Roll No. | | | | | | | | | | | |

Total No. of Pages : 02

Total No. of Questions : 09

B.Tech.(Automation & Robotics) (2011 & Onward)/(Electronics Engg/ Electrical Engineering & Industrial Control) (2012 Onwards)/ (EE/Electrical & Electronics/ Electronics & Electrical) (2011 Onwards) (Sem.–6)

MICROCONTROLLER AND PLC

Subject Code : BTEE-604

Paper ID : [A2337]

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. Give the name and manufacturer of some of the most widely used 16-bit microcontrollers.

b. Differentiate between the instruction MOVC and MOVX instruction.

c. Which ports of the 8051 are bit addressable?

d. What are the ways to increase the baud rate in 8051 microcontroller?

e. How many hardware interrupts has the 8051? How are they activated?

f. Find the machine cycle for a crystal of frequency 18 MHz.

g. What is meant by the term interrupt vector?

h. What is the function of the DA instruction?

i. Name different types of counter used in PLC.

j. How FPGA's are different than ASIC's?

SECTION-B

Q2) Describe the 8051 connection to the stepper motor and code a program to rotate it continuously.

Q3) Explain how to use the on chip and off chip memory with 8051 microcontroller.

Q4) Describe the dual role of port 0 in providing both data and addresses.

Q5) Describe the memory based I/O scheme and its advantages and disadvantages.

Q6) Write a program to generate a square wave with an ON time of 4 ms and an OFF time of 10ms on bit 0.0 of port 0. Assume the crystal frequency of 11.052 MHz.

SECTION-C

Q7) Explain operating modes for serial port in 8051.

Q8) Write a program for counter 1 in mode 2 to count the pulses and display the state of TL_1 count on port 2. Assume that clock input in connected to T_1 pin.

Q9) a. Draw the block diagram of the discrete AC and DC input modules and explain the function of each part.

b. Write a ladder program to flash a lamp 10 times with l0sec duty cycle.