B.E./B.Tech. DEGREE EXAMINATION, APRIL / MAY 2011

MIT

Ref.
All Semesters.

Second Semester

Electronics and Communication Engineering

EC 194 – Electronics Devices and Circuits

(Regulation 2004)

Time: 3 Hours Maximum: 100 Marks

Answer ALL Questions.

Part A – (10 x 2 = 20 Marks)

1. What are acceptors and donors? Comment on acceptor level, donor level and Fermi level.
2. What is meant by Peak Inverse Voltage of a diode?
3. How oscillator circuit gives output without an input.
4. List the ideal characteristics of an CE amplifier.
5. What are the important characteristics of an operational amplifier?
6. State Barkhausen Criterion Condition for sustained oscillation to be produced in a oscillator.
7. State the laws of Krichoff.
8. Define the term Power Factor.
9. List out the limitations of superposition theorem.
10. Define Thevenin Theorem.

Part – B (5 x 16 = 80 Marks)

11. Explain in Detail the Construction and Working Principle of the Zener Diode and also explain the typical values of voltages, the regulation action of the zener after the breakdown. (16)

12. (a) (i) With a suitable example, State and Prove the Superposition Theorem. (8)

(ii) Distinguish between the Thevenin's and Norton's equivalent Circuits. (8)

(OR)

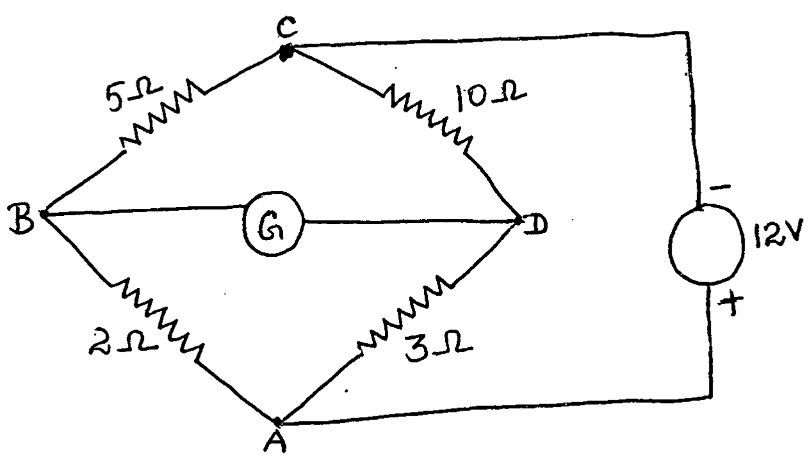
(b) (i) Derive the Expression for Current Relationship, Voltage Relationship and Power Relationship using Wye and Delta connection. (16)

13. (a) Derive the Expression for gain, input impedance and output impedance with feedback in voltage- shunt and current-series negative feedback amplifiers. (16)

(OR)

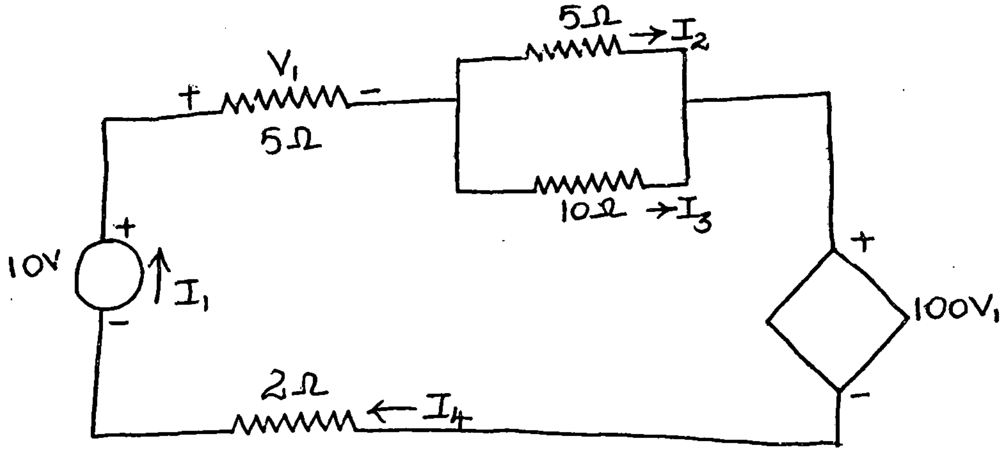
(b) Explain in Detail the Construction and Working Principle of RC Phase Shift oscillator and derive the expression for frequency of oscillation in it. (16)

14. (a) In the unbalanced Wheatstone Bridge network find the current through galvanometer of internal resistance 4Ω. (16)

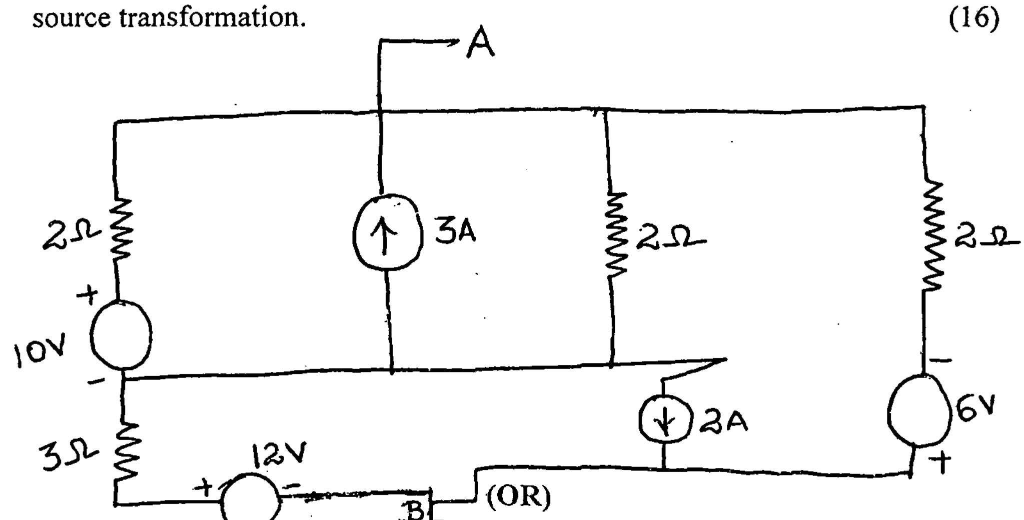


(OR)

(b) For the circuit given below, find V_1, I_1, I_2, I_3, and I_4. (16)



15. (a) Find the equivalent circuit across the terminal A and B by reducing the given circuit using source transformation. (16)



(OR)

(b) Find the current through the 5Ω resistor using Thevenin's Theorem. (16)