 Roll No. ……..

MCA–05/PGDCA–05/M.Sc.IT–05

Computer Organization and Architecture

Master of Computer Application/P. G. Diploma in Computer Application/Master of Science in Information Technology
(MCA–11/16, PGDCA–11/16, M. Sc.(IT)–12/16)
Second Semester, Examination, 2017

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. Answer the following :
   (a) Differentiate between Computer Organization and Computer Architecture.
   (b) Define the following :
      (i) Micro operation
      (ii) Micro instruction
      (iii) Micro program
      (iv) Microcode

2. Answer the following :

   (a) What is the difference between hardwired control and microprogrammed control ? Is it possible to have a hardwired control associate with a control memory ?

   (b) What is arithmetic pipeline ? Explain the arithmetic pipeline for floating-point addition and subtraction.

3. Answer the following :

   (a) Why are the read and write control lines in a DMA control bidirectional ? What purpose are use as inputs ? Under what condition and for what purpose are they used as outputs ?

   (b) Explain instruction set, instruction format word and types of instruction.

4. Answer the following :

   (a) What are the major characteristics of RISC and CISC computers ?

   (b) What is addressing mode ? Explain various addressing modes.

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 mean by associative memory page table in virtual memory ?

2. What is the difference between a direct and indirect address instruction ?
3. What is Control Unit ? Design and explain the control unit of basic computer.
4. What is Full Adder ? Write truth table and logic diagram of full adder.
5. What do you mean by pipeline in CPU design ? What are the major difficulties that causes the instruction pipeline to deviate from its normal operation ?
6. What is the difference between cache and virtual memory ?
7. Explain the design principles of memory hierarchy.
8. Explain Parallel Processing with block diagram.

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 uses the :
   (a) Digital Number System
   (b) Decimal Number System
   (c) Binary Number System
   (d) None of these
2. Binary digits are called :
   (a) 0 and 1
   (b) I and II
   (c) 0 or 1
   (d) All of the above

3. Which of the following is algebra that deals with binary variables and logic operations ?
   (a) Boolean algebra
   (b) Ordinary algebra
   (c) Binary algebra
   (d) None of these

4. A circuit is a connected arrangement of logic gates with a set of inputs and outputs :
   (a) Sequence circuit
   (b) Combination circuit
   (c) ALU
   (d) None of these

5. A register is a group of ..... capable of storing one bit of information.
   (a) Flip Flop
   (b) RAM
   (c) Encoder
   (d) All of the above

6. A memory unit accessed by content is called a/an ..... memory.
   (a) ROM
   (b) Programmable
   (c) Virtual
   (d) Associative

7. The simplification of Boolean expression is done by :
   (a) K-Map

(b) Boolean algebra

(c) Both (a) and (b)

(d) None of these

8. AND, OR and NOT are :

(a) Logic Gates

(b) Truth Table

(c) Register

(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. Virtual memory consists of :

(a) Static RAM

(b) Dynamic RAM

(c) Magnetic memory

(d) None of these