

(3 Hours)

[Total Marks :80]



N.B. 1) Question no. 1 is compulsory. Attempt any 3 questions out of remaining questions.

2) All questions carry equal marks.

3 Make suitable assumptions if necessary.

- 1** Solve following **20**
- a** Define embedded system. What are characteristics of embedded system?
  - b** Interface a pushbutton key to PIC 18. Write a program to read the status of the key and send it to RC0.
  - c** Explain Interrupt latency.
  - d** Explain following PIC 18 instructions.  
1. BCF      2. ANDLW
- 2** **a** Assume XTAL=10 MHz, write a PIC 18 program to generate square wave of 50 HZ. **10**  
Use Timer1 with maximum prescaling.
- b** Explain programming logic for converting HEX data to ASCII. Write a program to **10**  
convert 1 byte hex data to ASCII.
- 3** **a** Explain memory organization of PIC 18 in detail. **10**
- b** Explain design challenges of embedded systems **10**
- 4** **a** Interface 16x2 LCD to PIC18F. Write a program to display "INSTRUMENTATION" **10**  
on line 1 and "ENGINEERING" on line 2.
- b** What are the features of ADC module of PIC18. Write a program to get data from **10**  
channel0 of ADC and display the result on PORTC and PORTD

Q.P. Code :13270

- 5 a Draw and explain interfacing of 8 bit DAC to PIC18. Write a program to generate triangular waveform 10
- b Interface 4 seven segment LEDS to PIC18 using multiplexed display technique. Write a program to display 2017 on these LEDS 10
- 6 a What is task? What are different states of task? Explain various task scheduling algorithm 10
- b Explain PIC18F serial port. Write a program to send letter "A" continuously on serial port at 9600 baud. Assume crystal frequency is 8 Mhz. 10

PIC18F4520 SFRS

Reg. Name	Bit7	Bit6	Bit5	Bit4	Bit3	Bit2	Bit1	Bit0
INTCON	GIE/GIH	PEIE/GIEL	TMR0IE	INT0IE	PBIE	TMR0IF	INT0IF	RBIF
INTCON2	RBPU	INTEDG0	INTEDG1	INTEDG2	-----	TMR0IP	-----	RBIP
INTCON3	INT2IP	INT1IP	-----	INT2IE	INT1IE	-----	INT2IF	INT1IF
T0CON	TMR0ON	T08BIT	T0CS	T0SE	PSA	T0PS2	T0PS1	T0PS0
T1CON	RD16	T1RUN	T1CKPS1	T1CKPS0	T1OSCEN	T1SYNC	TMR1CS	TMR1ON
T2CON	---	T2OUTPS3	T2OUTPS2	T2OUTPS1	T2OUTPS0	TMR2ON	T2CKPS1	T2CKPS0
ADCON0	---	---	CHS3	CHS2	CHS1	CHS0	GO/DONE	ADON
ADCON1	---	---	VCFG1	VCFG0	PCFG3	PCFG2	PCFG1	PCFG0
ADCON2	ADFM	---	ACQT2	ACQT1	ACQT0	ADCS2	ADCS1	ADCS0
TXSTA	CSRC	TX9	TXEN	SYNC	SENDB	BRGH	TRMT	TX9D
RCSTA	SPEN	RX9	REN	CREN	ADDEN	FERR	OERR	RX9D
IPR1	PSPIF	ADIF	RCIF	TXIF	SSPIF	CCP1IF	TMR2IF	TMR1IF
IPR2	OSCFIF	CMIF	---	EEIF	BCLIF	HLVDIF	TMR3IF	CCP2IF
PIE1	PSPIE	ADIE	RCIE	TXIE	SSPIE	CCP1IE	TMR2IE	TMR1IE
PIE2	OSCFIE	CMIE	---	EEIE	BCLIE	HLVDIE	TMR3IE	CCP2IE
PIR1	PSPIP(1)	ADIP	RCIP	TXIP	SSPIP	CCP1IP	TMR2IP	TMR1IP
PIR2	OSCFIP	CMIP	---	EEIP	BCLIP	HLVDIP	TMR3IP	CCP2IP