

**1901****October 2024**

**Time - Three hours**  
**(Maximum Marks: 100)**

- [N.B.** 1. Answer all questions under Part-A. Each question carries 3 marks.  
2. Answer all the questions either (A) or (B) in Part-B. Each question carries 14 marks.]

**PART - A**

1. Compare microprocessor and microcontroller.
2. Write short notes on ALU.
3. Write down the different addressing modes of 8051.
4. Define assembler.
5. What are the different operating modes of timer?
6. Write a note on interrupt priority.
7. State the need of ADC.
8. Define interfacing. Give an example for interfacing device.
9. Write down the applications of Raspberry pi.
10. What is meant by home automation?

[Turn over.....]

PART - B

11. (a) Draw and explain the architecture diagram of 8051.  
(Or)  
(b) (i) Explain the function of program counter and stack pointer. (7)  
(ii) Write notes on 8051 timer. (7)
12. (a) Write notes on arithmetic and logical instructions with examples.  
(Or)  
(b) (i) Write an assembly language program to add two 16 bit numbers. (7)  
(ii) Write an assembly language program to subtract two 16 bit numbers. (7)
13. (a) (i) Write down the bit and byte addresses for I/O ports. (4)  
(ii) Explain I/O port programming with example. (10)  
(Or)  
(b) Write the steps involved in programming 8051 to transmit and receive data serially.
14. (a) (i) Explain mode 0, mode 1 and mode 2 of 8255 with a diagram. (10)  
(ii) Write down the advantages and disadvantages of 8255. (4)  
(Or)  
(b) Draw the interfacing diagram of DC motor with 8051 microcontroller and explain its operation.
15. (a) Draw and explain the block diagram of PIC microcontroller.  
(Or)  
(b) Explain the role of IoT in home automation with neat block diagram.

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