

510504/510604

Roll No. \_\_\_\_\_

Total No. of Pages: 2

**510504/510604**

**B. Tech. V - Sem. (Main/Back) Exam., (Academic Session 2021- 2022)**

**Electrical Engineering**

**5EX4-04/5EE4 – 04 Microprocessor**

**Common with EEE & EE**

**Time: 3 Hours**

**Maximum Marks: 120**  
**Min. Passing Marks:**

**Instructions to Candidates:**

**Part – A: Short answer questions: (up to 25 words)  $10 \times 2$  marks = 20 marks.**  
**All ten questions are compulsory.**

**Part – B: Analytical/Problem solving questions  $5 \times 8$  marks = 40 marks.**  
**Candidates have to answer five questions out of seven.**

**Part – C: Descriptive/Analytical/Problem Solving questions  $4 \times 15$  marks = 60 marks.**  
**Candidates have to answer four questions out of five.**

*Schematic diagrams must be shown wherever necessary. Any data you feel missing may suitably be assumed and stated clearly. Units of quantities used/calculated must be stated clearly.*

*Use of following supporting material is permitted during examination.*  
*(Mentioned in form No. 205)*

1. NIL

2. NIL

### **PART – A**

- Q.1 What do you mean by embedded system? [2]
- Q.2 What are the functions of a microprocessor? [2]
- Q.3 Mention the basic structural elements of microprocessor. [2]
- Q.4 How many counters are there in 8051 architecture? [2]

- Q.5 Which instruction of 8051 microcontroller is used for reading data from code memory? [2]
- ~~Q.6~~ In 8051, how many addressing modes are there? [2]
- Q.7 What are the four distinct types of memory in 8051? [2]
- Q.8 Which port is used to establish serial communication in 8051? [2]
- ~~Q.9~~ Give examples of external communication interface. [2]
- Q.10 Which microcontrollers is used in keyboard? [2]

### PART – B

- Q.1 Explain the microprocessor architecture. [8]
- Q.2 Discuss the clock and reset circuits of 8051 microcontroller. [8]
- Q.3 Explain the memory structure of 8051 with suitable sketch. [8]
- Q.4 (a) Explain memory interfacing with suitable example. [5]  
 (b) What is data memory and code memory? [3]
- ~~Q.5~~ (a) How does DAC work in microcontroller? [4]  
 (b) Explain the timers and counters of 8051. [4]
- ~~Q.6~~ (a) Elaborate synchronous and asynchronous communication with proper example. [6]  
 (b) Is Facebook synchronous or asynchronous? [2]
- ~~Q.7~~ Explain the speed control of DC motor using 8051 microcontroller with proper sketch. [8]

### PART – C

- Q.1 (a) What are the steps in instruction execution cycle? Explain with diagram. [8]  
 (b) What is the purpose of timing diagram? [3]  
 (c) What are the components of timing diagram? Illustrate with diagram. [4]
- ~~Q.2~~ Discuss the types of instructions in 8051 microcontroller instruction set. [15]
- ~~Q.3~~<sup>10</sup> (a) What is the difference between memory mapped I/O and I/O mapped I/O? [4]  
 (b) How does address bus and data bus work? [6]  
 (c) What is data bus, address bus and control bus? [5]
- Q.4 (a) Why is SPI used? [3]  
 (b) What is the main advantage of 12C over SPI? [4]  
 (c) In which cases SPI and 12C should be used? Explain separately. [8]
- ~~Q.5~~ Explain the LCD interfacing with 8051 microcontroller. [15]