Total No. of printed pages = 7

**EE 131505**

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

**2017**

**B.Tech. 5th Semester End-Term Examination**

**Electrical**

**MICROPROCESSOR AND MICROCONTROLLER**

Full Marks – 100 Time – Three hours

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

Answer Question No. 1 and any *six* from the rest.

1. Answer *all* the questions : (10 × 1 = 10)

(a) Consider the sequence of 8085 instructions given below:

LXI H, 9258

MOV A, M

CMA

MOV M, A

**[Turn over**

Which one of the following is performed by this sequence?

(i) Contents of location 9258 are moved to the accumulator

(ii) Contents of location 9258 are compared with the contents of accumulator

(iii) Contents of location 9258 are complemented and stored in location 9258

(iv) None of the above

(b) The instruction that is used to transfer the data from source operand to destination operand is:

(i) Data copy/transfer instruction

(ii) Branch instruction

(iii) Arithmetic instruction

(iv) Logical Instruction

(c) TRAP is ———— interrupt, whereas RST 7.5, RST 6.5, RST 5.5 are ———— interrupts

(i) maskable , non-maskable

(ii) maskable, maskable

(iii) non-maskable, non-maskable

(iv) non-maskable, maskable



(d) Which of the following statement is false?

(i) Counters and time delays can be designed using software

(ii) In 8085,8 bit registers can be combined as register pairs (BC, DE and HL) to manipulate 16 bit data

(iii) Instruction DCX and INX do not affects flags

(iv) Instruction DCR and INR do not affects flags

(e) When a subroutine is called, the address of instruction following the CALL instruction is stored in/on the

(i) Stack Pointer (ii) Program Counter

(iii) Accumulator (iv) Stack

(f) Which of the following flag condition are not available in 8085 microprocessor?

(i) Zero Flag (ii) Parity Flag

(iii) Overflow Flag (iv) Auxillary Flag

(g) A 'DMA' transfer implies

(i) direct transfer of data between memory and accumulator

(ii) direct transfer of data between memory and I/O devices without the use of microprocessor

(iii) transfer of data exclusively within microprocessor registers

(iv) a fast transfer of data between microprocessor and I/O devices

(h) The contents of accumulator after the execution of following instructions will be

MVI A, A7H

ORA A

RLC

(i) CFH (ii) 4FH

(iii) 4EH (iv) CEH

(i) What is the address range of SFR register bank in 8051 Microcontroller?

(i) 00H-77H (ii) 40H-80H

(iii) 80H-7FH (iv) 80H-FFH

(j) Which among the registers stated below do not belong to the category of special function registers?

(i) TCON & TMOD (ii) TH0 & TL0

(iii) P0 & P1 (iv) SP & PC



2. (a) Why the lower order address bus is multiplexed with data bus? How will they be de-multiplexed?

(b) Explain the operation of 8085 signals: READY, S1 & S0, HOLD & HLDA.

(c) Draw the pin diagram of 8085 Microprocessor and explain the different control signals of 8085 Microprocessor. (5 + 5 + 5 = 15)

3. (a) What is the structure of the flag register of 8085 Microprocessor? Explain each flag with an example.

(b) An 8085 program subtracts the hex number 22H from FFH and places the result in its accumulator. What would be the status of 8085 flags CY, P, AC, Z, S on completion of the subtraction.

(c) List and explain the interrupts available in 8085. (5 + 5 + 5 = 15)

4. (a) Explain the operation carried out when 8085 executes the following instructions:

(i) MOV A, M

(ii) XCHG

(iii) DAD R

(iv) DAA

(v) XRA A

(b) What is a subroutine? Write an assembly language program to obtain a time delay using three registers in nested loop. (5 + 10 = 15)

5. (a) Explain with the help of a timing diagram the instruction MVI A, 55H.

(b) A block of 10 bytes of data is stored at the memory location starting from 9000H. Write a program to move this block to the memory location starting from 9050H.

(c) Write an assembly language program in 8085 to add two 16-bit data. Store the result and carry, in two different register pairs. (5 + 5 + 5 = 15)

6. (a) What is serial data transfer? Compare synchronous and asynchronous modes of data transfer.

(b) Interface two 8K × 8 RAM chips and a 8K × 8 EPROM chip with the 8085, using 74LS138 decoder, such that the starting addresses assigned to them are 6000H, 8000H and 0000H, respectively. (5 + 10 = 15)

7. (a) What are RISC and CISC? Write the difference between RISC and CISC. Give a list of examples of RISC and CISC.

(b) Explain the internal RAM structure of 8051 Microcontroller. (5 + 10 = 15)

8. (a) Explain the interfacing of D/A converter with 8085 microprocessor.

(b) What are the different addressing modes of 8051 Microcontroller? Explain each with suitable examples. (5 + 10 = 15)



9. (a) Mention the purpose of SID and SOD lines. Explain interpretation of the accumulator bit pattern for SIM instruction.

(b) Interface PPI 8155 to a microprocessor 8085 with IO address space 40H-45H and address space for 256 × 8 RAM as 4000H-40FFH. Develop program in assembly language to transfer a data from memory location 800611 to the first location of C900H. (5 + 10 = 15)

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