

B.E/B.Tech. (Full Time) DEGREE END SEMESTER EXAMINATIONS, APRIL/MAY 2011

ELECTRONICS AND COMMUNICATION ENGINEERING

III SEMESTER

EC 294 – ELECTRONIC DEVICES AND CIRCUITS

REGULATIONS : 2004

Time: 3 hours

Maximum Marks: 100

Answer ALL questions

**PART A – (10 x 2 = 20 marks)**

1. What is meant by the term quiescent operating point?
2. Sketch the VI Characteristics of Zener Diode.
3. Prove that  $\mu = g_m \times r_d$ .
4. List the applications of 555 timers.
5. Draw the circuit diagram of first order high pass filter.
6. What are the applications of relaxation oscillator?
7. State Kirchoff's current law and Kirchoff's voltage law.
8. A  $20 \Omega$  resistor is connected across a 12 V battery. How much current flows through the resistor?
9. State the Norton's theorem.
10. Discuss how to obtain the star connected equivalent for delta connected circuit?

**PART B – (5 x 16 = 80 marks)**

11. a. Explain the construction and working of a Junction FET. Compare and contrast the Depletion mode MOSFET and Enhancement mode MOSFET. (16)
12. a. i. Explain in detail the working of a Bridge Rectifier. (8)  
ii. Explain with a circuit the operation of RC oscillator and derive an expression for the frequency of oscillation. (8)

OR

- b. i. List the differences between un biased transistor and biased transistors. (4)  
ii. Explain in detail about the choke input filter. (4)  
iii. Discuss in detail about the CE amplifier. (8)

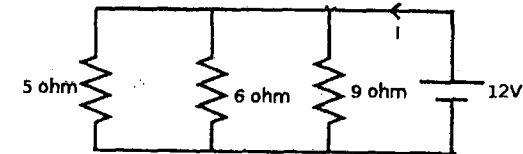
13. a. Describe in detail the various applications of operation amplifier. (16)  
OR

- b. Write short notes on  
i. Integrator and Differentiator (6)  
ii. Low Pass filter (4)  
iii. Inverting and Non Inverting Amplifier (6)

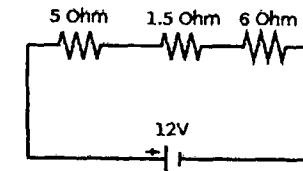
14. a. Explain the voltage and current division principle with illustrations. (16)

OR

- b. i. Find the total resistance, total current and current through each branch for the circuit given below. (8)

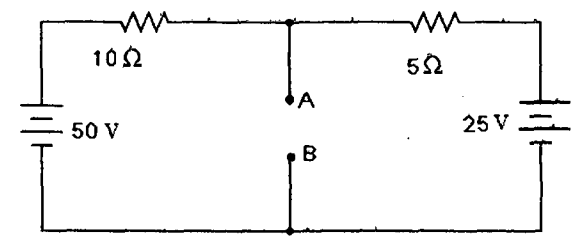


- ii. Calculate the total resistance and potential difference for the circuit given below. (4)



- iii. A 200w bulb is connected in 230v supply determine the current flowing in the bulb and resistance of the bulb. (4)

15. a. i. Discuss in detail about the phasor diagrams. (8)  
ii. Determine the Thevenin's equivalent circuit across 'AB' for the given circuit below. (8)



OR

- b. i. A symmetrical 3-phase 440 V system supplies balanced delta connected load. The branch current is 10A at a phase angle of  $30^\circ$ , lagging. Find line current, total active power, total reactive power. Draw the Phasor diagram. (8)  
ii. Explain the Delta- Wye conversion with an example. (8)

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