Printed Pages : 3 **TIC-601**

(Following Paper ID and Roll No. to be filled in your Answer Book)

PAPER ID : 3097 Roll No.

B. Tech.

(SEM. VI) EXAMINATION, 2007-08

MICROCONTROLLER & EMBEDED SYSTEM

Time : 3 Hours] *[Total Marks : 100*

Note : *(1) Attempt **all** questions.*
*(2) All questions carry **equal** marks.*

1 Attempt any **four** parts of the following : **5×4=20**

(a) Write salient features of microcontroller 8051.

(b) Give the merits and demerits of CISC and RISC processors.

(c) Which of the following will be more suitable from technical and commercial point of view :

(i) Microprocessor based temperature measurement

(ii) Microcontroller based temperature measurement. Justity your answer.

(d) Compare the two architectures of processor.

(e) Give a list of microcontrollers by different manufacturers. How will you select for your application ?

(f) What is the difference between 8 bit and 16 bit microcontroller ?

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2 Attempt any **four** parts of the following : **5×4=20**

(a) What are the alternate functions of port 3 of 8051 microcontroller ?

(b) Describe stack pointer, program counter, DPTR of 8051.

(c) Explain the interrupts of 8051. How they can be enabled and disabled ? How priority can be assigned ?

(d) Explain the following assembler directives :

(i) ORG

(ii) EN

(iii) DB

(e) Describe mode 0 and mode 1 in which serial port can be configured.

(f) Explain the following instructions of 8051 :

(i) MOV X

(ii) XCH

(iii) MVL AB.

3 Attempt any **two** parts of the following : **2×10=20**

(a) Discuss the architecture of PIC microcontroller with the help of block diagrams.

(b) Describe the architecture of Atmel 89C2051 microcontroller with the help of block diagram.

(c) Discuss the following features of 89C2051 microcontroller :

(i) Flash memory

(ii) Analog comparator.

4 Attempt **two** parts of the following : **2×10=20**

(a) How will you interface LCD with Atmel 89C51 microcontroller ? Draw the circuits and explain its operation.

(b) How will you connect (i) electromechanical relay and (ii) HEX keyboard using microcontroller port pins ?

(c) Explain interfacing of DAC to microcontroller. Write a program in assembly language for its operation.

5 Attempt any **four** parts of the following : **4×5=20**

(a) How will you measure frequency using microcontroller ?

(b) Describe microcontroller based temperature measurement.

(c) Design a microcontroller based scheme for the measurement of load using strain gauge load cell.

(d) How will you interface LVDT to microcontroller for the measurement of linear distance ?

(e) Describe microcontroller based PID controller with the help of flow chart.

(f) How will you generate a square wave of 1 kHz using Timer of 8051 at port pin P1.0. Assume control frequency 12 kHz.