

**BIRLA INSTITUTE OF TECHNOLOGY, MESRA, RANCHI  
(END SEMESTER EXAMINATION)**

**CLASS: BTECH  
BRANCH: ECE**

**SEMESTER : V  
SESSION : MO/2022**

**TIME: 3:00 Hours**                      **SUBJECT: EC333 INTRODUCTION TO MICROCONTROLLERS**

**FULL MARKS: 50**

**INSTRUCTIONS:**

1. The question paper contains 5 questions each of 10 marks and total 50 marks.
  2. Attempt all questions.
  3. The missing data, if any, may be assumed suitably.
  4. Before attempting the question paper, be sure that you have got the correct question paper.
  5. Tables/Data hand book/Graph paper etc. to be supplied to the candidates in the examination hall.
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- Q.1(a) Apart from the accumulator in 8051, is there any register involved in multiply and division instruction execution? [2]
- Q.1(b) Why is the SP of MCS-51 an 8-bit and not a 16-bit register? [3]
- Q.1(c) Write a program to generate a delay of 20msecs using 8051. [5]
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- Q.2(a) What is the difference between LCALL and ACALL instruction sets? [2]
- Q.2(b) When the MCU is powered on, the default register bank is bank 0. Write a program to switch to bank 3 and then to switch to bank 1. [3]
- Q.2(c) Draw the block diagram of the 8051 microcontrollers. Write the difference between the 8051 and 8031 microcontrollers. [5]
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- Q.3(a) What is the difference between LJMP and SJMP instructions? [2]
- Q.3(b) What is meant by a register are bit addressable? [3]
- Q.3(c) Why intel 8255 is designated as a programmable peripheral interface? [5]
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- Q.4(a) How many timers are available in 8051? Distinguish between timer and counter. [2]
- Q.4(b) Explain the functions of the timer mode register (TMOD) and serial control register (SCON). [3]
- Q.4(c) Write assembly language code to generate the square wave waveform at port 1.4 of 8051 microcontroller where ON time is 13 msec and OFF time 4 msec in a period using timer 1 in mode 1. The clock frequency is 12MHz. [5]
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- Q.5(a) What is interfacing? Why is it essential to interface the keyboard and display devices to the 8051 microcontrollers? [2]
- Q.5(b) Illustrate with a suitable diagram the interfacing of the temperature sensor using port A of 8255 with memory-mapped schemes. [3]
- Q.5(c) Write short notes on a. Serial Communications b. Memory-mapped I/O and I/O mapped I/O [5]

:::25/11/2022:::M