Total No. of Questions : 10]

SEAT No. :

**P3190**

[Total No. of Pages : 3

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## T.E. (Electrical) (Semester - I)

## ADVANCED MICROCONTROLLER AND ITS APPLICATIONS

## (2015 Pattern)

*Time : 2 ½ Hours]* *[Max. Marks :70*

***Instructions to the candidates:***

1) ***All question are compulsory.***
2) ***Answers to the sections should be written in separate books.***
3) ***Figures to the right indicate full marks.***

***Q1)*** a) Write an instruction sequence in assembly language to add a data 0x0B to contents of memory location 0×200 and store the result in WREG. **[6]**

b) Draw the status register for the PlC microcontroller and Explain the function of Negative flag **[4]**

OR

***Q2)*** a) Explain the following instructions : **[6]**

i) BTG f,b,a ii) MOVFF fs, fd

iii) MOVLW k

b) Explain the function of Bank select register. Write an instruction in assembly language which will select BANK 1. **[4]**

***Q3)*** a) Explain various addressing modes used in PIC 18 microcontroller. **[6]**

b) Write a program in C language to load Timer 0 by a data FFAA H. **[4]**

OR

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***Q4)*** a) Write a program in C to configure the most significant 4 bits of Port D as input bits and the least significant 4 bits of the same port as output bits. **[6]**

b) Write a program in C language to load Timer 0 by a data 0x0l and start Timer 0. **[4]**

***Q5)*** a) Using capture mode. write program in C language to measure the period of wave form fed to RC2 (CCP1) pin of Port C. Output the digital equivalent of the time period of wave form on Port B and Port D. Assume crystal frequency is 10MHz. Timer 1 without a pre scaler us used as a clock resource. **[8]**

b) Draw CCP1CON and list the steps involved in programming PIC microcontroller in Compare mode **[8]**

OR

***Q6)*** a) Using compare mode. write program in C language to toggle the LED every 10 pulses. Use Timer 3 with 1:1 pre scaler as clock resource. **[8]**

b) Draw CCP1CON and list the steps involved in programming PIC microcontroller in PWM mode **[8]**

***Q7)*** a) Explain the functions of following pins of LCD (l6x2) **[8]**

i) Register select (RS) ii) Read/Write (R/W)

iii) Enable (E) iv) VEE

b) Write a short note on interrupt structure of PIC 18 microcontroller **[9]**

OR

***Q8)*** a) List the steps that must be taken in programming PIC 18 microcontroller to transfer character bytes serially. **[8]**

b) Using interrupt programming method write a program in C language to toggle an LED connected to Pin RB7 on occurrence of an interrupt INT0( Pin RB0). **[9]**

***Q9)*** a) Explain in detail the functions of following flags related to onboard ADC of PIC microcontroller i) ADIF ii) Go/Done iii) ADFM iv) ADON **[8]**

b) Explain with a neat diagram, interfacing of DAC 0808 with PIC microcontroller and write a program in C language for generation of RAMP waveform using DAC interfaced with PIC microcontroller through Port B. Assume the crystal frequency to be 10MHz **[9]**

OR

***Q10)***a) With the help of a neat interfacing diagram explain how an electromagnetic relay can be controlled through PIC 18 microcontroller. **[8]**

b) With a neat interfacing diagram and explain temperature measurement using PIC 18 microcontroller **[9]**

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