Code: 9A02405

R09

B.Tech II Year II Semester (R09) Supplementary Examinations December/January 2014/2015

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 Design of an emitter follower for maximum efficiency. The emitter follower has $V_{CC} = -V_{EE} = 5$ V, $R_1 = 2.15$ kΩ, and V_{CE}(sat) = 0.2 V. Find the optimum value of RL for maximum efficiency and find the value of this efficiency.

2 Derive the voltage gain, input admittance and input miller capacitance of CS amplifier using its high frequency equivalent circuit.

3 (a) What are series and parallel mixing and voltage, current sensing in feedback amplifiers?

(b) An amplifier has a voltage gain of 200, before negative feedback is applied. When negative feedback with β = 0.25 is applied, the nominal gain changes by 10%. Find the percentage change in the overall gain.

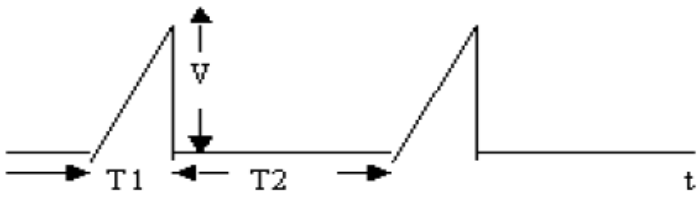
4 (a) Draw the RC oscillator. Using hybrid equivalent model, justify the statement that the sustained oscillations is obtained by having the gain of transistor amplifier greater than 29.

(b) Find the capacitor *C* and h_{fe} for the transistor to provide a resonating frequency of 10 kHz of a transistorized phase shift oscillator. Assume $R_1 = 25$ kΩ, $R_2 = 60$ kΩ, $R_C = 40$ kΩ, $R = 7.1$ kΩ and $h_{ie} = 1.8$ kΩ.

5 (a) Explain about power amplifiers and its features.

(b) Derive an expression for efficiency of class-A amplifier.

6 (a) The periodic ramp voltage shown below is applied to a low pass RC circuit. Find the equations from which determine the steady state output waveform.



(b) If $T_1 = T_2 = RC$, find the maximum and minimum value of the output voltage and plot this waveform.

7 With the help of neat wave forms explain the storage and transition times of diode.

8 Explain the method of unsymmetrical triggering of the binary with relevant circuit diagram.

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