Total No. of printed pages = 3

EI 181503

Roll No. of candidate | | | | | | | | | |

24/2/22 **2021**

B.Tech. 5th Semester End-Term Examination

EE, IE

MICROPROCESSORS

(New Regulation & New Syllabus)

Full Marks – 70 Time – Three hours

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

Answer question No. 1 and any *four* questions 2 to question 7.

1. Examine the following statements for TRUE or FALSE. (10 × 1 = 10)

   (a) 8085 microprocessor has dedicated 20 bit address lines.

   (b) During IO mapped IO operation 8085 microprocessor provides 8 address lines.

   (c) The vector location for RST 7.5 is 003CH.

   (d) DI instruction sets IE (F/F) of interrupt circuit of a microprocessor 8085.

   (e) RET (Return) instruction increments stack pointer by two.

   (f) 8085 microprocessor has 8 FLAGs in the FLAG register.

   (g) Instruction SIM can be used to receive serial data through SID pin.

   (h) Data transfer instructions do not affect FLAG register.

   (i) In 41H, transfer data from port 41 to HL pair.

   (j) Instruction POP HL increases SP (Stack Pointer) by two.

2. Answer the followings:

   (a) What will be the content of DE and HL after execution of the instructions by a microprocessor 8085, given below? (3)

   LXI HL 2233H

   LXI DE 4455H

   PUSH DE

   POP HL

[Turn over

(b) What will be the value of PC after executing the instructions given below by a microprocessor 8085? (3)

LXI BC 0002H

PUSH BC

LXI BC 002CH

RET

(c) Explain, how a microprocessor 8085 sets the interrupt flip flops, if it executes the following instructions? (3)

MVI A 0BH

SIM

EI

(d) Provide format of instruction RIM and explain their significance Explain how RIM can be used to examine pending interrupt request. (6)

3. (a) Use decoder to interface the following memory ICs to an 8085 microprocessor:-

(i) 8 K ROM (8bits)

(ii) Two 4K RAM (8bits)

Ensure that the each IC will have unique address space. (8)

(b) Draw the timing diagram representing status of AD0-AD7, A8-A15, IO/$\overline{M}$, ALE, $\overline{RD}$ and $\overline{WR}$ for the instruction given below: (7)

Address	Label	Assembly Language	Memory content
C925 C926		OUT 41	D3 41

4. (a) A PPI 8255 is interfaced to an 8085 microprocessor having address space 40H-43H. Provide instruction to configure 8255 Port A as in put mode-1. Also, provide instruction to set $INTE_A$ as 1. (7)

(b) Interface PPI 8253 to a microprocessor 8085 as an IO device with address space 10H-13H. Develop program in assembly language to set counter -2 of this 8253 as a 16 bit binary down counter in mode-0 with initial count 100_{10}. (8)

5. (a) Develop a program in assembly language to rotate LEDs connected to PB of 8255 of a µp 8085 based system from MS Bit to LS Bit with a delay time 0.5 sec. (approx.) (7)

(b) Draw functional block diagram of PPI 8279 and explain the functioning of key board and display section of the service. Provide and explain the following control words of the device: (i) Key board and Display control word (ii) Frequency division control word and (iii) Display write control word. (8)

6. (a) Provide data representation format for srial communication with start, end and perity bits. Develop program in assembly language to transfer an eight bit data stored in loaction C900H through SOD pin without. (assume any baud rate for transfer). (7)

(b) Interface PPI 8155 to a microprocessor 8085 with IO address space 40H-45H and address space for 256 × 8 RAM as 4000H - 40FFH. The TIMER IN of 8155 is connected to a 555 square wave generator having frequency 100 Hz. TIMER OUT is interfaced to RST 7.5 of 8085 as shown in figure-1. Develop program in assembly language to increase the register pair HL by one (from 0000H) for every pulse of the 555 timer circuit using routine at vector location defined by RST 7.5. (8)

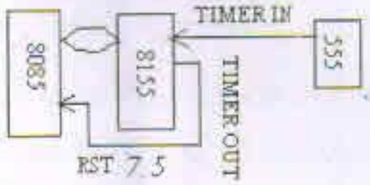

Fig. 1

7. Answer the following: (5 × 3 = 15)

(a) Functinal block diagram of 8255.

(b) Functional block diagram of 8253.

(c) Maskable vector interrupts of 8085: their vector locations and prirority.

(d) Use of instruction SIM.

(e) Reset circuit for microprocessor 8085.