



- b) (i) Explain the internal components and principle of operation of Successive Approximation A/D converter in detail. (8)
- (ii) Show how a 3-bit Successive Approximation A/D converter converts an analogue voltage of 7.5V into digital output with a reference voltage of 10V. (6)

22. a) With a neat functional block diagram explain the architecture of 8085 microprocessor in detail.

**(OR)**

- b) (i) Explain the instruction formats of 8085 MPU with clear examples. (6)
- (ii) Describe the following 8085 instructions with an example: (8)
  - (1) DAA      (2) DAD D      (3) RAR      (4) SBB B

23. a) Write an 8085 assembly language program to count continuously in hexadecimal from FFH to 00H in a system with a 2 MHz clock frequency. Use register pair BC to set up a 250 millisecond (ms) delay between each count and display the numbers at the output port addressed 80H. Also show the calculations to set up the 250 ms delay.

**(OR)**

b) Write an 8085 assembly language program to provide the given on/off time to three traffic lights (Green, Yellow, and Red) and two pedestrian signs (WALK and DON'T WALK). The signal lights and signs are turned on/off by the data bits of an output port as shown below:

<u>Lights</u>	<u>Data bits</u>	<u>On Time</u>
1. Green	D <sub>0</sub>	30 seconds
2. Yellow	D <sub>1</sub>	5 seconds
3. Red	D <sub>3</sub>	40 seconds
4. WALK	D <sub>5</sub>	30 seconds
5. DON'T WALK	D <sub>6</sub>	45 seconds

The traffic and pedestrian flow are in the same direction. The pedestrian should cross the road when the Green light is on. The delay section of your program should be a subroutine.

24. a) Explain the various I/O modes of Programmable Peripheral Interface 8255A in detail with their control word and status word.

**(OR)**

b) With a neat block diagram explain the internal structure and its functions of Programmable Keyboard/Display Interface 8279 in detail.

25. a) (i) Describe the various types of Read-Only Memory (ROM) in detail. (8)
- (ii) Explain the synchronous and asynchronous serial communication formats between a transmitter and a receiver. (6)

**(OR)**

b) With the help of a block diagram explain the internal blocks, its functions and various input/output signals of USART 8251 in detail.

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