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 $4^{th}$ position in line one and 'UNIVERSITY' at $5^{th}$ 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 PICI8F 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]**

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