

2107097

**BACHELOR OF VOCATION
Automotive Mechatronics (Captive)**

**Subject: Microcontroller and Programmable Logical
Controller**

Subject Code: ABEC-205

Semester: Sixth

July 2021

Theory (External): 35 Marks

Time: 03 Hours

**SECTION -B (ESSAY TYPE QUESTIONS)
(5x5=25 Marks)**

1. What is the difference between microprocessor and microcontroller? Give the applications of microcontroller.
2. Draw and explain the pin diagram of 8051 microcontrollers.
3. Explain the various timer modes of 8051 microcontrollers.
4. Write an assembly language program using 8051 microcontrollers to smallest 8-bit from an array of ten 8-bit numbers.
5. Explain data transfer instructions, logical instructions and Boolean instructions of 8051 with example.
6. Give the difference between PLCs and Computers. Enlist PLCs Advantages or Benefits
7. Explain the data manipulating instructions and math instructions of PLCs
8. Discuss the followings:
 - a) PLC programming
 - b) Registers of 8051

==END OF PAPER==

Instructions to the Students

1. This Question paper consists of two Sections. All sections are compulsory.
2. Section A comprises 10 questions of objective type in nature. All questions are compulsory. Each question carries 1 mark.
3. Section B comprises 8 essay type questions out of which students need to do any 5. Each question carries 5 marks.
4. Read the questions carefully and write the answers in the answer sheets provided.
5. Do not write anything on the question paper.
6. Wherever necessary, the diagram drawn should be neat and properly labelled

Roll Number

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SECTION –A (SHORT/OBJECTIVE TYPE QUESTIONS)
(10x1=10 Marks)

- A. Which operations are performed by the bit manipulating instructions of boolean processor?
- Complement bit
 - Set bit
 - Clear bit
 - All of the above
- B. Which condition approve to prefer the EPROM/ROM versions for mass production in order to prevent the external memory connections?
- size of code < size of on-chip program memory
 - size of code > size of on-chip program memory
 - size of code = size of on-chip program memory
 - None of the above
- C. Which among the below mentioned devices of MCS-51 family does not possess two 16 -bit timers/counters?
- 8031
 - 8052
 - 8751
 - All of the above
- D. How many registers can be utilized to write the programs by an effective selection of register bank in program status word (PSW)?
- 8
 - 16
 - 32
 - 64
- E. Which among the below stated registers does not belong to the category of special function registers?
- TCON & TMOD
 - TH0 & TL0
 - P0 & P1
 - SP & PC

- F. Which instruction should be adopted for moving an accumulator to the register from the below mentioned mnemonics?
- MOV A, Rn
 - MOV A, @ Ri
 - MOV Rn, A
 - MOV direct, A
- G. Which commands are used for addressing the off-chip data and associated codes respectively by data pointer?
- MOVX & MOVC
 - MOVY & MOVB
 - MOVZ & MOVA
 - MOVC & MOVY
- H. Which of the following statements is not correct? ‘
- The PLC rung output [-(-)] is a discrete output instruction or bit in memory.
 - Each rung of the ladder logic represents a logical statement executed in software – inputs on the right and outputs on the left.
 - Input and output instructions in ladder logic do not directly represent the switches and actuators.
 - PLC input instructions are logical symbols associated with voltage at the input module terminals.
- I. PLC can be _____ in plant to change the sequence of operation.
- only programmed
 - only reprogrammed
 - programmed and reprogrammed
 - able to give a set point
- J. _____ of PLCs can be done in very little time.
- Programming
 - Installation
 - Commissioning
 - All of the above