Roll No.:.....

National Institute of Technology, Delhi

Name of the Examination: B. Tech. NOV/DEC 2018

Branch : Electronics and Communication Engineering **Semester** : V

Title of the Course : Microprocessor and Microcontroller **Course Code** : ECB 302

Time: 3 Hours **Maximum Marks: 50**

Section A (10x01 = 10)

Answer all the questions

1. In the peripheral mapped I/O, can an input port and an output port have the same port address?
2. Specify the output at PORT A if the following program is executed.
   MVI B, 82H
   MOV A,B
   MOV C,A
   MVI D, 37H
   OUT PORT A
   HLT
3. How the multiplexed address/data bus can de-multiplexed?
4. Difference between a subroutine and interrupt service routine.
5. What is the function of the chip MAX232?
6. What is the significant of GATE bit in TMOD register?
7. Name the six mode of operation in 8254 programmable interval timer.
8. What is the function of the microcontroller EA/VPP and PSEN?
9. Which register bank shares the same space with stack in microcontroller?
10. What is indicated by the REN bit of the SCON register?

Section A (04x05 = 20)

Answer any four questions

11. Explain in detail with neat diagram about the 8086 memory banks and the associated signals for byte and word operations.
12. (i) Write a program to add the two Hex numbers 7A and 46 and to store the sum at memory location XX98H and the flag status at location XX97H. **(2)**
    (ii) Write a 20 ms time delay subroutine using register pair BC. Clear the Z flag without affecting any other flags in the flag register and return to the main program. **(3)**

13. Discuss the following modes of DMA transfer (i) Single transfer mode (ii) Block transfer mode (iii) Demand transfer mode (iv) Memory to memory transfer.

14. What is the need for programmable interrupt controller? Draw and discuss the internal architecture of programmable interrupt controller.

15. Explain different modes of operation of the timer in 8051.

Section C (02x10 = 20)

Answer any two questions

16. Draw and explain the memory interfacing diagram of 8051 with external program memory of 32K x8 ROM, and two numbers of 16Kx8 RAM of data memory.

17. Draw and discuss a typical maximum mode 8086 system. What is the use of a bus controller in maximum mode?

18. Design a traffic light control system using microprocessor/microcontroller. Give the necessary diagrams also.