Total number of printed pages–4

3 (Sem–1/CBCS) CSC HC 2

2021

(Held in 2022)

COMPUTER SCIENCE

(Honours)

Paper : CSC–HC–1026

(Computer System Architecture)

Full Marks : 60

Time : Three hours

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

1. Answer the following questions : 1×7=7

   (a) What is accumulator (AC) ?

   (b) What is binary number system ?

   (c) What do you mean by machine language ?

   (d) What do you mean by flip-flop ?

Contd.

(e) Name *any two* external devices that are used as auxiliary memory for performing I/O.

(f) What is memory reference instruction ?

(g) What are the two types of implementation of stacks that are used in the CPU ?

2. Answer the following questions : 2×4=8

(a) Name the three modes for handling data transfer to and from peripheral I/O.

(b) What is instruction code format ? Name its three most common fields.

(c) Differentiate between SRAM and DRAM.

(d) Differentiate between combinational circuit and sequence circuit.

3. Answer ***any three*** of the following questions : 5×3=15

(a) What do you mean by counter ? Distinguish between synchronous (or, parallel) counter and asynchronous (or, ripple) counter.

(b) How does a digital computer represent a floating-point number ? Explain briefly with a figure.

(c) What is bus interconnection structure ? Explain with diagram and categorize them into different functional groups. 1+2+2=5

(d) What is programmed I/O system ? Draw the block diagram showing the data transfer between I/O device and CPU. 2+3=5

(e) How many ways a register can be represented while using different addressing modes ? Write *any five* of them briefly. 2+3=5

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

(a) Name *five* different logic gates that are commonly used for designing logic circuit. Draw their logic symbols along with truth table of each. (1+1)×5=10

(b) What are minterms and maxterms ? Draw the table showing the minterms and maxterms for three binary variables with their proper symbolic notations.

(c) Draw the circuit for hardwired control unit and explain its working.

(d) Explain the hardware implementation of 4-bit arithmetic circuit of the ALU with the help of a neat diagram.

(e) Explain the general register organization of CPU with the help of a block diagram.

(f) Draw RAM and ROM chips with the help of their block diagram. Explain how Read and Write operations are performed in these chips.
