

Roll No.

Total No. of Pages : 02

Total No. of Questions : 09

**B.Tech.(Automation & Robotics) (2012 & Onward)/
(EE/Electrical & Electronics Engg.) (2012 Onwards)/
(Electronics & Electrical Engg.) (2012 to 2017)
(Sem.-6)**

MICROCONTROLLER AND PLC

Subject Code : BTEE-604

M.Code : 71150

Time : 3 Hrs.

Max. Marks : 60

INSTRUCTION TO CANDIDATES :

1. SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.
2. SECTION-B contains FIVE questions carrying FIVE marks each and students have to attempt any FOUR questions.
3. SECTION-C contains THREE questions carrying TEN marks each and students have to attempt any TWO questions.

SECTION-A

Q1. Answer briefly :

- a) What is an embedded system?
- b) What is criterion for choosing a microcontroller for a particular application?
- c) What is memory-mapped I/O?
- d) What are the advantages of using programmable logic over discrete logic?
- e) What is the advantage of relative jump over the absolute jump?
- f) What is checksum byte?
- g) Define a programmable logic controller.
- h) How the analog input and output devices are interfaced with a PLC?
- i) List all the programming languages of a PLC.
- j) Why do PLCs execute memory checking routines?

SECTION-B

- Q2. Explain the interrupt structure of 8051 microcontroller Explain how interrupts are prioritized.
- Q3. Explain the features of the 8255 chip and its mode selection.
- Q4. Five bytes are stored at external data RAM from address 1000H. Write a program to store these data in internal RAM from starting address 30H.
- Q5. Assume that a 1 Hz external clock connected to the input pin 3.4. Write a program to display counter 0 on an LCD. Set the initial value of TH0 to –60.
- Q6. Write the ladder programs for the NOT, AND, NAND, NOR and XOR logic functions.

SECTION-C

- Q7. a) Explain the memory map of the internal 128 byte and the special functions registers of the 8051. 5
- b) Write a program to interface a 4x4 matrix of keys with 8051. 5
- Q8. a) Compare and contrast the various types of programmable logic devices. 5
- b) Draw the schematic for interfacing a stepper motor with 8051 microcontroller and write 8051 a program for changing speed and direction of motor. 5
- Q9. a) Explain the architecture of the PLC in detail. Define the function of each section. Discuss the main specifications of a PLC. 5
- b) Explain the scan cycle of a PLC. What is the importance of the scan time? 3
- c) Explain the various types of timers in a PLC. 2

NOTE : Disclosure of identity by writing mobile number or making passing request on any page of Answer sheet will lead to UMC case against the Student.