

Total No. of Questions : 8]

SEAT No. :

PE-2545

[Total No. of Pages : 2

[6583]-72

**T.E. (Electrical Engineering)**

**ADVANCED MICROCONTROLLER AND EMBEDDED SYSTEMS  
(2019 Pattern) (Semester - V) (303145 A) (Elective -I)**

*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) *Figures to the right indicate full marks.*
- 3) *Neat diagrams must be drawn wherever necessary.*
- 4) *Assume suitable additional 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) Draw and explain bitwise CCP1CON register. **[6]**

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

OR

**Q2) a)** How timer is selected for compare and capture mode of CCP module of PIC18 **[4]**

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

c) Assume a pulse is being fed to the CCP1 pin. Using Capture mode, write a C language program to measure the period of the pulse and puts the result on PORTB and PORTD. **[8]**

**Q3) a)** What are the sources of interrupts. **[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 INT0. **[8]**

**P.T.O.**

OR

- Q4)** a) How enabling and disabling hardware interrupt INT0. [3]  
b) What the steps in executing an interrupt. [6]  
c) Write a C program to generate square wave on pin RB0 using timer0 interrupt. [8]
- Q5)** a) Which bits are used to set the conversion time of ADC [4]  
b) State the function of following [6]  
i) ADEM ii) GO/DONE iii) ADIF  
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) Draw interfacing diagram of LCD with PIC18. Write a C program to initialise the LCD. [8]
- Q7)** a) List steps for programming PIC18 to receive data serially [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) With Fosc=10 MHz and BRGH=0, find the SPBRG value for 4800 baud rate. [3]  
b) Write a program for PIC18 to receive data serially at the baud rate of 9600, continuously and put result on PORTB. Assume XTAL=10MHz. [6]  
c) What are the steps for SPI read and write protocol for single byte. [8]

