

**328653(28)**

**B. E. (Sixth Semester) Examination, April-May 2020**

**(New Scheme)**

**(Et & T Branch)**

**MICROCONTROLLER & EMBEDDED SYSTEMS**

***Time Allowed : Three hours***

***Maximum Marks : 80***

***Minimum Pass Marks : 28***

***Note : Part (a) of each question is compulsory and carries 2 marks attempt any two parts from (b), (c) & (d) of each question and carries 7 marks. Assume suitable data if required.***

**Unit - I**

1. (a) Write the difference between 8051 and AT89C51 micro controller.
- (b) Write the function of following pins of 8051 microcontroller :

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$\overline{\text{PSEN}}$ , ALE, RST,  $\overline{\text{EA}}$ ,  $\overline{\text{WR}}$ , XTAL1 & XTAL2

- (c) Draw the architecture of microcontroller 8051 and explain the functions of each block.
- (d) Assume that register A has packed BCD No. write a program to convert packed BCD number to two ASCII numbers and place them into register R2 and R6.

#### Unit - II

- 2. (a) Write the function of TCON Register.
- (b) Discuss the various timer mode supported by 8051. What is special about the auto reload mode.
- (c) Write an assembly language program to count 1000 pulses externally connected to P3.4 of 8051 and after receiving all 1000 pulses, display "OK" message on display connected to the port P2.
- (d) Write a program for get data from port-1 and send it to port 0 continuously. When interrupt than generate a square wave of 200  $\mu\text{s}$  period on pin P2.1. Use Timero to create a square wave.

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#### Unit - III

- 3. (a) Write the difference between 1488 and 1489 standard.
- (b) Design a interfacing circuit to interface 8051 micro controller with serial port PC using MAX-232. State the advantages of MAX 232 and MAX-233.
- (c) Write an assembly language program to send the message serially "CSVTU" with Baud Rate 9600 (Assume XTAL = 12 MHz).
- (d) Write short notes on following standards :  
RS - 422, GP8B, RS - 232.

#### Unit - IV

- 4. (a) What is address decoding techniques?
- (b) Interface DAC 0808 with microcontroller and write a assembly language program to generate a "SINE WAVE".
- (c) A robotic arm consist of two stepper motors  $M_1$  and  $M_2$  at two joints. Each motor has step angle has 2 degree. Write an ALP to rotate  $M_1$  by 64

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degree clockwise and  $M_2$  by 24 degree anticlockwise. Use 4-step sequence. Connect motor  $M_1$  with port 1 (P1) and  $M_2$  with port 2 (P2).

(d) Interface following memory chips with 8031 microcontroller:

(i) Program ROM  $32\text{ K} \times 8$

(ii) Data RAM  $16\text{ K} \times 8$

(iii) Data ROM  $16\text{ K} \times 8$

#### Unit - V

5. (a) What is embedded system?
- (b) Explain designing parameters of an Embedded system and its significances.
- (c) Explain characteristics of real time Embedded system.
- (d) Explain software and hardware development process of Embedded system.