2019

B.Sc.

1st Semester Examination

COMPUTER SCIENCE (Honours)

Paper - C 2-T

Full Marks : 40 Time : 2 Hours

The figures in the margin indicate full marks.
Candidates are required to give their answers in their own words as far as practicable.

Group - A

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

   (a) Convert the following : $(56.50)_{10} \rightarrow (\_)_{16}$.

   (b) Perform arithmetic operation in binary using signed 2's complement representation for negative numbers : (–42) – (–23).

   (c) What is an instruction cycle ?

   (d) What are major function of I/O Module ?

[Turn Over]

(e) What do you understand by instruction pipelining ?

(f) What are the two common types of DRAM ?

(g) Why do dynamic RAMs need constant refreshing ?

(h) State the difference between combination and sequential circuit.

Group - B

2. Answer any *four* questions of the following : $4 \times 5 = 20$

(a) Write notes on set associative cache memory mapping.

(b) Instructions of a computer with memory capacity of 2k words contain a 7 bit opcode, 2 bit processor register code, address of a memory operand, address of next instruction and as direct/indirect mode bit :

(i) How many bits must be in a word if an instruction is stored in one word ?

(ii) Show the instructions word format indicating the number of bits and functions of each part.

(iii) What is the maximum number of operations that can be incorporated in a computer ?

(c) Explain the control unit with a neat block diagram.

(d) What is the difference between software interrupt and hardware interrupt ?

(e) Illustrate the Booths algorithm with an example.

(f) Write the program to evaluate the arithmetic statement.

$X = A - B + C \times (D \times E - F)$. Using a stack organized computer with zero address instruction

Group - C

3. Answer any *one* question of the following : $1 \times 10 = 10$

(a) (i) What is a flip-flop ? Give the drawback of SR flip-flop and how is it removed in JK flip flop. Give the excitation table of D flip flop.

(ii) Compare and contrast CISC and RISC architectures. (2+3+2)+3

(b) (i) Describe the data transfer method using DMA.

(ii) Write in detaill about various addressing modes. 5+5