5. (a) (i) What is the difference between the Hardwired Control Unit and the Micro-programmed Control Unit ?

(ii) Draw the flowchart of address sequencing in Micro-programmed Control Unit. (CO2)

OR

(b) Explain the rules of assembly language. Write an assembly language program to add two 8-bit numbers. (CO2)

H Roll No. .....

TBC–304/TBI–302

B. C. A./B. SC. (IT)
(THIRD SEMESTER)
MID SEMESTER EXAMINATION, 2022

COMPUTER ORGANIZATION AND ARCHITECTURE

Time : 1½ Hours

Maximum Marks : 50

Note : (i) Answer all the questions by choosing any ***one*** of the sub-questions.

(ii) Each question carries 10 marks.

1. (a) (i) The 8 bit registers A, B, C and D initially have the following values :

A = 11101000, B = 00011011, C = 10110101, D = 01110110.

Determine the 8 bit values in each register after the execution of the following sequence of micro-operations :

B ← B + C, A ← A–C, B ← B^D, C ← C–1

P. T. O.

(ii) Design 4 bits memory and bus transfer system using three state buffer gates and explain its working with the help of functional table. (CO1)

OR

(b) (i) What is Register Transfer Language ? Explain with suitable examples.

(ii) What are Shift Microoperations ? Starting from initial value of A = 11101011, determine the sequence of binary values in A after a logical shift right, followed by a circular shift left, followed by an arithmetic shift right. (CO1)

2. (a) What is subroutine ? Explain with the help of an example of assembly language program. (CO2)

OR

(b) Write an assembly language program to add two 16 bits numbers from memory location. (CO2)

3. (a) Define Logical Micro-operations. Design and explain with the help of Functional table. (CO1)

OR

(b) Design Arithmetic Logic Unit (ALU) and explain its working with the help of Functional table. (CO1)

4. (a) (i) With the help of a suitable diagram, explain various CPU registers with their working.

(ii) What is computer instructions format ? Explain different types of instructions format. (CO1)

OR

(b) Explain instruction cycle with the help of flowchart. (CO1)