P2872

[4958]-1061

T.E. (Electrical)

ADVANCED MICROCONTROLLER AND ITS APPLICATIONS

(2012 Course) (Semester - I) (303141) (End - Semester)

Time : 2½ Hours]   *[Max. Marks : 70*

Instructions to the candidates:

1)   Answer Q1 or Q2, Q3 or Q4, Q5 or Q6, Q7 or Q8, Q9 or Q10..

2)   Neat diagrams must be drawn wherever necessary.

3)   Figures to the right indicate full marks.

4)   Assume suitable data, if necessary.

Q1) a)   Explain the status register of PIC 18F458.   **[6]**

b)   Explain the concept of Pipe lining used in PIC 18 microcontroller.   **[4]**

OR

Q2) a)   Compare RISC and CISC architectures.   **[6]**

b)   Write an instruction sequence in assembly language to add a number 0x05 to the contents of memory location 0x06 H and store the result at the same location.   **[4]**

Q3) a)   Using Timer0 in 16-bit mode, write a C language program to obtain a time delay of 1ms. Assume 8-MHz crystal, leading edge clock, and a prescale value of 1 : 128.   **[6]**

b)   Explain the instruction

BTFSC f,b,a

MOVLW 0x04   **[4]**

OR

Q4) a) Explain the following control structures used in embedded C **[6]**

      i)   if then else construct

      ii)   while construct

      iii) switch construct

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

Q5) a) Draw a neat diagram of interfacing of 16x2 LCD with PIC18F458 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) Write short note on SPI protocol. **[8]**

OR

Q6) a) Write a program for PIC 18 microcontroller to transfer a letter 'A' serially and continuously at a baud rate of 9600. Use BRGH = 0. **[8]**

    b) With a neat diagram of interfacing of 4x4 keypad with PIC18F458. Using a flow chart explain the method of key press detection. **[8]**

Q7) a) Using capture mode, write a program to measure the period of pulse which is fed to CCP1 pin (RC2). Output the count corresponding to the period of pulse on Port B and Port D. Use timer 1 without a pre-scalar for capture mode. **[9]**

    b) Write a short note on PWM control DC motor using CCP mode. **[8]**

OR

Q8) a) A stepper motor is interfaced with PIC18 microcontroller through lower nibble of Port B(RD0-RD3). Write program to rotate the stepper motor in anti-clock wise direction continuously. Assume the 4 step sequence is stored from locations 0x10 to 0x13 H. **[9]**

b) Explain the steps involved in PWM programming using CCP module in PIC 18F458 microcontroller. **[8]**

Q9) a) Explain the steps involved in programming of A/D converter in PIC18F458 microcontroller using method of polling. **[9]**

b) Explain with a neat diagram, interfacing of DAC 0808 with PIC microcontroller and write a program for ramp waveform generation using DAC interfaced with PIC microcontroller through Port D. Assume the crystal frequency to be 10MHz. **[8]**

OR

Q10) a) Draw interfacing of LM35 with PIC 18F458. Write a program to measure the temperature and display the 10 bit digital equivalent value of the temperature on Port C and Port D. **[9]**

b) Explain in detail the functions of the following special function registers ADCON0, ADCON1 ADRESH and ADRESL of PIC18 microcontroller. **[8]**

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