1. Write the correct answer

b) Auxiliary carry flag of 8051 is set during which condition?
   a) **When carry is generated from D3 to D4.**
   b) When carry is generated from D6 to D7.
   c) When carry is generated from D3 to D4 and from D6 to d7 both.
   d) When carry is generated either fromD3 to D4 or from D6 to D7.

c) What is the address range of internal Ram of 8051 Microcontroller?
   a) 00H to FFH. b) 80H to FFH. c) **00H to 7FH.** d) None of these.

d) Which of the following architecture uses pipelining?
   a) 8085 b) 8051 c) **8086** d) None of these.

e) How many interrupt sources are available in 8051 microcontroller?
   a) 2 b) 3 c) 4 d) **5**

f) The 8086/8088 can be operated in a single step when _____ is set.
   a) **TF** b) IF c) DF d) AF

g) The control word to set PC0 bit of 8255 in BSR mode is
   a) **01H** b) 02H c) 00H d) 03H

h) Which of the following is the most commonly used buffer in the serial porting?
   a) LIFO b) **FIFO** c) FILO d) LILO

i) TEST input in 8086 microprocessor is used by which instruction?
   a) **WAIT** b) LOCK c) both of these d) none of these.

j) Which of the following register of 8051 microcontroller is not a bit addressable register?
   a) TCON b) **TMOD** c) SCON d) IE

k) Direction flag is used for
   a) Arithmetic operation b) Transfer operation c) **String operation** d) Logical operation

l) How many address and data lines does 256*4 have?
   a) 8 and 8 b) **8 and 4** c)4 and 8 d) 4 and 4

m) Instruction Queue of 8088 consists of?
   a) **4 data** b) 6 data c) 8 data d) none of these.

2. (a) Explain physical memory formation of 8086 microprocessor.
   What is the advantage of segmentation?

3. Explain minimum mode of operation of 8086 microprocessor.

4. Write single instruction to perform the following operations.
   a. Increment the content of CX by 1
   b. Copy the content of BX to a memory location in the data segment with offset 0234H.
   c. Copy the content of 4000H offset to DX register.
   d. Mask lower 4 bit of AL register.
   e. Divide the content of AL by 2.

5. Explain mode1 input mode operation of 8255 PPI with necessary diagram.

6. Explain TCON and TMOD register of 8051 microcontroller.

7. a) Describe different addressing modes of 8086 microprocessor.
   b) Design and interface between 8086 CPU and two chips of 16K x 8 EPROM and two 32K x 8 RAM. The RAM address must start at 0000H. Select the starting address of EEPROM suitably.

8. a) Explain the Flag register of 8086 microprocessor.
   b) Interface ADC 0808 with 8086 using 8255 PPI. Use port A of 8255 for transferring digital data output of ADC to the CPU, port B and port C for control signals. Assume that an analog input is present at I/P 0 of the ADC. Draw the schematic and write required ALP.

9. a) An 8086 system with an 8255 interfaced at port A address F0H, has a block of 50 data bytes stored in it. Another 8086 system with another 8255 interfaced at port A address 80H has a another block of 50 data bytes stored in it. Interchange these blocks of data bytes between two 8086 systems. Draw the necessary hardware scheme and write the necessary sequence of instructions. Both system runs of the same clock rate.
   b) Write the differences between microprocessors and microcontrollers.

10. a) Initialize the 8237 for memory to memory transfer mode, using channel 0, masking all other channels. Initialize the 8237 for normal timing, fixed priority, extended write with DREQ and DACK active high. The 8237 work in auto initialization mode, with address increment, block mode select with read transfer on channel 0. Further write a program to transfer a data block of size 4KB available at 5000H:0000H to 5000H:1000H. The address of the command register is F8H.
    b) Write a program to move data words from offset 2000H to offset 4000H. The length of the string is 0FH.

11. a) Describe internal RAM structure of 8051 Microcontroller.
    b) Explain PSW register of 8051 microcontroller.
    c) Explain IE and IP register of 8051 microcontroller.

12. **Write short notes on any three of the following.**
    a) 8288
    b) 8284
    c) SCON of 8051 microcontroller.
    d) Difference between 8086 and 8088
    e) Delay of 100ms.