

Total No. of Questions : 12]

P770

T.E. Electrical Sem-I

Nov-Dec-2012

SEAT No. :

2008 pattern

[Total No. of Pages : 2

[4263] - 252

T.E. (Electrical)

MICROCONTROLLER AND ITS APPLICATIONS

(2008 Pattern) (Semester - I)

Time : 3 Hours]

[Max. Marks : 100

Instructions to the candidates*:

- 1) Answer three questions from Section-I and three questions from Section-II.
- 2) Figures to the right indicate full marks.
- 3) Assume suitable data, if necessary.

SECTION - I

- Q1) a) Classify the microcontrollers based on number of bits, memory architecture, instruction set, memory devices and family. [8]
- b) Explain the internal RAM structure of 8051 microcontroller also explain programme memory and Data Memory with use of \overline{EA} pin. [10]

OR

- Q2) a) Draw and explain Architecture of 8051 Microcontroller and hence explain Memory Organization of 8051. [10]
- b) Explain PSW in 8051. What are the flags that associate with ALU operation in 8051. [8]

- Q3) a) Square the content of R4 and put the result in R3 (higher byte) and R2 (lower byte). Also send result at External Location 20h (higher byte) and 21h (lower byte). [8]
- b) Explain stack organization and enlist stack related instructions. [8]

OR

- Q4) a) Add the content of Ram locations 20h - 30h. Store the result at 40h (lower byte) and 41h (higher byte). [8]
- b) Random numbers are present at R0 to R5. Find largest number and put it in R6. [8]

- Q5) a) Write a program for the 8051 to transfer letter 'A' serially at 4800 baud rate, continuously. Also explain SCON register. [10]
- b) Explain SPI communication bus. [6]

OR

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- Q6)** a) What is interrupt? Hence explain Programming interrupts, Timer interrupts, External interrupts, Serial interrupts and multiple interrupts. [10]
b) Explain 12C communication bus. [6]

SECTION - II

- Q7)** a) Write need of simulator, assembler and compiler for 8051 microcontroller and hence explain it's function in microcontroller development tool. [8]
b) Show the design of 8255 connection to 8051 where port A has the address 20H. Then program the 8255 to get the data from port B and send it to both ports A and C. [10]

OR

- Q8)** a) 8kb of program ROM and 8kb data RAM are to be interfaced with 8051. Draw a diagram showing interfacing of these memories with 8051 such that following maps are realized : [10]

Program ROM 0000H-1FFFH

Data RAM 8000H-9FFFH

- b) Explain serial communication of 8051 with computer through RS232 port. [8]

- Q9)** a) Draw and explain interfacing diagram of ADC with 8051. [8]
b) Write assembly language program to rotate stepper motor through 360deg using 4 step sequence in clockwise direction. [8]

OR

- Q10)** a) Draw interfacing diagram DAC with 8051. Write an assembly language program to generate triangular wave using DAC. [8]
b) Explain with suitable diagram, temperature measurement using 8051. [8]

- Q11)** a) Explain power measurement using 8051. [8]
b) Draw and explain matrix keyboard interfacing with 8051. [8]

OR

- Q12)** a) Draw and explain 8051 based speed control of DC motor. [8]
b) Draw the interfacing diagram of LCD with 8051. Explain function of pins of LCD. [8]

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