(3 Hours) **[Total Marks:80]**

N.B. **(1)** Question no.1 is compulsory.
(2) Attempt any three from the rest.
(3) Make any suitable assumption wherever required.

Q.1		Answer any four.	
	(a)	What do you mean by prescaling of PIC 18 timers?	5M
	(b)	Explain the internal bus structure of PIC18 microcontroller.	5M
	(c)	Explain the pipelining concept in PIC 18 Microcontroller.	5M
	(d)	Explain status register and BSR register of PIC18.	5M
	(e)	What are the different data transfer schemes?	5M
Q.2	**(a)**	Explain the memory organization (Program and Data Memory) of PIC18 Microcontroller.	10M
	(b)	Write a program in assembly language to multiply and divide two 8 bit numbers using PIC18 Microcontroller.	10M
Q.3	**(a)**	Explain all the instructions related to stack and subroutine with example.	10M
	(b)	Write a C18 program to send the message "University of Mumbai" to the serial port continuously. Assume a SW is connected to pin RB2. Monitor its status and set the baud rate as follows: SW=0, Baud rate=9600 SW=1, Baud rate=38400 Assume crystal frequency=10MHz	10M
Q.4	**(a)**	Explain the SPBRG, TXSTA and RCSTA registers used in serial communication.	10M
	(b)	Write a C18 program using Timer 0 to generate a square wave of 100Hz frequency on Port B pin RB0. Use 16 bit programming technique with 128 prescaler. The internal frequency is 10 MHz.	10M
Q.5	**(a)**	Draw and explain LCD interfacing with PIC 18 Microcontroller.	10M
	(b)	Draw the interfacing diagram and write C18 program to interface Dc Motor to monitor the status of switch connected to pin RC2 and do the following (1) If switch = 0, the Dc Motor moves with 50% of duty cycle. (2) If switch =1, the Dc Motor moves with 25% of duty cycle.	10M
Q.6		Write a short note on any two	
	(a)	ADC interfacing with PIC 18 Microcontroller.	10M
	(b)	CCP modules of PIC 18 Microcontroller.	10M
	(c)	Stepper Motor interfacing with PIC 18 Microcontroller.	10M

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