B.E/B.Tech (Full Time) DEGREE END SEMESTER EXAMINATIONS, NOV/DEC 2011
INFORMATION TECHNOLOGY BRANCH
SECOND SEMESTER (REGULATION 2008)
EC 9161 ELECTRONIC DEVICES AND CIRCUITS

Time : 3 Hrs   Max. Mark :100

Answer <u>ALL</u> Questions
**PART-A**   **(10 x 2 = 20 Marks)**

1. State Kirchoff's law.
2. Differentiate between nodal analysis and mesh analysis.
3. What is meant by "power factor"?
4. State "Superposition theorem".
5. Differentiate between drift and diffusion current.
6. Define "pinchoff voltage".
7. What is the condition for sustained oscillation?
8. What is the need for using a rectifier circuit?
9. List out some of the practical applications of operational amplifier.
10. What are the characteristics of an ideal operational amplifier?

**PART-B**   **(5 x 16 = 80 Marks)**

11.(i) With a neat diagram, explain the operation of a full wave rectifier with a capacitor
filter and also obtain the expression for the ripple factor.   (8)

(ii) With a neat sketch, explain in detail about common source MOSFET amplifier.   (8)

12.a) Calculate the current through a 2Ω resistor by making use of source transformation
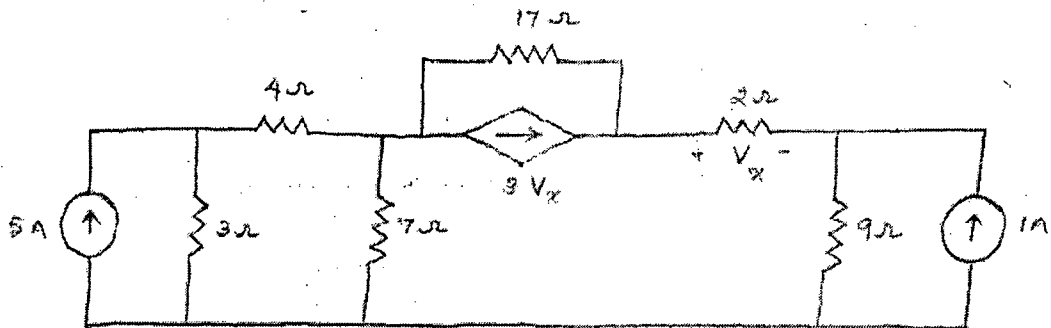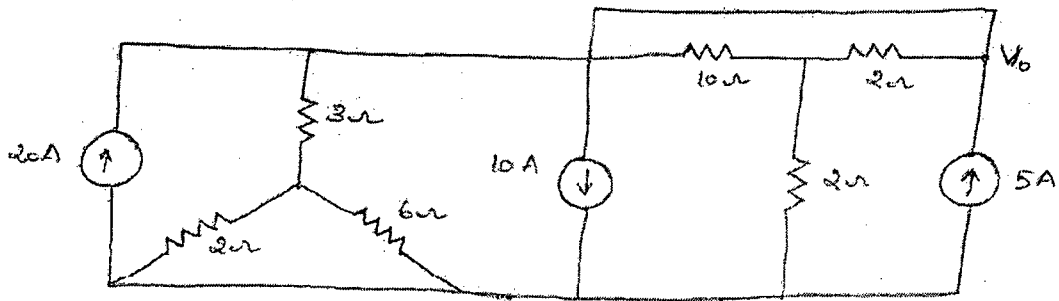

(16)

(OR)

12.b) Determine the nodal voltages for the following circuit
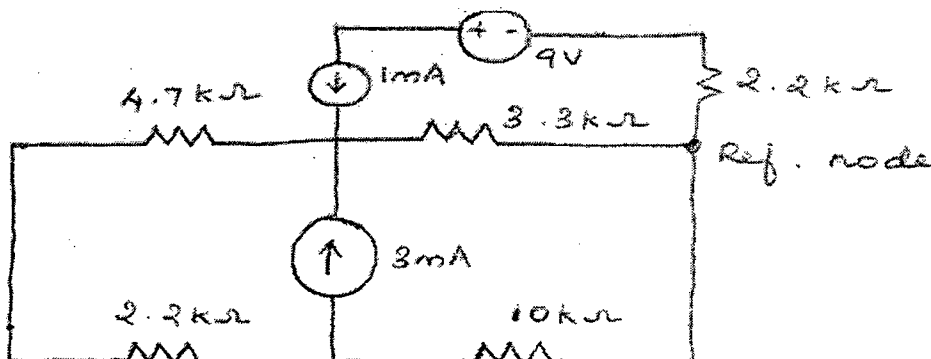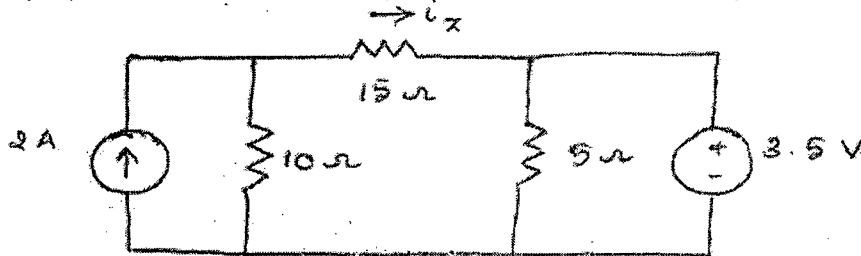

(16)

(P.T.O)

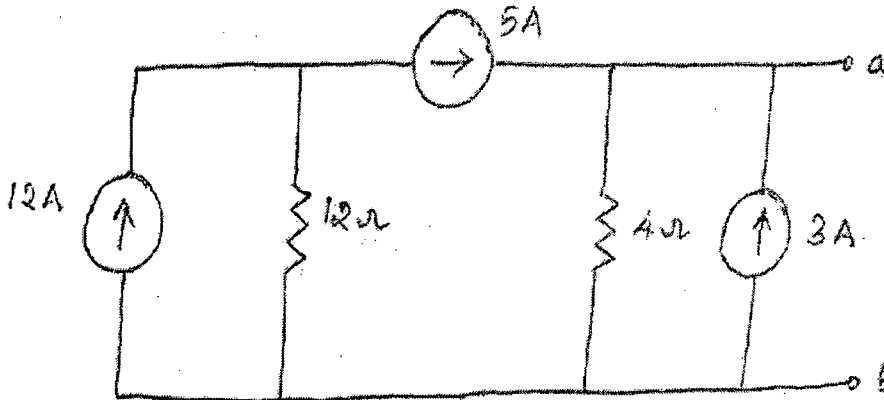13.a) Determine the voltage V_0 for the following circuit

(16)

(OR)

13.b)(i) Use superposition theorem, to compute the current i_x.

(8)

(ii) Determine the Thevenin's equivalent circuit with respect to the terminals a and b for the circuit shown below.

(8)

14.a)(i) With neat sketches, briefly explain the input and output characteristics of the BJT in common emitter configuration. (8)

(ii) Bring out the difference between enhancement type and depletion type MOSFET's with respect to its working principle and characteristics. (8)

(OR)

14.b)(i) Explain in detail the construction, working principle and V-I characteristic curve of a JFET with the help of neat sketches. (10)

(ii) With neat diagram, explain how a zener diode can be used as a voltage regulator. (6)

15.a) With neat diagrams, explain the operation of integrator, differentiator, adder and subtractor circuits using OPAMP. (16)

(OR)

15.b)(i) With neat sketches, explain the working of a OPAMP 1st order low pass filter. (8)

(ii) Explain the working of R—2R ladder type digital to analog converter. (8)