

B.E. / B.Tech (Full Time) DEGREE END SEMESTER EXAMINATIONS, NOV / DEC 2011
 INFORMATION TECHNOLOGY BRANCH

SECOND SEMESTER

EC 194 – ELECTRONIC DEVICES AND CIRCUITS

(REGULATION 2004)

Time: 3 Hours

Mamarks: 100

Answer ALL Questions

Part-A (10x2=20 Marks)

1. Define doping.
2. List the applications of SCR.
3. Draw the circuit diagram for bridge rectifier.
4. What do you mean by biased transistor?
5. How can you say that operational amplifiers are a form of integrated circuit?
6. Draw a LPF using operational amplifier.
7. In an electrical network, define path.
8. Calculate the equivalent resistance of a parallel circuit of 2Ω and 3Ω .
9. State superposition theorem.
10. What is the condition for maximum power transfer?

Part-B (5x16=80 Marks)

- 11 Explain the types of extrinsic semiconductors and describe how a zener diode behaves as a regulator. (16)
- 12.(a) With circuit diagrams and mathematical substantiation explain the working principle of half wave rectifier and full wave rectifier. (16)
- OR**
- 12.(b) Explain the theory of sinusoidal oscillation with suitable circuit diagrams for —
 - (i) RC oscillators (8)
 - (ii) LC oscillators (8)
- 13.(a)(i) Design a non-inverting amplifier with a gain of 25 based on an operational amplifier. (8)
- OR**
- (ii) Write the mathematical substantiation and draw the circuit diagram of a differential amplifier. (8)
- OR**
- 13.(b) Give the mathematical substantiation, theory and circuit diagram of the following:
 - (i) Integrator (8)
 - (ii) Differentiator (8)

- 14.(a)(i) State and prove KVL and KCL. (8)
(ii) Explain the parallel connected independent source. (8)

OR

- 14.(b) List the steps involved in nodal analysis and mesh analysis (16)

- 15.(a) With necessary equivalent circuits state and prove Thevenin's and Norton's theorems. (16)

OR

- 15.(b) With phasor diagrams explain the concept of power factor of single phase and three phase circuits. (16)
