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**SECOND YEAR (Computer Science)**  
**CELE 24201: System on Chip Programming**  
**(Semester IV)**

**Program: BScComp05**  
**Program Specific: B.Sc.(Computer Science)**  
**Course Type: Minor**  
**Paper: I**

**Credits: 2**  
**Time: 2 Hours**  
**Max. Marks: 30**  
**SET:A**

**Instructions to the candidate:**

- 1) All questions are compulsory.
- 2) Figures to the right indicate full marks.
- 3) Draw a well labelled diagram wherever necessary.

**Q1) Answer the following**

**[5 X 1= 5]**

- a) Write the size of Program Counter (PC) in 8051 microcontroller.
- b) Write the name of data register for serial communication in 8051  $\mu$ C.
- c) Which is the highest priority programmable interrupt of 8051 microcontroller?
- d) Port 0 is used to carry upper byte of data from external memory: Write True/False
- e) What is the size of memory location if a variable is declared as integer?

**Q2) Answer the following (Attempt any 5/7)**

**[5 X 2 =10]**

- a) Write result of execution of given instruction : bit switch=02H
- b) Find the address range for internal ROM in 8051 microcontroller
- c) Write role of Tx and Rx pin of 8051 Microcontroller.
- d) Write default priority of interrupts in 8051 Microcontroller.
- e) Find the value of TMOD register for timer 1 used in mode 1 to generate time delay.
- f) Identify the type of instruction: P0= A & (0XF0)    2. A=A+B
- g) Write a program to toggle the bits of Port 1 continuously with some time delay.

**Q3) Answer the following/Write short notes on following (Attempt any 2/4) [2 X 5 = 10]**

- a) Explain Internal RAM organization.
- b) Explain the block diagram of an embedded system.
- c) Draw Block diagram & explain interface of external 1KB RAM to 8051 Microcontroller .
- d) Write a program to continuously sent a message "Hello" using mode 1 of serial communication with baud rate of 9600 .

**Q4) Answer the following (Attempt any 1/2)**

**[5 X 1 = 5]**

- a) Explain different data types used in embedded C programs.
- b) Write a program to generate 5msec delay using timer 0 in mode1. Frequency of an externally connected crystal is 12 MHz.

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MEP 2020