - (c) Indirect
 - (d) None of these
7. AND, OR & NOT are :
- (a) Logic gates
 - (b) Circuit
 - (c) Logic unit
 - (d) None of these
8. The secondary memory is slower than that of main memory but has :
- (a) Smaller Size
 - (b) Larger Size
 - (c) Larger than CPU
 - (d) None of these
9. MIMD stands for :
- (a) Multiple Instruction Multiple Data
 - (b) Multiple Instruction Memory Data
 - (c) Memory Instruction Multiple Data
 - (d) Multiple Information Memory Data
10. Binary digits are called :
- (a) 0 and 1
 - (b) I and II
 - (c) 0 or 1
 - (d) All of the above