

**PRESIDENCY UNIVERSITY BENGALURU**

**SCHOOL OF ENGINEERING**

**SUMMER TERM END TERM EXAMINATION AUGUST 2024**

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| **Semester**: 6th    **Course Code**: ECE 3014  **Course Name**: Microcontroller Applications  **Department:** ECE | **Date**: 05-08-2024  **Time**: 1:00pm – 4:00pm  **Max Marks**: 100  **Weightage**: 50% |
| **Instructions:**   1. *Read the all questions carefully and answer accordingly.* 2. *Do not write any matter on the question paper other than roll number.* |  |

# PART A

|  |  |  |  |  |  |  |  |  |  |  |  |  |
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| Roll No |  |  |  |  |  |  |  |  |  |  |  |  |

**Answer any FIVE Questions. Each question carries 2 marks. (5Q x2M= 10M)**

1. 8051 is \_\_\_\_\_\_\_\_\_\_ bit controller and it is a \_\_\_\_\_\_\_\_\_ pin IC. (CO: 01 BL: Knowledge)

1. 8051 has \_\_\_\_\_\_\_\_\_number of address and \_\_\_\_\_\_\_number of data lines (CO: 01 BL: Knowledge)

1. The addressing mode for the instruction MOV A, #34h is \_\_\_\_\_\_\_\_\_\_\_\_. (CO: 02 BL: Knowledge)

4. ARM stands for \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. (CO: 04 BL: Knowledge)

5. T0 and T1 of 8051 can perform \_\_\_\_\_\_\_\_\_\_/\_\_\_\_\_\_\_\_\_\_ operations. (CO: 03 BL: Knowledge)

6. The maximum 16-bit hexadecimal count for counters is \_\_\_\_\_\_\_. (CO: 03 BL: Knowledge)

7. ALU stands for \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ and SP stands for \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ in 8051. (CO: 01 BL: Knowledge)

# PART B

**Answer any FIVE Questions. Each question carries 10 marks. (5Q x 10M= 50M)**

1. Briefly describe what is an embedded system and list few examples. (CO: 04 BL: comprehension)

1. Explain with a neat diagram stack operations PUSH and POP. (CO: 02 BL: comprehension)

1. Differentiate between timers and counters with a suitable diagram. (CO: 03 BL: comprehension)

4. Identify and explain different modes of serial communication. (CO: 03 BL: comprehension)

5. List the salient features of 8051 with a simple block diagram of 8051. (CO: 01 BL: comprehension)

6. Assume A register in 8051 has a hexadecimal number 45H . what will be the result in accumulator if the data is rotated left 2 twice and rotated right once. (CO: 02 BL: comprehension)

7. Pipelining is an important concept in ARM controllers. Explain pipelining with a neat diagram.

(CO: 04 BL: comprehension)

# PART C

**Answer any TWO Questions. Each question carries 20 marks. (2Q x 20M= 40M)**

1. With a neat diagram explain how to interface 8KB EPROM and 8KB RAM to 8051 microcontrollers. Give the memory map for the same. (CO: 01 BL: Application)

2. Write the following assembly language programs

a. Find the square of the 8-bit number 08h.

b. Find the decimal equivalent of the hexadecimal number 62h. (CO: 02 BL: Application)

3. With a frequency of 22 MHz, generate a frequency of 100KHz on P2.3. Use timer 1 in mode 1.

(CO: 03 BL: Application)

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