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

ADVANCED MICROCONTROLLER AND ITS APPLICATIONS

(2012 Pattern)

Time : 2½ Hours]   *[Max. Marks :70*

Instructions to the candidates:

    1)   *All questions are compulsory.*

    2)   *Figures to the right indicate full marks.*

Q1) a)   Compare RISC and CISC architectures.   **[6]**

    b)   Draw the TOCON register and Explain the use of Pre-scalar.   **[4]**

OR

Q2) a)   With a neat diagram explain the internal RAM organization of PIC18F458 microcontroller.   **[6]**

    b)   Draw the status register of PIC 18F458 and explain any one of its flag.**[4]**

Q3) a)   Explain the following instruction   **[6]**

        i)   MOVFF 0X01,0X05

        ii)   SETF f,a

    b)   Write a program in C language which will copy the contents of WREG to Port B continuously.   **[4]**

OR

Q4) a)   Write an assembly language program for PIC18f458 microcontroller to copy data from PORTB to PORTC.   **[6]**

    b)   Explain any two tools used in application development using PIC microcontroller.   **[4]**

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Q5) a) Draw a neat diagram of interfacing of 16 × 2 LCD with PIC 18F458 microcontroller in 8 bit mode. Assume suitable port pins for interfacing. Explain the function of following pins in detail RS, R/W, and EN. **[8]**

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

OR

Q6) a) Write a program for PIC 18 microcontroller in C language to transfer a letter 'T' serially and continuously at a baud rate of 9600. Use BRGH = 0. **[8]**

b) With a neat diagram of interfacing of 4 × 4 keypad with PIC18F458 and flow chart,explain the method of key press detection. **[8]**

Q7) 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. **[9]**

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

OR

Q8) a) A stepper motor is interfaced with PIC18 microcontroller through lower nibble of Port B (RD0- RD3). Write program in C language to rotate the stepper motor in anticlockwise direction continuously. Assume the step angle of 1.8 degree's. Assume crystal frequency = 10 MHz. **[9]**

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

Q9) a) Explain in detail the functions of the following special function registers ADCON0, ADRESH and ADRESL of PIC 18 microcontroller. **[9]**

b) Draw a neat diagram of interfacing of DAC 0808 with PIC microcontroller and write a program for generation of square waveform using DAC. Assume **[8]**

    i) Crystal frequency is 10MHz

    ii) DAC 0808 is interfaced with PIC microcontroller through Port B.

OR

Q10) a) With the help on interfacing diagram and flowchart explain how PIC18 microcontroller can be used to measure temperature using LM35 sensor.**[9]**

b) Explain the steps involved in programming of A/D converter in PIC18F458 microcontroller using method of polling **[8]**

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