

(B)

B.E. END SEMESTER EXAMINATIONS, APRIL / MAY 2012
III SEMESTER REGULATIONS R 2008
EC 9213 ELECTRONIC DEVICES AND CIRCUITS

Time: 3 Hours

Max Mark : 100

ANSWER ALL QUESTIONS

PART-A

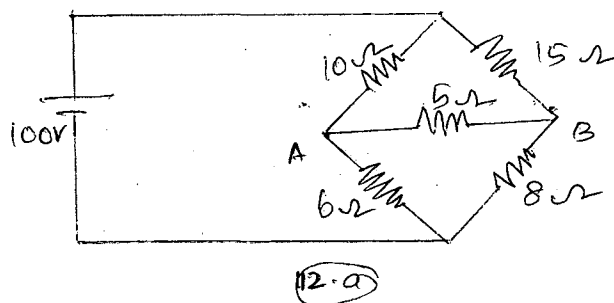
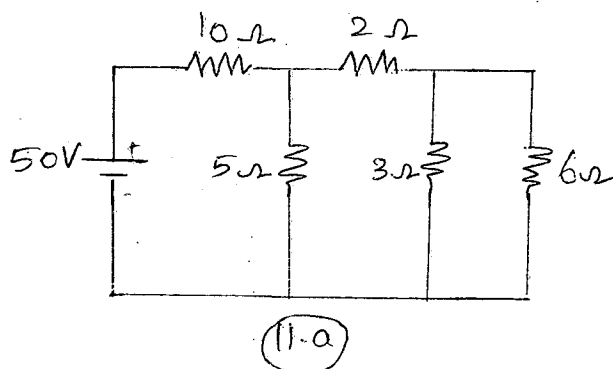
(10X2=20 marks)

1. A total current of 50 mA flows through two resistors in parallel. If the resistor values are $R_1 = 300 \Omega$ and $R_2 = 200 \Omega$, determine the individual currents.
2. Three resistors R_1 , R_2 and R_3 are in series with a constant voltage V . The voltage across R_1 is 20 volts, the power in R_2 is 25 watts and R_3 has a resistance of 2 ohms. Find the voltage V if the current is 5 amperes.
3. What is the condition for transfer of maximum power from source to load.
4. Three 30Ω resistors are connected in a delta connection. Determine wye equivalent.
5. Define cut in voltage of PN junction diode.
6. What is diffusion current.
7. Define ripple factor.
8. Draw the frequency response of CE amplifier. State the reason for reduction in gain at lower and higher frequencies.
9. What are the ideal conditions of an operational amplifier.
10. Draw the three input non inverting summer.

PART-B

(5X16=80 marks)

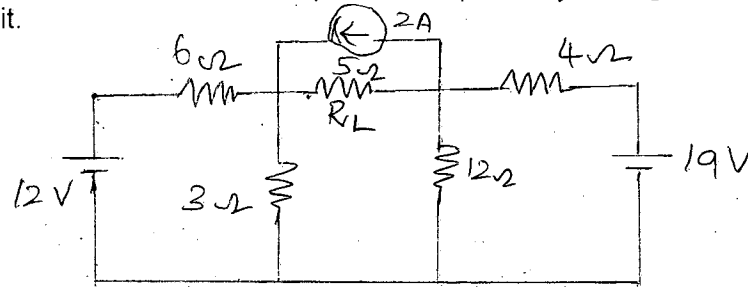
- 11a. Determine voltage drop across 5Ω resistor using Nodal analysis for the given circuit. Verify the result using mesh analysis.



- 12 a. Determine the Thevenin equivalent circuit at terminals AB of the network given. Verify the equivalent circuit using Norton's theorem.

OR

- b.i) Use Superposition theorem to find the power dissipated by the R_L resistor in the given circuit.



- ii). A three-phase, 100 volt, ABC system supplies a balanced delta connected load with impedances of $20\angle 45^\circ$ ohms. Determine the line currents and draw the phasor diagram.
- 13a(i) Explain the working principle, transfer and drain characteristics of JFET.
 (ii) Explain in detail the volt-amp characteristics of PN junction diode.

OR

- b(i) What is Zener effect. Explain Zener characteristics and its application as a regulator.
 (ii) Explain the input and output characteristics of common emitter configuration of PNP transistor.
- 14a. Explain using DC and AC analysis, how amplification is achieved in CE amplifier. Draw the waveforms at various nodes of CE amplifier.

OR

- b(i) Derive the ripple factor of fullwave rectifier with and without filter.
 (ii) Describe the dc and ac analysis of common source amplifier.
- 15a(i). Design the op-amp circuit to generate the output $V_0 = V_1 - V_2$.
 (ii). Explain the applications of an operational amplifier as low pass filter, high pass filter differentiator and integrator.

OR

- b(i) Determine the corresponding analog voltage for the binary word $d_1d_2d_3 = 100$ using any two types of digital to-analog converter.
 (ii) Design the three input inverting and non inverting subtractor using op-amp.
