

Total No. of Questions : 08]

SEAT No. :

P1725

[Total No. of Pages : 2

[5460] - 554

**T.E. (E & TC) (Semester - I)**  
**MICROCONTROLLERS**  
**(2015 Pattern)**

*Time : 2½ Hours]*

*[Max. Marks :70*

*Instructions to the candidates:*

- 1) *Answer Q.1 or Q.2, Q.3 or Q.4, Q.5 or Q.6 and Q.7 or Q.8.*
- 2) *Neat diagrams must be drawn wherever necessary.*
- 3) *Figures to the right side indicate full marks.*
- 4) *Use of calculator is allowed.*
- 5) *Assume suitable data if necessary.*

- Q1)** a) Write a program for Transmission of SPPU continuously at baud rate of 9600. [6]
- b) Draw and explain block schematic of logic analyzer. [7]
- c) Draw an interfacing diagram of stepper motor and write an ALP to rotate 90° clock wise and then anti - clock wise with highest delay generated by timer 1, mode 1. [7]

OR

- Q2)** a) Draw and explain programming model of 8051 in detail. [6]
- b) Draw an interfacing diagram of multiplexed 7 segment display and write an ALP to display 99 with step delay of 1 msec (Timer 0, Mode 1) [7]
- c) Design a DAS to interface LED, Switches, relay and buzzer, write an ALP for satisfying the following conditions. [7]
- i) S1 pressed – Relay ON, LED ON, Buzzer off;
  - ii) S2 Pressed ---- Relay On, LED ON, Buzzer ON;
  - iii) S3 pressed ----- Relay off, LED off, Buzzer off

**P.T.O.**

**Q3) a)** Draw and explain functional diagram of Timer 1 of PIC. Also differentiate between operating functions of timer 0, 1 and 2 of PIC. [8]

b) Draw and explain the functional diagram of RESET in PIC. [8]

OR

**Q4) a)** State features of PIC 18, draw and explain the flag structure of PIC in detail. [8]

b) Write a C18 program to generate square wave of 50 Hz continuously using Timer 0, 16 bit and no prescaler. XTAL = 10 MHz. [8]

**Q5) a)** Draw a neat interfacing diagram to display 'SPPU' on 4<sup>th</sup> position in line one and 'UNIVERSITY' at 5<sup>th</sup> position on second line, write an embedded C program. [8]

b) Draw and explain the Compare mode of CCR module. [8]

OR

**Q6) a)** Write a program for 2.5 KHz and 75% duty cycle PWM generation with N = 4, XTAL = 10 MHz. [8]

b) Draw an interfacing diagram of LED connected to Port B of PIC18F and write program embedded C program for Ring Counter. [8]

**Q7) a)** Explain the I2C mode of MSSP structure used for serial communication. [8]

b) Explain the use of BRGH register for calculation of Baud rates. Draw and explain UART transmitter block diagram. [10]

OR

**Q8) a)** Draw an interfacing diagram to PIC - ADC for measuring temperature of room and display on LCD, indicate over temperature by LED, buzzer and relay connected to port, Write an C program for testing. [8]

b) State features of RTC and draw an interfacing diagram with PIC 18FXXXX, write an initialization program. [10]

