DIP401

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06ES42

Fourth Semester B.E. Degree Examination, Dec 08 / Jan 09
Microcontrollers

Time: 3 hrs. Max. Marks:100

Note : ***Answer FIVE full questions, selecting atleast TWO questions from each part.***

PART - A

1 a. Differentiate between a microprocessor and a microcontroller. **(06 Marks)**

b. List the salient features of 8051 microcontroller. **(06 Marks)**

c. Explain the memory organization in 8051 controller. **(08 Marks)**

2 a. Explain the following instructions with suitable examples.
i) SWAP ii) MOVX iii) XCHD iv) DA A. **(06 Marks)**

b. Write an assembly language programme using 8051 mnemonics to convert 2 digit BCD to binary. **(06 Marks)**

c. What is a stack? Explain with examples the PUSH and POP instructions. **(08 Marks)**

3 a. Differentiate between a counter and timer. Explain the timer modes of operation in 8051. **(06 Marks)**

b. Name and explain the significance of interrupt of 8051 controllers. **(06 Marks)**

c. Write a 8051 C program to toggle all bits of port Po continuously. Use timer 0 to generate the delay of 1 sec between each toggle. **(08 Marks)**

4 a. Differentiate between JMP and call instruction. Explain with suitable examples the different ranges associated with call instructions. **(06 Marks)**

b. Explain with suitable examples Lcall and Scall instruction in 8051. **(06 Marks)**

c. Write an assembly language program to realize an exclusive OR gate. Assume P1.0 and P1.1 as inputs and P2.0 as output bit. **(08 Marks)**

PART - B

5 a. Write an 8051C program to transfer the message "Good morning" serially at 9600 baud, 8 bit data, 1 slip bit. **(06 Marks)**

b. Explain serial port of 8051. Explain the significance of SCOW register in detail. **(06 Marks)**

c. What is the use of MODEM in serial communication? Describe different types of modulation techniques used in MODEM. **(08 Marks)**

6 a. What is key bouncing? How it is eliminated? **(04 Marks)**

b. Show a simple keyboard interface with a port of 8051 and explain its operation. **(06 Marks)**

c. With suitable hardware and software features, explain an interface of 7 segment display in multiplexed connection. **(10 Marks)**

7 a. Explain the salient features of an ADC. What are the signals of importance while interfacing such an ADC to a 8051 controller? **(10 Marks)**

b. Show a scheme of interfacing an 8-bit ADC to a 8051 controller. Write the software required to obtain the output from such an interface. Discuss practical application. **(10 Marks)**

8 a. Show an interface of 8051 controller with a stepper motor drive circuit and explain its principles of operation. **(10 Marks)**

b. Write an 8051 assembly language program to (step) control stepper motor using connections given in fig. 8(b) below.

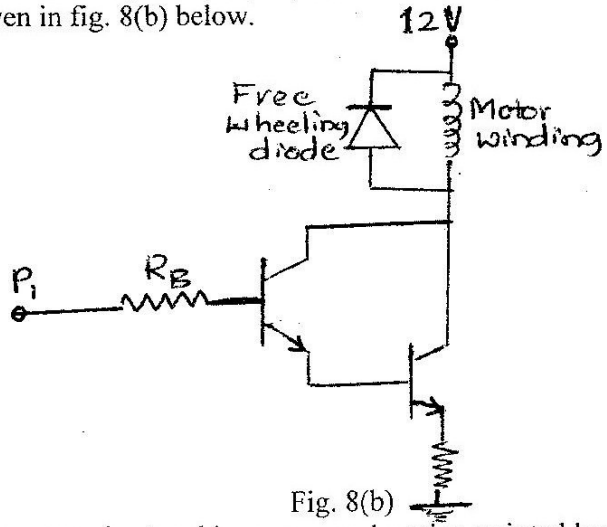

Fig. 8(b)

Assume code sequence is stored in a memory location pointed by DPTR code. Use suitable delay routine, comment on each of instruction used. **(10 Marks)**

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