2053
B.E. (Information Technology)
Eighth Semester
IT-802: Embedded System Design

Time allowed: 3 Hours

Max. Marks: 50

**NOTE**: *Attempt <u>five</u> questions in all, including Question No. I which is compulsory and selecting two questions from each Unit.*

x-x-x

I.   Attempt the following:-

    a)  The 8051 DIP package is a _____ pin package.

    b)  Explain the role of timer to set the baud rate in 8051.

    c)  Explain Harvard architecture.

    d)  The transfer of data using parallel lines is _____ but _____.

    e)  Write instruction to add 88H and 94H and show the status of flags for PIC after execution.

    f)  List the pointers used to access ROM in PIC.

    g)  Which bit must be set in TCON register in order to start the "Timer 0" while operating in Mode 0?

    h)  Name the timer responsible for setting baud rate in 8051.

    i)  What is the nature of real time operating system?

    j)  What do you mean by task states in contest to RTOS?          (10x1)

## UNIT - I

II.  a) Explain the following registers w.r.t 8051.

    A, B, PSW, DPTR.

    b) What is the role of serial control register (SCON) in serial program of 8051?     (2x5)

III. a) Differentiate between Harvard and von Neumann architecture. And explain the role of microcontroller in embedded devices.

    b) Compare Microprocessor and Microcontroller and give few examples of each.  (2x5)

P.T.O.

IV.  a) In 8051, assume that clock pulses are fed into pin T1, write a program for counter 1 in mode 2 to count the pulses and display the state of the TL1 count on P2.

b) Explain level and edge triggered interrupts of 8081.  (2x5)

## UNIT - II

V.  a) Draw and Explain PIC microcontroller program memory.

b) Write instructions to logically AND bytes 97H and 68H and identify the status of the flags for PIC Controller.  (2x5)

VI.  a) What are the trends of embedded system evolution?

b) Explain the following terms w.r.t RTOS:-

i) Kernel and Its Types

ii) Different time management tasks done by RTOS  (2x5)

VII.  a) Explain real time scheduling and its taxonomy.

b) Explain:-

i) Round robin

ii) Interrupt routines

iii) RTOS environment.  (2x5)

x-x-x