



Date: 31-10-2018  
Time: 01:00-04:00

Dept. No.

Max. : 100 Marks

**PART-A**

**Answer ALL the questions**

**(10x2=20 Marks)**

1. State Norton's Theorem.
2. What is a constant voltage source?
3. Write the different methods of transistor biasing.
4. Draw the circuit diagram of a monostable multivibrator.
5. Define CMRR.
6. Write the difference between FET and MOSFET.
7. Simplify  $Y = A B + \bar{A} C + B C$ .
8. Draw the logic diagram and write the truth table of a D - flip-flop.
9. Write a note on scale of integration.
10. What is a monolithic I.C.?

**PART-B**

**Answer Any Four questions**

**(4x7.5=30Marks)**

11. State the maximum power transfer theorem and derive the condition for transfer of maximum power from source to a load
12. (a) Explain the working of a phase shift oscillator with a neat circuit diagram.  
(b) A phase shift oscillator uses 5pF capacitor. Find the value of R to produce a frequency of 800 kHz. **(4.5+3.0)**
13. Explain the operation of an OP-AMP as a non-inverting amplifier and obtain the expression for the voltage gain.
14. With a neat circuit diagram and truth table, describe the function of a full adder.
15. Explain the fabrication of monolithic I.C.
16. Describe the construction and working of FET.

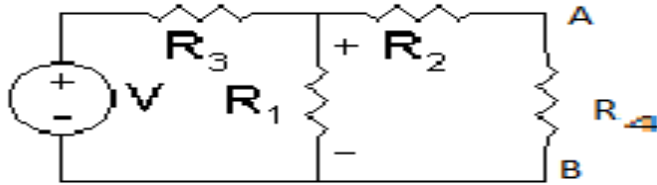
**PART-C**

**Answer Any Four questions**

**(4x12.5=50)**

17. (a) Discuss Thevenin's theorem.

(b) Calculate the Thevenin resistance across the terminal AB in the following circuit.



Given  $R_1 = 2 \Omega$ ;  $R_2 = 3 \Omega$ ;  $R_3 = 1 \Omega$ ;  $R_4 = 4 \Omega$ ;  $V = 10V$

18. With necessary circuit explain the construction and working of a bistable multivibrator.

19. Describe the operation of OP-AMP as summing and difference amplifier.

20. Explain the operation of JK flip - flop and JK Master Slave flip-flop along with their logic diagram and truth table.

21. Describe how a diode, transistor, resistor and capacitor can be fabricated on a monolithic IC.

22. Explain the function of (a) shift left and (b) shift right shift registers with neat circuit diagram.

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