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, 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. Answer the following :

    (a) What is counter ? Draw a block diagram of any four bit counter.

    (b) Is it possible to design a microprocessor without a micro program ? Are all microprogrammed computers also microprocessor ?

2. Answer the following :

   (a) A computer has 32-bit instructions and 12 bit-addresses. If there are 250 address instructions, how many one-address instruction can be formulated ?

   (b) What is the difference between Full-Adder and Half-Adder ?

3. Answer the following :

   (a) What is instruction cycle ? How is it different from execution cycle ? Explain.

   (b) What are data transfer techniques ? Explain the difference between synchronous and asynchronous transmission of data.

4. Answer the following :

   (a) What are the different storage technologies ? Explain memory array organization.

   (b) Draw a space-time diagram for a six-segment pipeline showing the time it takes to process eight tasks.

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 is the difference between computer organization and architecture ?

2. Design and explain the control unit of a computer.

3. Explain memory hierarchy in computer system.

4. What is the difference between SISD and SIMD ?

5. What is Input Output processor (I/O) ? Explain.

6. What are different Logic gates ? Draw their graphic symbol and algebraic function.

7. What is the difference between Combinational circuit and Sequential circuit ? Explain by giving example.

8. What is Register ? 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.

1. Which of the following is highest in the memory hierarchy ?

    (a) Cache Memory

    (b) Secondary Memory

    (c) Registers

    (d) RAM

2. The addressing mode used in an instruction DIV X,Y, is :

    (a) Absolute

    (b) Indirect

    (c) Index

    (d) None of these

3. Which among the following is volatile ?

    (a) ROM

(b) EPROM

(c) DROM

(d) RAM

4. Flip Flop is used to store :

(a) One bit data

(b) Two bit data

(c) Both one bit and two bit data

(d) None of these

5. Virtual memory consists of :

(a) Static RAM

(b) Dynamic RAM

(c) Magnetic RAM

(d) None of these

6. A group of bits that tell the computer to perform a specific operation is known as :

(a) Instruction code

(b) Micro-operation

(c) Accumulator

(d) Register

7. In computers, subtraction is generally carried out by :

(a) 9's complement

(b) 10's complement

(c) l's complement

(d) 2's complement

8. ALU and Control Unit are the part of :

(a) CPU

(b) Mother Board

(c) RAM

(d) None of these

9. Which of the following is not a combinational circuit ?

(a) Decoder

(b) Encoder

(c) Flip Flop

(d) None of the above

10. Which of the memory is the fastest memory ?

(a) RAM

(b) Registers

(c) Cache Memory

(d) ROM

(A-22)