Roll No ....

EC - 404

B.E. IV Semester Examination, December 2014

Electronics Circuits

Time : Three Hours

Maximum Marks : 70

Note: i) Answer five questions. In each question part A, B, C is compulsory and D part has internal choice.

ii) All parts of each question are to be attempted at one place.

iii) All questions carry equal marks, out of which part A and B (Max.50 words) carry 2 marks, part C (Max.100 words) carry 3 marks, part D (Max.400 words) carry 7 marks.

iv) Except numericals, Derivation, Design and Drawing etc.

Unit - I

1. a) Write short note on h-parameter of BJT.

   b) Write short note on biasing of transistors.

   c) Write short note on A.C. and D.C. load lines.

   d) Describe the stability factor (S) for following transistor bias circuits:

      i) Fixed bias circuit

      ii) Self bias or voltage divider-bias circuit

                              OR

      i) Collector to base bias circuit

      ii) Base bias with collector and emitter feedbacks.

Unit - II

2. a) What are the advantages of negative feedback? Explain.

   b) State and briefly explain Barkhausen criterion of oscillation. Draw the circuit diagram of general oscillator.

   c) Write short note on R.C. phase shift oscillator. A crystal oscillator has L = 0.5 H, C = 0.06pF, R = 5 kΩ. Then find the series and parallel resonant frequencies and Q-factor of the crystal.

   d) What is the effect of negative feedback on the following:

      i) Gain stability

      ii) Distortion

                              OR

      i) Bandwidth

      ii) Input and output impedance

Unit - III

3. a) Write the basic characteristics of class-C amplifier.

   b) Explain the working of a class-B push-pull amplifier.

   c) What is class-A amplifier? Explain. Derive an expression for its power conversion efficiency.

   d) A class-B push-pull amplifier with transformed coupled load uses two transistors rated 10W each.

   OR

   What is the maximum power output one can obtain at the load from the circuit?

Unit - IV

4. a) Write short note on effect of cascading on the bandwidth.

   b) What is Bootstrapping? Explain. Why it is done?

   c) Explain the difference between constant current bias and current mirror.

   d) What is Darlington amplifier? Explain in brief. In the circuit diagram given below of Darlington amplifier. Determine
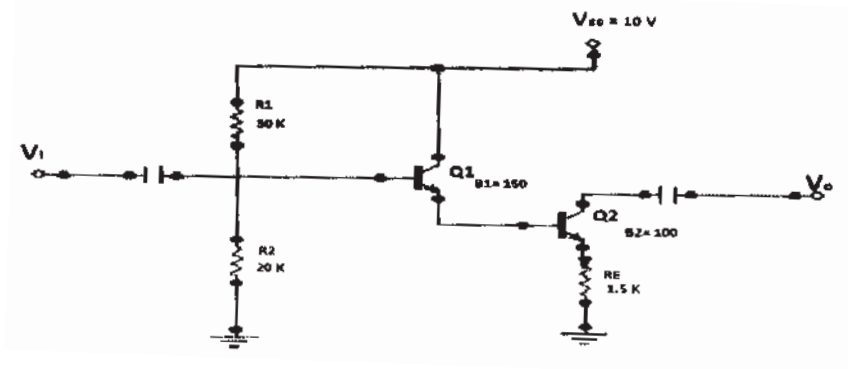
   i) Overall gain   ii) The A.C. emitter diode resistance for each transistor.

   OR

   i) Total input resistance   ii) Overall voltage gain

Unit - V

5. a) Draw and explain the basic block diagram of an optional amplifier.

   b) What is slew rate? How is it related with full power bandwidth?

   c) Draw and explain inverting summing amplifier configuration and averaging amplifier.

   d) Write short note on the following applications of op-amp

   i) Integrator amplifier   ii) Differentiator amplifier

   OR

   i) Log amplifier   ii) Anti log amplifier

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