

(3 Hours)

[Total Marks:80]

N.B. :

- (1) Question No. 1 is compulsory.
- (2) Attempt any three questions out of remaining five questions.
- (3) Assume suitable data if necessary

1. Answer following. 20
 - a. Explain characteristics of embedded systems
 - b. Interface one 7-segment LED display to PIC18F4520 and write instructions/program to display '8' on it.
 - c. Explain following instructions with example
 - i. DECFST
 - ii. BTFSS
 - d. With suitable example explain priority inversion
 - e. Explain PORTB change interrupt of PIC18F.
2. a. Draw and explain programming model of PIC18F4520. 10
 - b. Write a program to convert HEX number to decimal number using PIC18F assembly language or C programming. 10
Explain program logic in detail with example.
3. a. Interface 16x2 LCD module to PIC18. Write a program to display "INSTRU" on first line and "ENGINEERING" on second line 10
 - b. Write a program for PIC18 to transfer the string 'INSTRU' serially at 9600 baud continuously. Assume XTAL=8Mhz
4. a. Interface 8 keys and one 7-segment display to PIC18. Write a program to display key number which is pressed. If no key is pressed display '0'. 10
 - b. What is task? Explain various task scheduling algorithms. 10

[Turn Over]

5. a. Explain onchip ADC module of PIC18F4520. Write a program to convert analog signal at AN0 and out it on PORTB and PORTD. 10
- b. Explain block diagram of temperature measurement / control system using PIC18F4520. Explain program flowchart. 10
6. Write short note on any two 20
- a. Development tools for PIC18F4520. Explain role of each tool in PIC18F based project.
- b. On- chip ECCP module of PIC18F4520. Explain PWM mode in detail.
- c. Memory organization of PIC18F.

PIC 18f4520 SFRS

Reg. Name	Bit7	Bit6	Bit5	Bit4	Bit3	Bit2	Bit1	Bit0
INTCON	GIE/GIH	PEIE/GIEL	TMROIE	INTOIE	RBIE	TMROIF	INTOIF	RBIF
INTCON2	RBPUP	INTEDG0	INTEDR1	INTEDG2		TMROIP		RBIP
INTCON3	INT2IP	INT1IP		INT2IE	INT1IE		INT2IF	INT1IF
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	NDB	ACQT0	ADCS2	DACS1	ADCS0
TXSTA	CSRC	TX9	TXEN	SYNC	SENDB	BRGH	TRMT	TX9D
RCSTA	SPEN	RX9	SREN	CREN	ADDEN	FERR	OERR	TX9D
IPR1	PSPIP	ADIP	RCIP	TXIP	SSPIP	CCP1IP	TMR2IP	TMR1IP
IPR2	OSCFIP	CMIP	---	EEIF	BCLIP	HLVDIP	TMR3IP	CCP2IP
PIE1	PSPIE	ADIE	RCIE	TXIE	SSPIE	CCP1IE	TMR2IE	TMR1IE
PIE2	OSCFIE	CMIE	---	EEIE	BCLIE	HLVDIE	TMR3IE	CCP2IE
PIR1	PSPIF	ADIF	RCIF	TXIF	SSPIF	CCP1IF	TMR2IF	TMR1IF
PIR2	OSCFIF	CMIF	---	EEIF	BCLIF	HLVDIF	TMR3IF	CCP2IF