Code: 9A02405

R09

B.Tech II Year II Semester (R09) Supplementary Examinations May/June 2017

ANALOG ELECTRONIC CIRCUITS

(Electrical & Electronics Engineering)

Time: 3 hours Max. Marks: 70

Answer any FIVE questions

All questions carry equal marks

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1 Derive all components in the Hybrid-π model in terms of h-parameters in CE configuration.

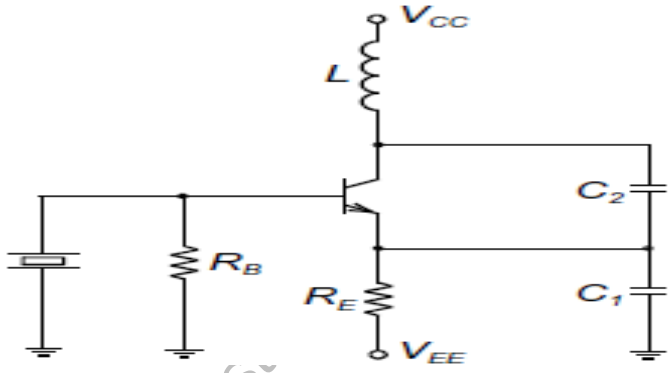
2 (a) What is diffusion capacitance of a transistor and derive its equation.

(b) In a given germanium PNP transistor, base width is 10^{-4} cm. At room temperature and for a dc emitter current of 2mA, find emitter diffusion capacitance and gain-band width product.

3 (a) Classify the feedback amplifiers and draw block diagrams.

(b) The open loop gain of an amplifier is 50 and its output impedance is 40 kΩ. When a negative feedback is applied, the output impedance becomes 6.666 kΩ. Find the feedback factor.

4 Derive the frequency of oscillations of the circuit shown in figure.



5 (a) Write short notes on requirement and types of heat sinks for power dissipation in large signal amplifiers.

(b) With the help of a neat circuit diagram, explain the operation of a complementary symmetry configured class-B power amplifier.

(c) Compare and contrast push-pull and complementary-symmetry configurations for class-B power amplifiers.

6 (a) What is synchronized clamping? Explain.

(b) Design a diode clamper circuit to clamp the positive peaks of the input signal at zero level. The frequency of the input signal is 500 Hz.

7 (a) Explain the reverse recovers of a semiconductor diode. How does the recovery time place a limitation on the diode speed?

(b) Write about diode switching times.

8 Calculate the stable state currents and voltages for the self biased bistable multivibrator which uses n-p-n silicon transistors. The various parameters for the circuit are: V_{cc} = 12 V, R_1 = 30 kΩ, R_c = 4 kΩ, R_2 = 10 kΩ and R_E = 500 Ω.

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