Printed Pages : 3 **EIC601**

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

PAPER ID : 2618 **Roll No.** | | | | | | | | | | |

B. Tech.

(SEM. VI) THEORY EXAMINATION 2010-11

MICROCONTROLLER

Time : 3 Hours *Total Marks : 100*

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

(2) Be precise in your answer. No second answer book will be provided.

1. Attempt any **two** parts of the following :— **(10×2=20)**

(a) (i) Discuss microcomputer system. Is microcomputer as same as microcontroller ?

(ii) What are the different parameters of classifying the microcontrollers ? Explain

(b) (i) Write One instruction each using the following addressing modes :

immediate, direct, register, indirect. In accessing the stack which addressing mode is used ?

(ii) Give the size of RAM and on chip ROM in 8051, 8052 and 8031.

(c) (i) Explain the different power saving modes of 8051.

(ii) With the help of block diagram, explain the architectural feature of 8051 microcontroller.

2. Attempt any **two** parts of the following :— **(10×2=20)**

(a) (i) With the help of circuit explain port 1 pin configuration.

(ii) Multiply the sunsigned number in register R3 by the unsigned number on port 2 and put the result in external RAM location 10h(MSB) and 11h(LSB).

(b) (i) Write a program to set the carry flag to 1 if the number in A is even; set the carry flag to 0 if the number in A is odd.

(ii) Write a program to add two 16-bit numbers. The numbers are 2E5Fh and A3B4h. Store the sum in R7 and R6; R6 should have the lower byte.

(c) (i) Discuss the SFR memory organization of 8051.

(ii) Write a program to place any number in internal RAM location 3Ch and increment it until the number equals 2Ah.

3. Attempt any **two** parts of the following :— **(10×2=20)**

(a) (i) Discuss various SFR's required while programming the 8051 Timer(s)/Counter(s). Find the timer's clock frequency and its period with the following crystal frequencies : 12 HMz, 16 MHz and 11·0592 MHz.

(ii) With a frequency of 22 MHz, generate a frequency of 100 kHz on pin P2·3. Use timer 1 in mode 1.

(b) (i) With oscillator frequency 11·0592 MHz, find the TH1 value needed to have the following baud rates :
9600, 2400 and 1200.

(ii) How the interrupts are processed in 8051 ? Give the name of highest and lowest priority interrupt.

(c) Explain the operation of an 8051 UART device with the help of block diagram. Also write a program which will transmit an 8-bit data via the serial port. A ninth bit is to be used as an odd parity bit.

4. Attempt any **two** parts of the following :— **(10×2=20)**

(a) Explain the memory mapped I/O and memory address decoding.

(b) With a schematic diagram and related program, interface a DAC to 8051.

(c) With a schematic diagram and related program, interface a printer to 8051. Give reasonable details after stating the assumptions.

5. Attempt any **two** parts of the following :— **(10×2=20)**

(a) Write short notes on the following features of 8096 microcontroller :

(i) High speed input

(ii) High speed output

(iii) A to D Converter.

(b) Show the ADC connection to 8255 and write the program for the showed connection.

(c) Describe MC68HC11 microcontroller features in detail.