



12. (a) Illustrate the contents of the stack memory and registers when PUSH and POP instructions are executed, and explain how memory pointers are exchanged. (13)

Or

- (b) Write an assembly language program to perform bubble sorting operation. (13)
13. (a) With a neat circuit diagram/functional block diagram, interface an analog sensor with 8085 microprocessor. Also, write an assembly language program to read, convert the sensor value and save the result in 8000H. (13)

Or

- (b) Briefly explain the different modes of operation in 8254 IC? Support the answer with appropriate timing diagrams. (13)
14. (a) Discuss in detail about the methodology involved in configuration, Data transmission and reception via UART module in 8051 microcontroller. Assume a crystal oscillator of 11.059 MHz is connected to a microcontroller for achieving 19200 baud rate. Also, calculate the value of TH1 to be loaded in order to achieve the desired baud rate. Support the data transmission and reception part via assembly language programming. (13)

Or

- (b) With a neat circuit diagram and assembly language program, briefly explain the process of interfacing a unipolar stepper motor with 8051 microcontroller in 4-step sequence/bi-phase mode. (13)
15. (a) With a neat sketch, describe the features and architecture of PIC16F877 microcontroller. (13)

Or

- (b) With a neat sketch, detail the interrupt structure supported in PIC16F877 microcontroller. (13)

PART C — (1 × 15 = 15 marks)

16. (a) Design an 8085-microprocessor based system with 2K × 8 RAM and 1K × 8 EPROM memory. (15)

Or

- (b) Design an 8051 based temperature monitoring system using LED array connected to P3. Assume that a temperature sensor output connected to ADC0808IC (8-bit ADC) is in the voltage range between 0V to 5V. (15)