Code: 9A04301

R09

B. Tech II Year I Semester (R09) Supplementary Examinations, May 2013

ELECTRONIC DEVICES & CIRCUITS

(Common to EIE, E.Con.E, ECE, ECC, CSS, IT, CSE, EEE & MCT)

Time: 3 hours Max. Marks: 70

Answer any FIVE questions

All questions carry equal marks

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1 (a) Draw the forward characteristic of semiconductor diode and briefly explain the method of obtaining the characteristic.

(b) Mention the reason for silicon devices to work at higher temperatures when compared to germanium devices with necessary energy band diagrams.

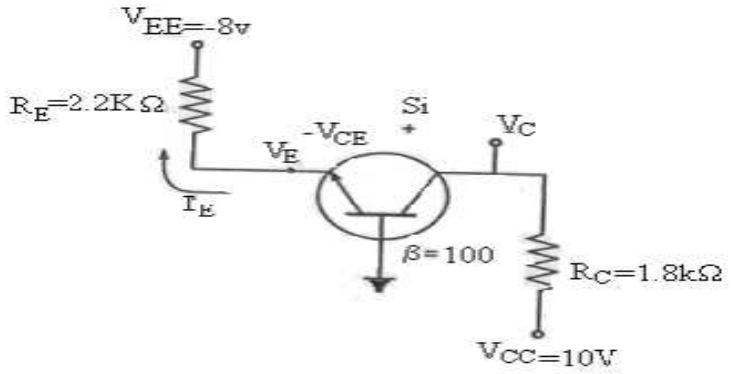
2 (a) Derive an expression for ripple in a π-section filter when used with a half wave rectifier.

(b) A full-wave single phase rectifier employs a π-section filter consisting of two 4 μF capacitances and a 20 H choke. The transformer voltage to the center tap is 300 V_{rms}. The load current is 500 mA. Calculate the dc output voltage and the ripple voltage. The resistance of the choke is 200 Ω.

3 (a) Define α, β, γ of a transistor and show have they are related to each other.

(b) Why does the CE configuration provide large current amplification while CB does not?

4 (a) For the circuit shown below, determine I_E, V_C and V_{CE}. Assume V_{BE} = 0.7 V.



(b) Compare the advantages and disadvantages of biasing schemes.

5 (a) Explain the construction and its operation of N-channel JFET with neat diagram.

(b) Explain JFET parameters.

6 (a) Draw the two biasing circuits for JFET and explain.

(b) Briefly explain the small signal model of JFET.

7 (a) Draw the hybrid equivalent circuits for CB, CE and CC configurations.

(b) Define h-parameters along with its units.

8 (a) Explain the working principle of UJT with its characteristics.

(b) Define the gate power dissipation and explain its importance in SCR.

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