Unit III

5. A square wave of 75% duty cycle is coming at pin P0.0 of 8051 microcontroller. Draw block diagram of connections, write program to find its frequency and save in external memory location 8CH.

6. A block of 10 bytes of data is lying in memory starting from location 22H. Write an 8051 program to count the number of bytes whose D1 (i.e. second least significant bit) is zero. Store the result in external data memory location FC00 H.

Unit IV

7. An 8 bit A/D converter (ABC 0809) is to be interfaced with 8051 using interrupt I/O. Draw block digram of connections and write suitable interface program to store 10 conversions in consecutive external memory location starting from FC00 H. Use timber of 8051 to generate clock signal for A/D converter. Assume crystal frequency of 11.0592 MHz.

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B.Tech. EXAMINATION, May 2019

(Sixth Semester)

(B. Scheme) (Main & Re-appear)

(EE, EEE)

EE306B

ADVANCED MICROPROCESSOR AND MICROCONTROLLER

Time : 3 *Hours*]   [*Maximum Marks :* 100

Before answering the question-paper candidates should ensure that they have been supplied to correct and complete question-paper. No complaint, in this regard, will be entertained after the examination.

Note : Attempt *Five* questions in all, selecting at least *one* question from each Unit. All questions carry equal marks.

Unit I

1. (a) Explain the purpose of segment registers in the architecture of 8086 microprocessor. Draw and explain block diagram of 8086 in minimum and maximum mode configuration. What are the applications of two modes ?

   (b) How an 8086 enters into a wait state ? At what point of time in a machine cycle does an 8086 enter a wait state ? What information is on the buses during a wait state ? How long is a wait state ? How many wait states can be inserted in a wait state ?

2. Draw the following :

   (a) Circuit that generators four memory and I/O control bus signals from $\overline{RD}$, $\overline{WR}$ and $M|\overline{IO}$ outputs of 8086.

   (b) Circuit that puts 8086 in Trap mode.

   (c) Single bit input/output port.

   (d) 16 bit input/output port.

Unit II

3. (a) Sketch the architecture diagram of 8086. List the advantages of segmented memory and FIFO queue.

   (b) How much time an 8086 will take to read two words stored in consecutive memory locations ?

4. (a) Sketch 8086 minimum mode CPU hardware module that provides all the signals required to interface memory and I/O in a practical 8086 based microcomputer system.

   (b) List the support ICs and their functions which are required to design maximum mode signle prossor 8086 CPU module.

8. (a) Discuss memory map of 8051. What are different interrupts of 8051 ? What are their vector locations ? How priority is assigned in interrupts ?

(b) Ten bytes of data are lying in memory starting from 30H. Write 8051 program to transmit these data bytes and receive 8 data bytes at 9600 baud. Store the received data bytes in memory starting from location 40H.