

**B.Tech. - VIEP - ELECTRICAL ENGINEERING  
(BTELVI)**

**Term-End Examination**

**00043 December, 2018**

**BIEE-010 : MICROCONTROLLERS**

*Time : 3 hours*

*Maximum Marks : 70*

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*Note : Answer any seven questions. All questions carry equal marks. Scientific calculator is permitted. Assume data wherever required.*

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1. (a) Compare the features of microprocessors and microcontrollers. 5  
(b) What are the advantages and disadvantages of using Harvard architecture in 8051 ? 5
2. Draw and explain the architecture of 8051 microcontroller with its pin diagram. 10
3. (a) Explain various arithmetic operations in 8051 microcontroller. 5  
(b) What is the function of DPTR register ? Differentiate between RRA and RRCA instruction in 8051 microcontroller. 5

4. Explain the CALL and JUMP instructions present in 8051 microcontroller with a mnemonic code and its operations. 10
5. Discuss various data types in 8051 microcontroller. Write a program to bring data in serial form and send it out in parallel form. 5+5
6. Explain various Program Status Word (PSW) registers in 8051. Write a program to find 2's complement using 8051C. 5+5
7. (a) What is an interrupt ? Explain the different types of interrupts that 8051 can handle. 5  
(b) Describe the operation of timers and counters of the 8051. How does the 8051 decide to act like timer or counter ? 5
8. (a) Draw and explain the RS-232 serial port connection to 8051 microcontroller. 5  
(b) Write a program for the 8051 to transfer letter 'A' serially at 4800 baud rate repeatedly. 5
9. Draw a diagram to interface a stepper motor with 8051 microcontroller. Write a program to make the stepper motor rotate in both clockwise and anticlockwise directions. 10

10. Write a short note on any *two* of the following: *2×5=10*

- (a) Flags
  - (b) PWM (Pulse Width Modulation)
  - (c) Calls and Subroutines
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