

Total No. of Questions : 8]

SEAT No. :

PD4061

[Total No. of Pages : 2

[6402]-20

S.E. (Electrical)

**FUNDAMENTALS OF MICROCONTROLLER AND APPLICATIONS
(2019 Pattern) (Semester - IV) (203149)**

Time : 2½ Hours]

[Max. Marks : 70

Instructions to the candidates:

- 1) Attempt Q.1 or Q.2, Q.3 or Q.4, Q.5 or Q.6, Q.7 or Q.8.
- 2) Draw neat diagrams wherever necessary.
- 3) Figures to the right indicate full marks.

- Q1)** a) Write a short note on C Data types for 8051 microcontroller. [5]
b) Write a program in C to configure Port 1 as input port and Port pin P2.0 as input pin. [5]
c) Draw the TCON and TMOD register and explain use of individual bits of TMOD register in detail. [8]

OR

- Q2)** a) Explain the function of bit TF0 in TCON register and Write a program in C language to start timer 0. [5]
b) Write a program in C language to copy the contents of Port 2 to Port 1. [5]
c) Write a program in C language to generate a square wave form on pin 5 of port 1. The frequency of the waveform is 125Hz. Use timer 1 in mode 1. Assume crystal frequency = 11.0592 MHz. [8]

- Q3)** a) Write a program in C language to enable hardware interrupts INT0 and INT1. [5]
b) Write down the steps to program ADC 0809. [5]
c) Write a short note on interrupt structure of 8051. [8]

OR

- Q4)** a) Draw the IE register and explain the functions of bits EA, ET0 and EX0. [5]
b) Write down the steps in executing on an interrupt. [5]
c) Draw and explain interfacing diagram of ADC with 8051. [8]

P.T.O.

- Q5)** a) Write down the steps to be followed to receive a data serially using 8051 microcontroller. [5]
- b) Write down a short note on interfacing of a GSM module with 8051 microcontroller. [5]
- c) Write a program to transfer a character "P" serially at baud rate of 9600, Use serial port in Mode 1. Crystal frequency is 11.0592 MHz. [7]

OR

- Q6)** a) Draw the SCON register and explain use of individual bits of the register in detail. [5]
- b) Write down the steps to be followed to transfer a data serially using 8051 microcontroller. [5]
- c) Program the 8051 in C to receive bytes of data serially and put them in P1. Set the baud rate at 4800, 8-bit data, and 1 stop bit. [7]
- Q7)** a) With a neat block diagram explain AC voltage measurement using 8051 microcontroller. [7]
- b) Draw an interfacing diagram of stepper motor with 8051. Assuming the motor is controlled through most significant 4 bits of port 1, Write a program in C language to run the stepper motor continuously in anticlockwise direction. Assume suitable step sequence. [10]

OR

- Q8)** a) Explain the function of an electromechanical relay and draw an interfacing diagram of relay with microcontroller 8051 with suitable driver circuit. [7]
- b) Draw and explain interfacing of LED in common anode and common cathode configurations. Write a program in C language for blinking display of a LED connected to port pin P1.0. Use a suitable delay. [10]

