Write the program show that each light repeat in a fixed sequence as given below :

Light	On time
GREEN	20 seconds
YELLOW	05 seconds
RED	20 seconds

(b) What are basic difference between 8253 and 8254 timer/ counters ? Setup the 8254 as square wave generator with a 1 ms period, if the input frequency to 8254 is 1 MHz.

(c) How many 8259 can be interconnected in cascaded mode? Show their cascading structure.

(Following Paper ID and Roll No. to be filled in your Answer Book)

PAPER ID : 0109   Roll No. [ ][ ][ ][ ][ ][ ][ ][ ][ ][ ]

B. Tech.
(SEM. IV) THEORY EXAMINATION 2010-11
INTRODUCTION TO MICROPROCESSOR

Time : 3 Hours   Total Marks : 100

Note : (i) Attempt all Questions.

(ii) All questions carry equal marks.

(iii) Make and state appropriate assumptions where necessary.

1. Attempt any **four** parts of the following :   (4×5=20)

(a) Explain the evolution of microprocessors in brief.

(b) What building blocks are essentially required for any microprocessor ?

(c) What are the advantages of an assembly language in comparison with high level languages ?

(d) What determines whether a microprocessor is considered as a 8-bit, a 16-bit or a 32 bit device ? What are the advantages of using a CPU register for temporary data storage over using memory locations ?

(e) How does a microprocessor differentiate a signal between address and data ? Explain.

(f) How instruction cycle, machine cycle and clock cycle are related ? Explain them with proper sketches.

2. Attempt any **four** parts of the following : (4×5=20)

(a) Explain the need to demultiplex the bus AD_7-AD_0 with neat diagram.

(b) Describe the various addressing modes of 8085.

(c) Give the format of flag register of 8085. Explain each flag.

(d) Draw and explain the time diagram for execution of instruction MVI A, 32H.

(e) Why are the program counter (PC) and stack pointer (SP) 16 bits registers ? If the PC is always one count ahead of the memory location from which the machine code is being fetched, how does the microprocessor change the sequence of program execution with a jump instruction ?

(f) Identify the register contents and flag status as the following instructions are executed :

    A   S   Z   CY

LXI H, 2070H

MVI M, 64H

MVI A, 8FH

CMP M

3. Attempt any **two** parts of the following : (2×10=20)

(a) Draw the internal architecture of 8086 and discuss each block of its architecture.

(b) Draw and discuss the write cycle timing diagram of 8086 in maximum mode.

(c) Explain the interrupt response sequence of 8086 ? How do you set or clear the interrupt flag IF ? What is its important in interrupt sequence of 8086 ?

4. Attempt any **two** parts of the following : (2×10=20)

(a) Write an assembly language program based on 8085 to sort 10 numbers from memory location 2500 H in the ascending order.

(b) Write an assembly language program based on 8085 to count from 0 to 9 with a one second delay between each count. At the count of 9, the counter should reset itself to 0 and repeat the sequence continuously. Use register pair HL to set up the delay and display each count at one of the output ports. Assume the clock frequency of microprocessor is 1MHz.

(c) Write an assembly language program based on 8086 to find out the number of even and odd number from a series of six 16-bit hexadecimal numbers.

5. Attempt any **two** parts of the following : (2×10=20)

(a) An 8255 PPI is attached to 8085 with port A address 04H. Three traffic lights RED, YELLOW and GREEN are connected to port C pins PC_0, PC_1 and PC_2 respectively.