

Total No. of Questions : 8]

SEAT No. :

P1477

[5460]-153

[Total No. of Pages : 2

T.E. (E & TC)

MICROCONTROLLER AND APPLICATIONS
(2012 Pattern) (Semester - I) (End Sem.) (304183)

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) Explain the factors for selecting the Microcontroller for the particular application. [6]
b) Explain the operational diagram of Timer/Counter of 8051 in detail. [6]
c) Explain with example function of ALU in PIC for transfer of data. [8]

OR

- Q2)** a) With the help of neat block diagram explain the operation of Logic analyzer. [6]
b) Explain the operational diagram of Interrupt with vector locations of 8051 in detail. [6]
c) State features of PIC and explain BOD and Power down modes of PIC. [8]

- Q3)** a) Draw and explain the interrupt structure of PIC with reasons of causing Interrupts. [8]
b) Draw an interfacing diagram 4*4 key pad and write C program to accept the key. [8]

OR

- Q4)** a) Draw an interfacing Diagram to display the hex counter on LED and write C program to start up count when key 1 is pressed and down count when key 2 is pressed. [8]
b) Write an Embedded C program to generate PWM waveform of period = 200 μ s and Duty cycle of 10% using CCPx on port pin of PIC Microcontroller. [8]

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- Q5)** a) Draw and explain the I2C diagram of MSSP structure in detail. [8]
b) Draw an interfacing diagram to interface EEPROM using SPI protocol.[8]

OR

- Q6)** a) Write an Embedded C program to toggle the bits of port C after every 10 ms using interrupt. [8]
b) Explain the internal block diagram of ADC in PIC and explain the ADC conversion steps. [8]

- Q7)** a) Explain with flowchart and algorithm design of DMM using PIC18. [8]
b) Design a data acquisition system, to senses, process and display the Temp, Humidity, and air pressure. [10]

OR

- Q8)** a) Design a Home alarm system considering the parameters of door safety using sensors for detection of person and its movements, Display warning on LCD. [8]
b) Draw and explain Design of frequency counter with display on LCD using PIC18 Microcontroller. [10]

