Duration – 3 Hours **Total Marks – 80**

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

Q 1	Answer the following.	**20M**
(a)	Discuss the steps taken by the microcontroller when an interrupt occurs.	**5M**
(b)	What is timer roll over? Specify the significance of TMR0IF.	**5M**
(c)	Explain the Compare instructions used in PIC18F microcontroller.	**5M**
(d)	Explain STACK and STACK pointer in PIC18F.	**5M**
Q 2 (a)	Explain the memory organization (RAM and ROM) of PIC 18F microcontroller.	**10M**
Q 2 (b)	Build a C code to transmit a character 'Y' serially at 9600bps continuously. Assume XTAL = 10MHz.	**10M**
Q 3 (a)	Explain the different types of instruction sets and mention two examples of each set.	**10M**
Q 3 (b)	Write an Assembly language program to separate odd and even numbers from a given set of 10 numbers. Store the even numbers in the memory location starting from 20H and the odd numbers in the memory location starting from 30H onwards. Use register indirect addressing mode.	**10M**
Q 4 (a)	Explain the registers SPBRG, TXREG and RCSTA registers associated with serial communication in PIC 18F.	**10M**
Q 4 (b)	With a neat diagram, demonstrate a PIC microcontroller-based system to operate a stepper motor in forward and reverse directions using push buttons.	**10M**
Q 5 (a)	Illustrate the different addressing modes used in PIC18F458.	**10M**
Q 5 (b)	Describe the steps to program the Timer0 in 16-bit mode to generate a 1 ms delay. XTAL = 10MHz.	**10M**
Q 6	Write a short note on (Attempt any two)	
(a)	PWM signal generation using CCP module	**10M**
(b)	Seven Segments LED Interfacing with PIC 18 Microcontrollers.	**10M**
(c)	DC Motor interfacing with PIC18 Microcontroller	**10M**