

**B.Tech. – VIEP – ELECTRICAL ENGINEERING
(BTCLVI)**

Term-End Examination

December, 2016

00563

BIEE-010 : MICROCONTROLLERS

Time : 3 hours

Maximum Marks : 70

Note : Answer any *seven* questions out of ten questions.
All questions carry equal marks. Assume data
wherever required.

1. (a) What are the special function registers of 8051 ? Explain their usage. 6
- (b) Explain the two power saving modes of 8051 microcontroller, 4
2. (a) How is external memory interfaced with 8051 microcontroller ? What are the rules followed for interfacing I/O pin to external devices ? 5
- (b) Describe the memory and I/O addressing of 8051. 5

3. (a) Draw the internal RAM structure of 8051. Explain the dual role of port 0, port 2 and port 3. 6
- (b) Write a program to save the accumulator in R-7 to Bank 2. 4
4. (a) What are the different modes in which timer 2 can operate ? What is the use of watchdog timer ? 5
- (b) State the function of each bit in TMOD register. 5
5. (a) What are the steps followed to service an interrupt ? Give the format of interrupt enable register. 5
- (b) Give the priority level of the interrupt sources. Differentiate between Edge-Sensitive and Level-Sensitive programming of interrupts. 5
6. (a) Explain the interfacing of stepper motor with microcontroller. Write a program to rotate the stepper motor in clockwise direction continuously in full step mode. 5
- (b) Draw the interfacing diagram of DAC with 8051 microcontroller. Write a program to generate sine wave at the output of DAC. Use look up table to store hex values. 5

7. (a) Discuss the interfacing of LCD with 8051 microcontroller. Draw the interfacing diagram. How is liquid crystal display superior to conventional display ? Explain it. 5
- (b) List and describe LCD instructions. Draw the interfacing diagram for interfacing of common mode seven-segment displays with 8051 microcontroller. 5
8. (a) Write a program to generate a square wave of 50% duty cycle on P1.5 bit. Use Timer 0 to generate delay. 6
- (b) Draw the interfacing diagram to interface push-button switch at port pin. 4
9. (a) What is serial communication ? How will it perform using 8051 controller with PC ? Explain it. 5
- (b) Write a program to transfer "YES" serially at 9600 baud, 8 bit data and 1 stop bit. Do this continuously. 5
10. (a) Explain the following addressing modes of 8051 microcontroller : $5 \times 1 = 5$
- (i) MOV A, # 20H
 - (ii) MOV A, 30H
 - (iii) MOV A, R0
 - (iv) MOV X A, @ DPTR
 - (v) MOV A, @ R0
- (b) What is flag register ? Explain 8051 flag register and its practical implementation. 5