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APR / MAY 2013

B.E. END SEMESTER EXAMINATIONS, ~~NOV/~~ ~~DEC 2010~~
III SEMESTER REGULATIONS R 2008
EC 9213 ELECTRONIC DEVICES AND CIRCUITS

Time: 3 Hours **Max Mark : 100**

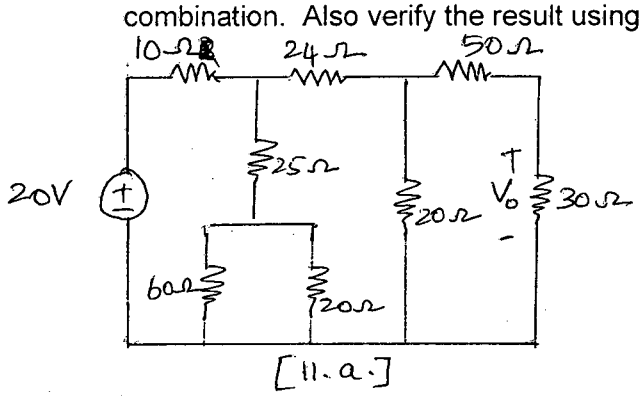
ANSWER ALL QUESTIONS

PART-A **(10X2=20 marks)**

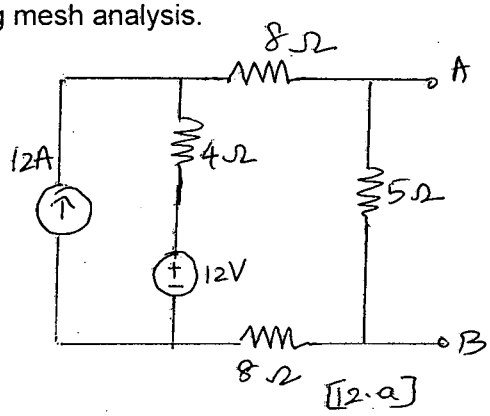
1. Determine the voltage across each element of the circuit supplied by the 50 V source. The circuit consists of 5 KΩ, 10 KΩ, 5 KΩ and 5 KΩ connected in series.
2. Three 10 Ω resistors connected in parallel receives1ampere as a total current. Find the current through each individual resistors.
3. Define power factor.
4. Three 30 Ω resistors are connected in a delta connection. Determine wye equivalent.
5. Define transconductance of a MOSFET.
6. What are diffusion and drift currents.
7. Define ripple factor.
8. What are the advantages of negative feedback.
9. What are the ideal conditions of an operational amplifier.
10. Define slew rate of an operational amplifier.

PART-B **(5X16=80 marks)**

11a. Determine i and V_0 for the given circuit using series/parallel resistance combination. Also verify the result using mesh analysis.



[11.a.]

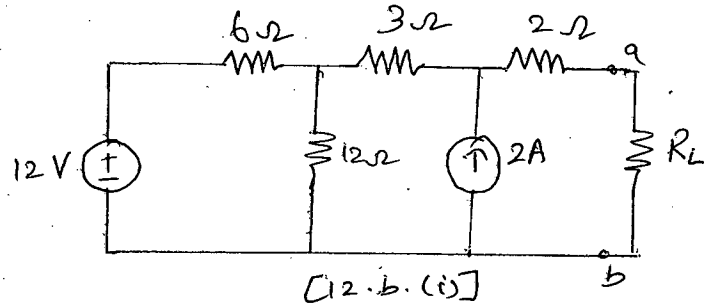


[12.a]

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) Determine the value of R_L for which maximum power is dissipated.



[12.b.(i)]

ii). A three-phase, 100 volt, ABC system supplies a balanced delta connected load with impedances of 20 45° ohms. Determine the line currents and draw the phasor diagram.

13a(i) Derive the h parameter model of CE transistor and determine the gain, input and output impedance.

(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 working of different types of MOSFET and describe their volt-ampere characteristics.

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 $V_0 = V_1 + V_2 + V_3$.

(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.
