Code : 031611

B.Tech 6th Semester Exam., 2018

MICROPROCESSOR AND ITS APPLICATION

Time : 3 hours *Full Marks* : 70

Instructions :

(i) The marks are indicated in the right-hand margin.

*(ii) There are **NINE** questions in this paper.*

*(iii) Attempt **FIVE** questions in all.*

*(iv) Question No. **1** is compulsory.*

1. Choose the correct alternative (any *seven*) : 2×7=14

(a) First microprocessor of Intel series is

(i) 8085

(ii) 8080

(iii) 4040

(iv) None of the above

(b) 8255 is a

(i) programmable peripheral interface

(ii) programmable interrupt controller

(iii) programmable DMA controller

(iv) None of the above

(c) The microprocessor speed depends on

(i) clock rate

(ii) data bus width

(iii) address bus width

(iv) size of registers

(d) The number of machine cycles in CALL 3000 instruction is

(i) 2

(ii) 3

(iii) 4

(iv) 5

(e) PC holds the address of

(i) the instruction to be executed

(ii) next instruction to be executed

(iii) previous instruction to be executed

(iv) None of the above

(f) SID and SOD pins of 8085 are

(i) used as status pins

(ii) control pins

(iii) serial transfer pins

(iv) address bus pins

(g) How many T states does Fetch machine cycle have?

(i) 3

(ii) 4

(iii) 5

(iv) None of the above

(h) The instructions IN and OUT of 8085 are used for

(i) accessing memory

(ii) accessing registers

(iii) accessing peripheral devices

(iv) All of the above

(i) ____ instruction is an example of immediate addressing mode.

(i) RAR

(ii) MVI

(iii) LDAX

(iv) MOV

(j) What is incorrect for 8086 processor?

(i) 8086 is 16-bit processor

(ii) Data bus is 16-bit wide

(iii) Address bus is 32-bit wide

(iv) It has instruction for multiplication operation

2. (a) Categorize the pins of 8085 microprocessor based on their characteristics. Also draw the respective pin diagram. 8

(b) Comment on the roles of SP, HL, PC and WZ register/register pairs. 6

3. (a) Write complete instruction, size of instruction, number of machine cycles and addressing mode for the instruction mnemonics given below : 8

LXI, LDA, CMP, INR

(b) Explain the steps involved in 'Fetch' machine cycle. Also draw the timing diagram of Fetch machine cycle for MVI instruction. 6

4. (a) Explain the working of CALL instruction. Also detail the machine cycle operations involved in CALL. 8

(b) Explain in detail the operating modes of 8255, i.e., programmable peripheral interface. 6

5. Write an assembly language program for writing table of 3 in the memory utilizing the looping functionality. 14

6. (a) Write a delay routine for creating delay of 1 millisecond where frequency of microprocessor is 5 MHz. 10

(b) What are merits and demerits of serial communication over parallel communication? 4

7. (a) What is DMA? Draw block diagram of 8257 coprocessor unit. Explain the DMA operation with actual handshaking signals. 8

(b) Define the terms—microcomputer, microprocessor, microcontroller, assembler, loader and linker. 6

8. (a) Write 8086 assembly program for searching a number in array of 10 numbers placed in memory. 8

(b) Explain the function of the following signals of 8086 : 6

HOLD, NMI, BHE, READY, DEN, DT/R

9. (a) Comment on the status flags of 8086 microprocessor architecture. Also discuss the conditions when they get affected. 9

(b) Write two lines for each of the following instructions : 5

NPG, IMUL, AAD, TEST, CLD

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