

Total No. of Questions : 8]

SEAT No. :

P3375

[Total No. of Pages : 2

**[5253] - 525**  
**T.E. (E & TC) (Semester - I)**  
**MICROCONTROLLER**  
**(2015 Pattern)**

*Time : 2½ hours]*

*[Max. Marks : 70*

*Instructions to the candidates:*

- 1) *Answer Q1 or Q2, Q3 or Q4, Q5 or Q6 and Q7 or Q8*
- 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) Draw and explain the flag structure of 8051 with bank 2 selection. [6]  
b) Draw an interfacing diagram of LED connected to port 2 and write an ALP to generate ring counter with highest delay generated using mode 0. [7]  
c) Draw an interfacing diagram of DAC and write an ALP to generate triangular wave continuously. [7]

OR

- Q2)** a) Draw and explain the Interrupt structure of 8051 with vector address [6]  
b) Write short note on hardware debugging tools [7]  
c) Draw the functional diagram of DAS for display of the count from external source on LED and LCD according to the condition: when switch S1 is pressed count should be displayed on LED and when S2 on LCD, Make the provision when Count reaches to FF, ring the buzzer connected with opto-isolater and Lamp the bulb connected with relay. Draw flowchart.[7]

- Q3)** a) Draw and explain functional diagram of Timer 0 of PIC. Also differentiate between operating functions of timer 0, 1 and 2 of PIC [8]  
b) Draw and explain the data memory organization of PIC 18FXXX with concept of bank selection. [8]

OR

- Q4)** a) State features of PIC, draw and explain the block schematic of PIC 18FXXX. [8]  
b) Draw and explain the RESET functional diagram with causes. [8]

*P.T.O.*

- Q5) a)** Draw an interfacing diagram of LCD 16×2 with PIC18FXXXX and write an embedded C program to display ‘GST’ on line one and ‘INDIA’ at 5th position on second line [8]
- b) Draw and explain the capture mode of CCP module. [8]

OR

- Q6) a)** Write a program for 2.5 KHz and 75 % duty cycle PWM generation with N=4. [8]
- b) Draw and explain the port structure of PIC with different registers used in Programming. [8]

- Q7) a)** Explain the SPI mode of MSSP structure used for serial communication. [8]
- b) State features of RTC and draw an interfacing diagram with PIC 18FXXXX, write an initialization program. [10]

OR

- Q8) a)** Explain the use of PIC-ADC module to interface the Temp sensor LM35 used for accepting the Temp and display on LED connected to port D, write an embedded C program. [8]
- b) Design a PIC test board test board using LED, keypad, buzzer and relay connected to ports with control using keys and write a C program for testing with S1 pressed LED ON and S2 pressed relay and buzzer ON.[10]

