

5E1364

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B.Tech. V- Semester (Main) Examination, Nov. - 2019  
PCC/PEC Electrical Engg.  
5EE4-04 Microprocessor  
(Common For EE,EX)

Time : 3 Hours

Maximum Marks : 120  
Min. Passing Marks : 42

**Instructions to Candidates:**

*Attempt all ten questions from Part A, five questions out of Seven from Part B and Four questions out of Five from Part C. Schematic diagrams must be shown wherever necessary. Any data you feel missing suitably be assumed and stated clearly. Units of quantities used/calculated must be stated clearly.*

**PART - A**

(Answer should be given up to 25 words only)

All questions are compulsory

(10×2=20)

1. Differentiate between timers and counters. Draw the diagram of TCON in 8051. (2)
2. Which register is used for serial programming in 8051? Illustrate it. (2)
3. List the 8051 interrupts with its priority. (2)
4. How is A/D converter interfaced with 8051? Explain. (2)
5. What are the benefits of subroutine? (2)
6. What does the term embedded system mean? (2)
7. Explain the function of each bit in TMOD register. (2)
8. Draw the pin diagram of 8051. (2)
9. State how band rate is calculated for serial data transfer in mode 1. (2)
10. What is the drawback of memory-mapped I/O? (2)

**PART - B**

(Analytical/Problem solving questions)

Attempt any five questions

(5×8=40)

1. Compare 8-bit, 16-bit and 32-bit microcontrollers. (8)
2. Show the interfacing circuit and functional pins of LCD. (8)
3. Explain the block diagram of 8051. Also discuss its features. (8)
4. Write short note on overview of 8051 family. (8)
5. Give PSW of 8051 and describe the use of each bit in PSW. (8)
6. Write short note on synchronous and Asynchronous communication. (8)
7. How are D/A and A/D interfaces used? Explain. (8)

**PART - C**

(Descriptive/Analytical/Problem Solving/Design Question)

Attempt any Four questions

(4×15=60)

1. a) How microprocessors and microcontrollers are different from computer based controllers? Explain. (7)  
b) What is sensor interfacing and external memory interfacing? Explain in detail. (8)
2. a) A switch is connected to pin P 2.7 and a stepper motor to port 1. Write a program to monitor the status as of switching and if SW = 0, stepper motor should rotate clockwise continuously. if SW = 1, stepper motor should rotate anticlockwise, continuously. (8)  
b) For an 8051 system of 11.0592 MHz. find the time delay for the following subroutine.

Delay : MOV R3, #250

Back : Nop

Nop

DJNZ R3, BACK

RET

(7)

3. a) Draw and explain the architecture of 8051. (10)  
b) Write an ALP to read switch as shown in figure 1. If switch is closed turn on the LED else turn OFF the LED. (5)

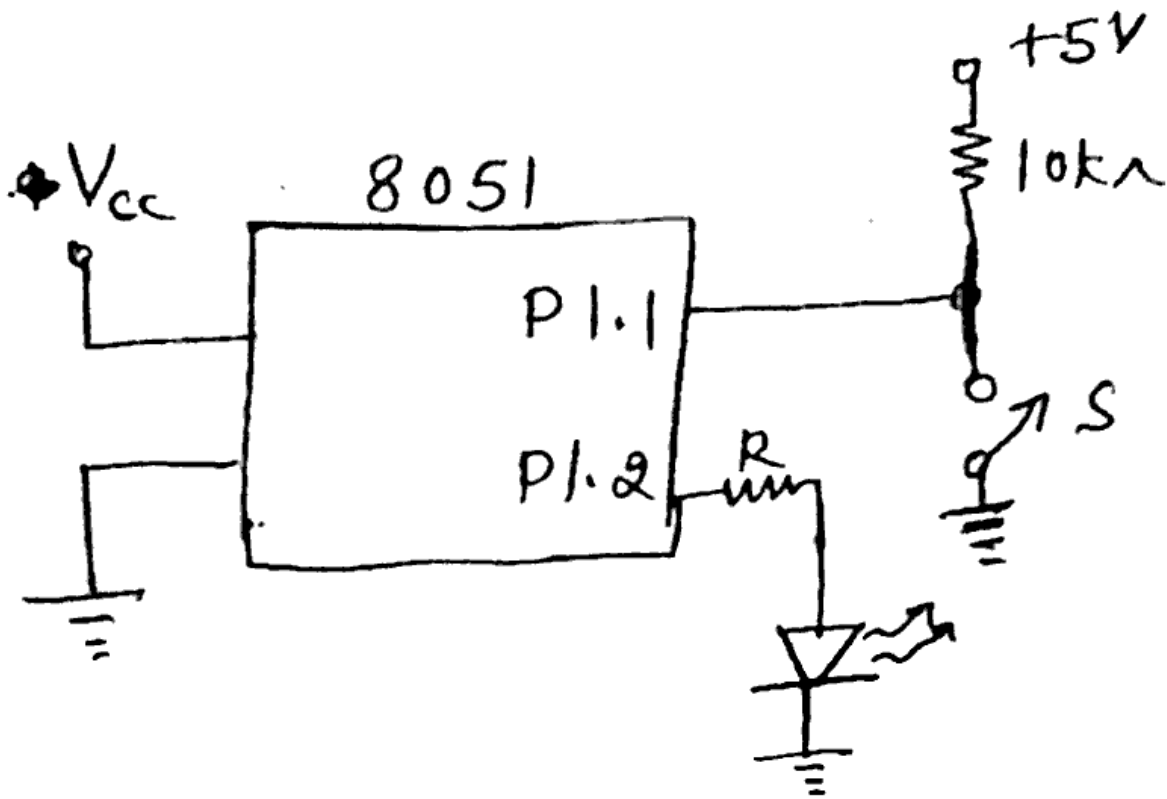


Figure 1.

4. a) Interface ADC 0804 to 8051 and write an ALP to connect the analog input to digital value. (10)  
b) What are SFR's? Explain. (5)
5. a) Draw the schematic for interfacing a stepper motor with 8051 microcontroller and write 8051 ALP for changing speed and direction of motor. (12)  
b) Explain any two data addressing modes of 8051 with example. (3)

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