

12. (a) (i) Explain the various assembler directives with suitable examples. (8)
(ii) Write an 8086 ALP to arrange the elements in an array of 10 elements in ascending order. (8)

Or

- (b) (i) Discuss the data movement and program control instructions of 8086. (10)
(ii) Write an 8086 ALP to find the sum of numbers in the array of 10 elements. (6)
13. (a) With neat block diagram explain the 8255 Programmable Peripheral Interface and its operating modes. (16)

Or

- (b) Explain the 8279 Keyboard/Display controller with neat block diagram. (16)
14. (a) (i) Draw the pin diagram of 8051 microcontroller and explain the functions of each pin. (10)
(ii) Discuss briefly the various registers in 8051 microcontroller. (6)

Or

- (b) (i) Explain the interfacing of 4×4 matrix keyboard to the 8051 microcontroller with neat diagram. (10)
(ii) Write shortly on the various operating modes for serial port of 8051 microcontroller. (6)
15. (a) Draw and explain the 8086 based traffic light control system in detail. (16)

Or

- (b) Draw the diagram to interface a stepper motor with a 8051 microcontroller and explain. Also write an 8051 ALP to run the stepper motor in both forward and reverse direction with a delay. (16)