Time : 3 hours]   [*Total Marks* : 80

PART—A   3×10=30

Instructions :   (1) Answer **all** questions.

           (2) Each question carries **three** marks.

           (3) Answers should be brief and straight to the point and shall not exceed *five* simple sentences.

1. Explain how data acquisition task is accomplished using ADC.

2. List the features of ADC 0809.

3. Distinguish among SRAM, DRAM and NVRAM.

4. List the features of 24C02 chip.

5. Why LCD displays are more popular than LED displays?

6. Draw the interface diagram for connecting common cathode seven segment display with 8051 microcontroller.

7. Explain the function of AF, AIE bits of DS12887 registers.

8. Draw the pin out diagram of DS12887 chip.

9. What is the need of placing a driver between microcontroller and motor?

10. Explain the basic working principle of stepper motor.

Instructions : (1) Answer *any* **five** questions.

(2) Each question carries **ten** marks.

(3) Answers should be comprehensive and the criterion for valuation is the content but not the length of the answer.

11. Draw the block schematic diagram of DAC 0800 interfaced to 8051 at port P1 and write a program to generate saw tooth wave form at the output of DAC 0800.

12. With a neat diagram explain how an 8051 microcontroller can access 32 KB external program memory.

13. With a neat diagram explain interfacing of 24C02 chip with 8051.

14. Interface a 4×4 keys keyboard to 8051 and write an ALP to send the key code to port P1 whenever a key is pressed.

15. Draw interfacing circuit of LCD with 8051 and write a program to display "HELLO" word on it.

16. With a neat diagram explain how an 8051 microcontroller can periodically activate the alarm using DS12887 real time clock.

17. Explain in detail about the address map and register structure of DS12887.

18. Describe how to interface DC motor to 8051 using optoisolator, and write a C program to move DC motor with 25% duty cycle pulse.

* * *