Total No. of Questions : 10]

SEAT No. : ____

P1732

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[5460] - 561
T.E. (Electrical)
ADVANCED MICROCONTROLLER AND ITS APPLICATIONS
(2015 Pattern) (Semester - I)

Time : 2½ Hours] ***[Max. Marks :70***

Instructions to the candidates:

1) ***Answers Q.1 or Q.2, Q.3 or Q.4, Q.5 or Q.6, Q.7 or Q.8, Q.9 or Q.10.***
2) ***Figures to the right indicate full marks.***

Q1) a) Write an assembly language program for PIC 18 microcontroller to clear the contents of location 0 × 200 and 0 × 300 in internal data memory. **[6]**

b) Draw the status register for the PIC microcontroller and explain the function of Digit Carry flag. **[4]**

OR

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

i) MOVF 0 x 04,0,1

ii) MOVFF fs, fd

iii) BSF PORTD, 0

b) Write a program in C language to configure bits RD0 and RB0 as input bits. **[4]**

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

b) Write an assembly language program for PIC 18 microcontroller to add 3 decimal numbers 1, 2, 3 and store the result in a location 0 x 040 in internal data memory. **[4]**

OR

P.T.O.

Q4) a) Draw T0CON register and explain function of individual bits of T0CON register. **[6]**

b) Find timer clock frequency and timer period for a PIC18 microcontroller with a crystal frequency of 16 MHz. Assume a pre scalar of 64 is used. **[4]**

Q5) a) Write a program in C language to configure CCP module of PIC18 microcontroller in PWM mode to generate a digital waveform with 40% duty cycle and 10 kHz frequency assuming PIC 18 microcontroller is running with 32 MHz crystal frequency. Use a pre scalar of 4 for timer2. **[8]**

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

OR

Q6) a) Explain how time period and duty cycle is set for generation of a waveform using PWM mode in CCP module in PIC 18 microcontroller. **[8]**

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

Q7) a) Draw an interfacing diagram of LCD (16 × 2) with PIC18 microcontroller and explain the functions of various pins of LCD. **[8]**

b) Explain the interrupt structure of PIC18 microcontroller. **[9]**

OR

Q8) a) Write a neat diagram and flowchart explain AC voltage measurement using PIC microcontroller. **[8]**

b) Write a program in C language for PIC 18 microcontroller to transfer a letter 'T' serially and continuously at a baud rate of 9600. Use BRGH = 0. Assume crystal frequency = 10 MHz. **[9]**

Q9) a) With the help of interfacing diagram and flowchart explain how PIC 18 microcontroller can be used to measure temperature using LM35 sensor. **[8]**

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

OR

Q10) a) Explain in detail the functions of following flags related to onboard ADC of PIC microcontroller **[8]**

i) ADIF

ii) Go/Done

iii) ADFM

iv) ADON

b) With the help of a neat interfacing diagrams explain interfacing of an electromagnetic relay and an Optoisolator with a PIC18 microcontroller. **[9]**

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