Total No. of printed pages = 5

63/2 (SEM-1) MCA 1·2

2021

(held in 2022)

MCA

(Theory Paper)

Paper Code : MCA-1·2

(Digital System and Computer Organization)

Full Marks – 75

Time – Three hours

The figures in the margin indicate full marks for the questions.

1. Choose the correct one : 1×10=10

   (i) The main components (or basic units) of a computer system are

   (a) Input / Output unit

   (b) Central Process Unit (CPU)

   (c) Memory unit (Storage unit)

   (d) All of the above

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(ii) What is computer organization ?

(a) Structure and behaviour of a computer system as observed by the user

(b) Structure of a computer system as observed by the developer

(c) Structure and behaviour of a computer system as observed by the developer

(d) All of the mentioned

(iii) To reduce the memory access time we generally make use of _____.

(a) SDRAM's

(b) Heaps

(c) Cache's

(d) Higher capacity RAM's

(iv) Which of the following operations is / are performed by the ALU ?

(a) Data manipulation

(b) Exponential

(c) Square root

(d) All of the above

(v) Which of the following circuit is used to store one bit of data ?

(a) Flip Flop (b) Decoder

(c) Encoder (d) Register

(vi) Which of the following circuit convert the binary data into a decimal ?

(a) Decoder (b) Encoder

(c) Code converter (d) Multiplexer

(vii) Where is the document temporarily stored during working on a document on PC ?

(a) ROM (b) CPU

(c) RAM (d) Flash Memory

(viii) Where is the decoded instruction stored ?

(a) Registers (b) MDR

(c) PC (d) IR

(ix) The Program Counter is also called as

(a) Instruction Pointer

(b) Data Counter

(c) Memory Pointer

(d) None of the above

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(x) What does one thousand bytes represent ?

(a) Kilobyte (KB)

(b) Megabyte (MB)

(c) Gigabyte (GB)

(d) Terabyte (TB).

2. Answer any *five* of the following questions : 2×5=10

(i) Write about a Serial Adder.

(ii) Draw the Memory Hierarchy of a Computer System.

(iii) What is False Ratio of a Cache Memory ?

(iv) What are Replacing Policies in a Cache Mapping ?

(v) What is Register ?

(vi) What is Sequential Circuit ?

3. Answer any *five* of the following questions : 5×5=25

(i) Define Instruction Set in terms of size and operation.

(ii) Write about Bus Organization of a processor.

(iii) Describe about the Writing policies of a Cache Organization.

(iv) Explain the Pipelining Hazards.

(v) Design a (8:1) Multiplexer.

(vi) What is Race Around Condition ? How it can be overcome ?

(vii) Design a (8:3) Encoder.

4. Answer any *three* of the following questions : 10×3=30

(i) Describe all the modes of Input and Output devices.

(ii) What is Addressing Mode ? Explain in details.

(iii) Reduce the following equation by using K-Map :

$Y(A,B,C,D) = \Sigma(0,3,5,7,9,13,15)$

(iv) Explain about Micro Programmed Control Unit.