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Reg. No...............................

Name....................................

# B.TECH. DEGREE EXAMINATION, MAY 2010

## Third Semester

Branch : Computer Science and Engineering

## MICROPROCESSOR SYSTEMS (R)

(Prior to 2007 admissions—Supplementary)

Time : Three Hours

Maximum : 100 Marks

### Part A

*Answer all questions briefly.*
*Each question carries 4 marks.*

1. Explain the following signals in 8085 :—

   (i) ALE ; (ii) READY ; (iii) HOLD ; (iv) $IO/\overline{M}$ .

2. Why the higher significant bits of the address lines, are not multiplexed with the data lines ?

3. Discuss the merits and demerits of register indirect addressing, with suitable examples.

4. What is a stack ? Where it is located ? What are its specialities ?

5. How Stack will be affected by the following instructions ?

   (i) PUSH ; (ii) POP.

6. Define T-state machine cycle and instruction cycle.

7. Explain the purpose and functions of RST instructions.

8. Distinguish between the operation of Hardware and Software interrupts.

9. Distinguish between I/O mapped I/O and Memory mapped I/O, showing the merits.

10. What is DMA ? When it is used ?

$(10 \times 4 = 40 \text{ marks})$

### Part B

*Answer **either** Section (a) or (b) from each module.*
*Each full question carries 12 marks.*

#### Module 1

11. (a) Describe all the registers in 8085, indicating their size, and functions clearly.

    *Or*

    (b) Explain from fundamentals, how an instruction is accepted and executed in 8085. Give *one* example.

**Turn over**

## Module 2

12. (a) (i) With a timing diagram, explain the operations taking place when the instruction JC is executed.

(6 marks)

(ii) List and explain the various stack operations.

(6 marks)

*Or*

(b) Distinguish between Direct addressing, immediate addressing and Implicit addressing modes, giving suitable examples. Discuss their merits and demerits.

(12 marks)

## Module 3

13. (a) With a neat timing waveform diagram, explain the opcode fetch operation from the memory, sketching IO/$\overline{M}$, $S_0$, $S_1$ $A_0$ to $A_{15}$ ALE and $\overline{RD}$ signals, with respect to the clock signals.

*Or*

(b) Explain the different data transfer group instructions used in 8085 microprocessor, with appropriate examples.

(12 marks)

## Module 4

14. (a) Write 8085 Assembly language program to multiply two 8 bit numbers. (product is 16 bits).

*Or*

(b) Draw a block schematic showing how the programmable interrupt controller 8259 can be used with 8085 and various other peripherals and describe how it works ?

(12 marks)

## Module 5

15. (a) Explain the various pins of the DMA controller 8257. Show how it is connected to a 8085 microprocessor with a circuit block diagram. Describe how DMA data transfer is taking place.

*Or*

(b) With neat diagrams, show an example of an I/O system which can be interfaced to the 8085 microprocessor using interrupt driven data transfer. What are the merits and disadvantages of this method ?

(12 marks)

[5 × 12 = 60 marks]