Total No. of Questions : 8]

SEAT No. :

PB3806

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T.E. (Electrical Engineering)

ADVANCED MICROCONTROLLER AND EMBEDDED SYSTEMS

(2019 Pattern) (Semester- I) (Elective-I) (303145A)

Time : 2½ Hours] *[Max. Marks : 70*

Instructions to the candidates:

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

Q1) a) List the step for compare mode programming of CCP module of PIC18. **[4]**

b) Explain bit configuration of CCP1CON. **[6]**

c) Write a C program to create 2 KHz PWM frequency with 75% duty cycle on CCP1 pin. Assume XTAL = 10Mhz. **[8]**

OR

Q2) a) Describe programming steps of PWM mode. **[4]**

b) Explain how time period and duty cycle is set for generation of a waveform using PWM mode of CCP module. **[6]**

c) Write a program to generate a square wave with frequency 10 kHz and 50% duty cycle on the CCP1 pin, use Timer1. **[8]**

Q3) a) Differentiate between Interrupt method and polling method. **[3]**

b) Explain interrupt structure of PIC 18 with neat diagram. **[6]**

c) Write a C program to toggle an LED connected to pin RB7 on occurrence of an interrupt INTO. **[8]**

OR

Q4) a) Explain use of INTOIF in INTCON. **[3]**

b) What the steps in executing an interrupt. **[6]**

c) Write a program to generate a square wave that is half the frequency of signal applied at INTO on PORTB.5. **[8]**

P.T.O.

Q5) a) Which bits are used to set the conversion time of ADC? **[4]**

b) Explain bit configuration of ADCON0. **[6]**

c) Write a C program to get data from Channel 0 (AN0) using ADC interrupt and displays the result on PORTC and PORTD. **[8]**

OR

Q6) a) State the features of ADC of PIC18F458. **[4]**

b) State the Sensors used for temperature measurement. Draw flow chart for temperature measurement using ADC of PIC 18. **[6]**

c) With the help of interfacing diagram explain how PC microcontroller can be used to measure temperature using LM35. **[8]**

Q7) a) Explain importance of TSR in serial communication. **[3]**

b) Write a program for PIC18 to transfer the letter 'T' serially at the baud rate of 9600, continuously. Assume XTAL = 10MHz. **[6]**

c) Draw and explain Serial communication USART transmit block diagram. **[8]**

OR

Q8) a) Explain how 8 and 9 bit data is transmitted in serial communication? **[3]**

b) Write down programming steps to transfer data serially. **[6]**

c) What are the steps for SPI read and write protocol for single byte? **[8]**