



- iv) Mode 2 of 8254 is
- a) bi-directional handshake mode
 - b) handshaking I/O
 - c) rate generator
 - d) square wave generator.
- v) For a stepper motor, if the rotor teeth are equal to 200, the count required to rotate the shaft of the stepper motor through an angle 180° is
- a) 200
 - b) 100
 - c) 50
 - d) 150.
- vi) ADC chip 0808 is 8 bit CMOS, is
- a) successive approximation type converter
 - b) dual-slope type converter
 - c) flash type converter
 - d) parallel converter.
- vii) The NMI input is - sensitive.
- a) edge b) level
 - c) both edge and level d) none of these.
- viii) The 8284A is a
- a) clock generator b) bus controller
 - c) co-processor d) none of these.



- ix) The 8288 I.C. is a/an
- a) clock generator b) ADC
- c) bus controller d) DAC.
- x) BHE signal is used to enable the
- a) even memory bank b) odd memory bank
- c) both (a) and (b) d) none of these.
- xi) If crystal oscillator frequency is operating at 24 MHz what will be the PCLK output of 8284A clock generator ?
- a) 24 b) 8
- c) 12 d) 6.
- xii) In a μ p the fetch / execute cycle is used to get and carryout which of the following ?
- a) Data from memory
- b) Data to memory
- c) Instruction code
- d) Demultiplexing multiplexed address / data bus.

GROUP – B

(Short Answer Type Questions)

Answer any *three* of the following. $3 \times 5 = 15$

2. a) Define pipelining.
- b) Discuss the function of instruction queue in 8086.
- c) What is the maximum memory size that can be addressed by 8086 ? $1 + 3 + 1$



3. a) Explain the different types of modes are used in 8237 controller.
- b) Describe the function of different bits of command register. 2 + 3
4. Select a SUB instruction that will :
- a) Subtract BX from CX
- b) Subtract OEEH from DH
- c) Subtract DI from SI.

Describe the functions of each bits of the command word register in the 8255. 2 + 3

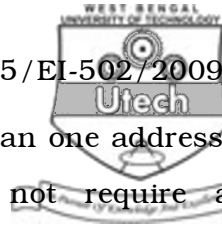
5. How does 8086 support segmentation of memory ? What are the advantages of having segmentation ? 3 + 2
6. Write an assembly language program to find square root of a two digit number. Assume that the no. is a perfect square.

GROUP – C

(Long Answer Type Questions)

Answer any *three* of the following. 3 × 15 = 45

7. a) What do you mean by addressing mode ? What are the different addressing modes supported by 8086 ? Explain each of them with suitable examples.



- b) A single instruction may use more than one addressing mode or some instructions may not require any addressing mode. — Explain.
- c) Draw and discuss in brief about the architecture of 8086 μ p. (1 + 5) + 2 + 7
8. a) Explain with block diagram the sequence of events that occur when an IR line of 8259 connected to 8086 becomes high.
- b) Design an 8086 based temperature measurement scheme using RTD as the sensor. Form a look-up-table for the above parameter and display the temperature on seven segment displays. 6 + 9
9. a) Interface an input port 74LS245 to read the status of switches SW1 to SW8 and an output port 74LS373 with 8086. Display the number of a key that is pressed *i.e.* from 1 to 8 on a 7-seg display with help of the output port. Write an ALP for this task, assume that only one key is pressed at a time. Draw the required hardware circuit. the i/p port address is 0008H and the o/p port address is 000AH.
- b) What is the advantage of DMA control data transfer over interrupt driven or program controlled data transfer ?
- c) Explain the following terms in relation to 8279 :
- i) Two key lock-out
- ii) N-key roll over. 8 + 3 + (2 + 2)



10. a) What do you mean by USART ? 2
- b) Why USART is used ? 3
- c) Design the hardware interface circuit for interfacing 8251 with 8086. Set the 8251 in asynchronous mode as a transmitter and receiver with even parity enabled, 2 stop bits, 8-bit character length, frequency is 160 kHz and baud rate 10 K. Write an ALP to —
- i) transmit 100 bytes of data string stored from 2000 : 3000H.
- ii) receive 100 bytes of data string and store it from 3000 : 4000H. 2 + 3 + 10
11. a) How can two 8259 be cascaded ?
- b) What is the need of EOI command to 8259A and when do you use two commands ?
- c) Draw and explain in brief the internal architecture of 8259A.
- d) Describe the process of data transfer from the peripheral to the system memory under 8237 DMA controller. 2 + 2 + 6 + 5



12. Write short notes on any *three* of the following : 3 × 5

- a) Read & write cycle of 8086
- b) Interrupt sequence of 8086
- c) 8279 (Programmable Keyboard / Display Controller)
- d) Decoding techniques
- e) Serial data transmission method.

=====