

(c) Write an ALP to get data from port P_2 and send it to port P_0 continuously. At the same time receive data serially through R × D pin and send it to port P_1 at the Baud rate of 9600.

7

(d) Write short note on any one :

7

(i) RS232

(ii) GPIB

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Unit-V

5. (a) Define an embedded system.

2

(b) Interface ADC 0804 with Microcontroller 8051 and write suitable software to convert analog input into digital & save the result at Address 30 H of Inbuilt RAM.

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7

(c) Discuss different issues in designing an embedded systems.

7

(d) Design a memory system for 8051 using :

7

(i) 8 KB Program Code Memory ROM

(ii) 8 KB of Data Memory ROM

(iii) 8 KB of Data Memory RAM

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B. E. (Seventh Semester) Examination,
April-May 2016

(Old Scheme)

(EEE, Et&T Engg. Branch)

MICRO CONTROLLER & EMBEDDED SYSTEMS

Time Allowed : Three hours

Maximum Marks : 80

Minimum Pass Marks : 28

Note : Part (a) of each question is compulsory. Attempt any two parts from (b), (c) and (d). Assume suitable data if required.

CSVТУonline.com Unit-I

1. (a) Why 8051 is referred as system on chip? 2

(b) Explain function of following pins of 8051 in brief: 7

RST, \overline{EA}/VPP , \overline{PSEN} , $\overline{ALE}/\overline{PROG}$,

XTAL₁, XTAL₂

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PTO

- (c) Write alternate functions of pins of port P_3 . Explain function of each pin. **CSVТУonline.com** 7
- (d) Give classification of micro-controllers in MCS-51 family depending upon size and type of program code memory. Also write features of each micro-controller. 2

Unit-II

2. (a) Write default content of different registers of 8051 after RESET. **CSVТУonline.com** 2
- (b) List all types of Addressing modes in 8051 and explain each addressing mode in brief with suitable example. 7
- (c) Draw structure of onchip RAM in 8051. Explain, how to access register banks and bit addressable area of RAM. 7
- (d) Explain function of an instruction $MOVC A, @A + DPTR$. How this instruction can be used to access ASCII equivalent codes of BCD digits 0 to 9 using lookup table? Save ASCII codes from 30H address in inbuilt RAM. **CSVТУonline.com** 7

Unit-III

3. (a) Draw an 8 bit format for IE register. What value to be loaded in IE register to enable Into, TF1 & Serial Interrupts? **CSVТУonline.com** 2
- (b) Assuming XTAL frequency 16 MHz, calculate the value to be loader in TH_0 & TL_0 registers of timer 0 to generate delay of 10 msec. Write programming steps to operate timer 0 in mode1. 7
- (c) Write an ALP to generate square waves of frequencies 2 kHz & 20 kHz at port pin P2.1 & P1.1 respectively using timer interrupts. Assume XTAL = 12 MHz. **CSVТУonline.com** 7
- (d) Assuming 1 Hz pulses are available at port pin P3.5. WALP to count pulses using counter 1 and display count on LCD continuously. LCD initialization & display subroutine are available. set initial value in $TH1 = 00H$. 7

Unit-IV

4. (a) What is the basic difference between TTL logic & RS232 logic? 2
- (b) Write 8 bit format for SCON and PCON registers of 8051. Explain each bit function in brief. 7