Total No. of Questions : 8] SEAT No. :

PA-1460 [Total No. of Pages : 2

[5926]-76

T.E. (Electrical)

ADVANCED MICROCONTROLLER AND EMBEDDED SYSTEM

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

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, Q.7 or Q.8.*
2) *Neat diagram 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) How DC motor speed control is achieved using PWM mode of CCP module of PICI8F458. **[8]**

b) Draw CCPICON and list the steps involved in programming PICI8F458 microcontroller in PWM mode. **[9]**

OR

Q2) a) List out timers used for CCP module in PICI8F458. Also explain CCP registers used in detail. **[8]**

b) Write embedded C program to generate PWM of 5KHz with 40% duty cycle and Prescalar N = 4. **[9]**

Q3) a) Write a note on enabling and disabling interrupts and steps to enable interrupts in PIC 18. **[9]**

b) Assuming crystal frequency = 10MHz, write a program in C language to generate square wave form with a frequency of 25kHz on PORTB.4. Use timer 0 in 8bit mode without a Prescalar. **[9]**

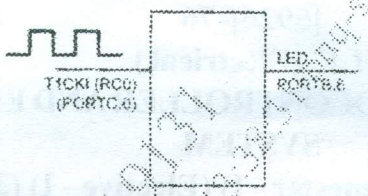
OR

Q4) a) Write a short note on interrupt structure of PIC18F458 microcontroller. **[9]**

b) Write a C Program for PIC18 toggle the LED connected to pin 7 of the PORT B every time INT1 is activated by a pulse generator connected at

P.T.O.

INTI (RB1). The program will toggle the LED on falling edge of the pulse. Assume XTAL = 10 MHz. [9]



Q5) a) Explain in detail the function of following flags related to on board ADE of PIC Microcontroller. [8]

i) ADIF
ii) Go/Done
iii) ADFM
iv) ADON

b) With the help of interfacing diagram and flow chart, explain how PIC microcontroller can be used to measure temperature using LM35 sensor. [9]

OR

Q6) a) Explain features of on-board ADC of PICI8F458. Also explain in detail the functions of ADIF and ADFM bits. [8]

b) Draw a neat diagram and flow chart, explain AC voltage measurement using PIC microcontroller. [9]

Q7) a) Write a C program for the PIC18 to transfer the message "A" serially at 9600 baud, 8-bit data, 1 stop bit. Do this continuously. Assume XTAL=10MHz. [9]

b) Compare synchronous and asynchronous serial communication. Also explain the concept of baud rate with example. [9]

OR

Q8) a) Draw and explain the block diagram of USART transmitter in PICI8. [9]

b) Explain the SPBRG register uses. Also find the value to be loaded in SPBRG register to have baud rate of 4800 and Fosc =10MHz. Assume asynchronous mode an low baud rate. [9]