BANKURA UNIVERSITY

B.Sc. 5th Semester (Honours) Examination, March 2021

Subject: *Electronics (H)*

Course ID: 51711 Course Code: SH/ELC/501/C-11(TH)

Course Title: *Microprocessors and Microcontrollers*

Full Marks: 25 Time: 1 Hr 15 Min

(The figures in the right hand side margin indicate marks.
Answer all the questions)

1. Answer *any three* of the following questions: 1×3=3
   a) What is the function of accumulator?
   b) What is the function of ADC M?
   c) How many memory locations can be addressed by a microprocessor with 14 address lines?
   d) What is PSW?
   e) In which T-state, ALE signal is activated?
   f) Why AD0-AD7 lines are multiplexed?

2. Answer *any three* of the following questions: 2×3=6
   a) What is a bus? Why address bus is uni-directional? 1+1
   b) What is the need for timing diagram?
   c) Indicate the nature of signals that will trigger TRAP, RST 7.5, RST 6.5, RST 5.5 and INTR.
   d) Describe the function of the following pins in 8085: S0, S1, SOD and SID.
   e) What is the difference between SHLD and LHLD?
   f) Differentiate between memory mapped I/O and I/O mapped I/O?

3. Answer *any two* of the following questions: 5×2=10
   a) What is timing diagram? Draw the Timing diagram for the instruction MVI B, 43H which is stored at memory address 2600H. 1+4
   b) Write an assembly language program to multiply two 8 – bit numbers.
   c) Define Stack. Explain function of PUSH and POP instruction. 1+2+2
   d) Specify the register contents and the Flag status as the following instructions are executed. Specify also the data at PORT0. Assume initial contents: A=00_H, B=FF_H, S=0, Z=1, CY=0. 5

```
MVI A, F2H
MVI B, 7AH
ADD B
OUT PORT0
HLT
```

4. Answer *any one* of the following questions: 6×1=6
   a) Draw the functional block diagram (internal architecture) of 8085 microprocessor and briefly explain the function of each block. 4+2
   b) What are the addressing modes used in the following instructions? Explain.

```
MVI B, 06H
STA 2680H
MOV B, A
XCHG
DCX D
CMC
```

   c) Write an Assembly Language Program to generate a time delay of 0.4 sec; assuming crystal frequency as 5MHz.