(b) What is an interrupt service routine? List the classification of type of interrupts and discuss interrupts of 8085 and 8086 microprocessor. (7.5)

7. (a) Discuss control word register and various modes of operation of 8254 PPI. (5)

(b) What is the significance of flags in a computer? Discuss the flag register of 8086 microprocessor. (5)

(c) What are assembler directives? Discuss the function of each:

ENDP, GROUP, GLOBAL, MACRO. (5)

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007503

December 2023
B.Tech. (EL) – V SEMESTER
Microprocessors (ELPC–503)

Time : 3 Hours]   [Maximum Marks : 75

Instructions :

1. *It is compulsory to answer all the questions (1.5 marks each) of Part-A in short.*

2. *Answer any **four** questions from Part-B in detail.*

3. *Different sub-parts of a question are to be attempted adjacent to each other.*

PART–A

1. (a) If the memory chip size is 2048*8 bits, how many chips are required to make up 16 K-byte of memory? (1.5)

(b) Draw the functional diagram of Programmable Peripheral Interface 8255. (1.5)

(c) Define a T-state, machine cycle and an instruction cycle. (1.5)

(d) Differentiate between the machine language and assembly language of a microprocessor. (1.5)

(e) Specify the 8085 signals that are used to enable an input port. (1.5)

(f) What is the size of instructions given below:

(a) MVI B,47H (b) ADI F5H (c) SUB C.
(1.5)

(g) Differentiate between memory mapped I/O and I/O mapped I/O. (1.5)

(h) Determine control word for following configuration of the ports of 8255 for Mode-0 operation:

Port A, Port B-Output; Port C_{lower}, Port C_{upper}-Output.
(1.5)

(i) Define an offset. Also discuss, how an effective address is calculated? (1.5)

(j) Discuss the function of program counter and stack pointer in 8085 microprocessor. (1.5)

PART-B

2. (a) Discuss in detail, the functional units of 8086 microprocessor. Discuss the concept of memory segmentation in microprocessor 8086. (10)

(b) Write an assembly language program in 8086 microprocessor to divide a 16-bit number by an 8 bit number. (5)

3. (a) List the characteristics of Intel 8085. Also give a detailed description of various pins of 8085 microprocessor along with a presentable diagram. (10)

(b) Explain the purpose of the following signals (i) READY (ii) RESET OUT (iii) HOLD (5) (iv) LOCK (v) INTR. (5)

4. (a) Write an assembly language program in 8085 to:

(i) interchange (swap) the contents of two memory locations 2100 H and 2101 H

(ii) find the 2's complement of a hexadecimal number 6A H which is stored in memory location 2050H and answer is to be stored in 2051H. (10)

(b) Explain how many times the following loop will be executed. Also write the description of each instruction.

LXI B, 0007H
LOOP : DCX B
MOV A,B
ORA C
JNZ LOOP. (5)

5. (a) Explain what is an addressing mode. Discuss various addressing modes of microprocessor 8086 along with suitable examples. (7.5)

(b) What do you understand by simplex and duplex transmission? Describe various standards in serial I/O. (7.5)

6. (a) Differentiate between a microprocessor and a microcontroller on the basis of applications each offers. Also, discuss the architecture and memory organisation of 8051 microcontroller. (7.5)