



**Notes :** 1. Due credit will be given to neatness and adequate dimensions.  
2. Assume suitable data wherever necessary.  
3. Illustrate your answer necessary with the help of neat sketches.  
4. Use of pen Blue/Black ink/refill only for writing the answer book.

1. a) What is a task scheduling? Explain various task scheduling algorithms. 7  
b) Explain how a Semaphore can be used for inter task synchronization. 7

OR

- |    |    |                                                                 |   |
|----|----|-----------------------------------------------------------------|---|
| 2. | a) | Describe Inter process communication mechanism.                 | 6 |
|    | b) | Explain the software architecture of Embedded System in detail. | 8 |
| 3. | a) | Describe the Register file structure of PIC 18 family.          | 7 |
|    | b) | Compare the features of ARM & PIC microcontroller.              | 6 |

OR

4. a) Explain the features of RISC implemented by the PIC 18 microcontroller. 7

b) Draw the block diagram & explain the 16 bit Timer 0 of PIC. 6

5. a) Explain following instructions: 6

  - i) BNZ
  - ii) BCF
  - iii) RCALL

b) A switch is connected to pin RB2 of PIC 18. Write an ALP to check the status of switch & perform the following 7

If Switch = 0, send a letter 'N' to port D  
 & if switch = 1, send a letter 'Y' to port D.

OR

6. a) Assume XTAL=10MHz. Write a program to generate square wave of 50Hz frequency on port B.7. Use timer-0, 16-bit mode, With prescaler=128. 7

b) Write C program for PIC18 to read the data from Channel 0 (RA0) of ADC & display the result on port C & port D for every quarter of second. 6

7. a) What is Mode Change? Explain Aperiodic Mode Change & Sporadic Mode Change. 7  
b) Explain Simple Clock driven Multiprocessor Scheduling. 7

**OR**

8. a) What are the constraints on the frame size on cyclic scheduling? Explain. 7  
b) What is a slack stealing? Explain how it improve the average response time of aperiodic jobs. 7  
9. a) With suitable example, explain RM algorithm for assigning a fixed priority. 7  
b) Explain the Schedulability test for EDF algorithm. 6

**OR**

10. a) What is a time demand analysis of fixed priority task? Explain. 7  
b) Explain the LST dynamic priority algorithm. 6  
11. a) Explain the operation of SpSI, Sporadic server. 7  
b) Explain Preemptive Weighted Fair Queuing algorithm. 6

**OR**

12. a) Explain a Deferrable servers Mechanism. 6  
b) Explain Constant Utilization Server algorithm. 7

\*\*\*\*\*