Roll No .....

EC - 404

B.E. IV Semester

Examination, June 2015

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 questions 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) What factors are to be consider for selecting the operating point Q for an amplifier?
   b) Define load line and stability of biasing circuit.
   c) State Miller effect.
   d) With the help of low frequency model of CB transistor, Explain its working.

OR

Determine the DC Bias voltage V_{CE} and the current I_c for the voltage divider configuration of figure.1.

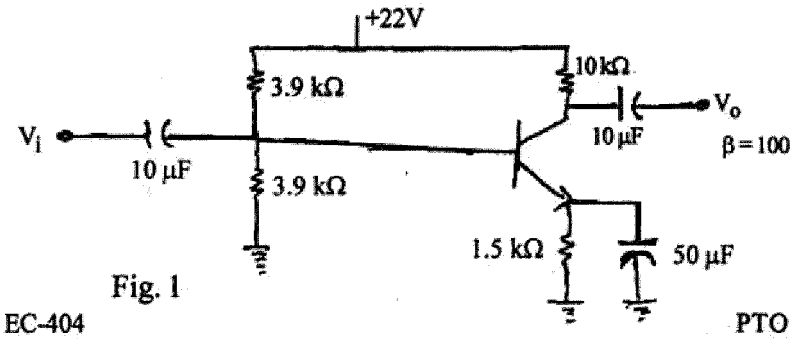

Fig. 1

Unit - II

2. a) What do you understand by condition of sustained oscillation?

   b) An amplifier has a gain of 4×10^{-5} without feedback, determine the gain if negative feedback is applied, given $\beta = 0.04$.

   c) What is oscillators? What is Barkhausen criteria for oscillators? How its use in it.

   d) Explain the working of negative resistance oscillator with the help of diagram.

OR

Explain how to obtain frequency response of a voltage shunt feedback amplifier using feedback concept.

Unit - III

3. a) What do you understand by Q-factor of tuned amplifier?

   b) Define the conversion efficiency (η) of a power stage. Also write a mathematical expression for it.

   c) Explain the origin of crossover distortion. Suggest a method to minimize it.

   d) For a class B amplifier, using a supply of $V_{CC} = 60V$ and driving a load of 32Ω, determine the maximum input power, output power, and transistor dissipation.

OR

Using two complementary silicon transistors, draw a single class B push pull amplifier circuit which does not use an output transformer.

Unit - IV

4. a) Define current mirror, common and differential mode gain.

   b) Discuss the effect of cascading on bandwidth of amplifier.

   c) Explain Darlington pair method with the help of diagram.

   d) Explain the performance of RC and direct coupled amplifier.

OR

Explain Boot strapping technique and level shifter.

Unit - V

5. a) What do you understand by virtual ground?

   b) What is Slew Rate? Give its importance?

   c) Determine the voltage gain for circuit show in figure 2.

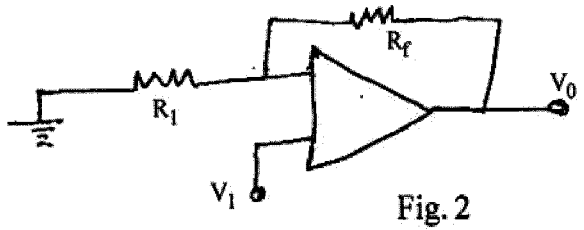

Fig. 2

Given $R_f = 900\ k\Omega$, $R_1 = 20\ k\Omega$.

   d) With the help of diagram explain Schmitt Trigger.

OR

Explain voltage to current and current to voltage converter with the help of diagram.

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