

Roll No.

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B.Tech. (Sem. - 6th)**MICRO CONTROLLER AND EMBEDDED SYSTEMS****SUBJECT CODE : EC - 306****Paper ID : [A0319]**

[Note : Please fill subject code and paper ID on OMR]

Time : 03 Hours**Maximum Marks : 60****Instruction to Candidates:**

- 1) Section - A is **Compulsory**.
- 2) Attempt any **Four** questions from Section - B.
- 3) Attempt any **Two** questions from Section - C.

Section - A**Q1)****(10 x 2 = 20)**

- a) What are the major differences between a microprocessor and microcontroller?
- b) List the on chip timers in Microcontroller 8051.
- c) Write the instruction to add the values 16H and CDH and place the result in register R2.
- d) How many bytes of on-chip ROM are there in Microcontroller 8051?
- e) What is the operation of instruction INC destination?
- f) Which is operation of instruction MUL AB?
- g) Write the instruction to clear the accumulator.
- h) Which timer is used for baud rate programming in the microcontroller 8051?
- i) What is "Clear LCD" and write its value is Hex?
- j) Indicate when RD and WR are used in microcontrollers. Can these be used for accessing external memory?

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Section - B**(4 x 5 = 20)**

- Q2)** The following shows the crystal frequency for different 8051 microcontroller based systems. Find the period of the machine cycle in each case : 11.0592 MHz, 12 MHz, 16 MHz, 18 MHz and 20 MHz.
- Q3)** Explain in detail the timer mode control register (TMON).
- Q4)** Write a program to copy a block of 10 bytes of data from RAM locations starting at 35 H to RAM location starting at 60 H.
- Q5)** Find the baud rate for the following if XTAL = 16 MHz and SMOD = 0
 (a) MOV TH1, #-10 (b) MOV TH1, #-25
 (c) MOV TH1, #-200 (d) MOV TH1, #-180.
- Q6)** For a 16 x 2 LCD, the location of the last character of line 1 is 8F H (its command code). How this value is calculated explain?

Section - C**(2 x 10 = 20)**

- Q7)** What are various addressing modes in microcontroller 8051? Explain them with suitable examples.
- Q8)** Assume that the microcontroller 8051 serial port is connected to the COM port of the IBM PC and on the PC we are using the terminal.exe program to send and receive data serially. P1 and P2 of the 8051 are connected to LEDs and switches, respectively. Write an 8051 program to
 (a) send to the PC the message "We are ready".
 (b) receive any data sent by the PC and put it on LEDs connected to P1, and
 (c) get data on the switches connected to P2 and send it to the PC serially.
 The program should perform part
 (a) once but parts (b) and (c) continuously.
 Use the 4800 baud rate.
- Q9)** Give an introduction to latest microcontrollers and list their applications explaining any one of them.

