RAMAKRISHNA MISSION VIDYAMANDIRA

(Residential Autonomous College under University of Calcutta)

B.A./B.SC. THIRD SEMESTER EXAMINATION, DECEMBER 2013

SECOND YEAR

Electronics (General)

Date : 20/12/2013

Time : 11am – 1pm

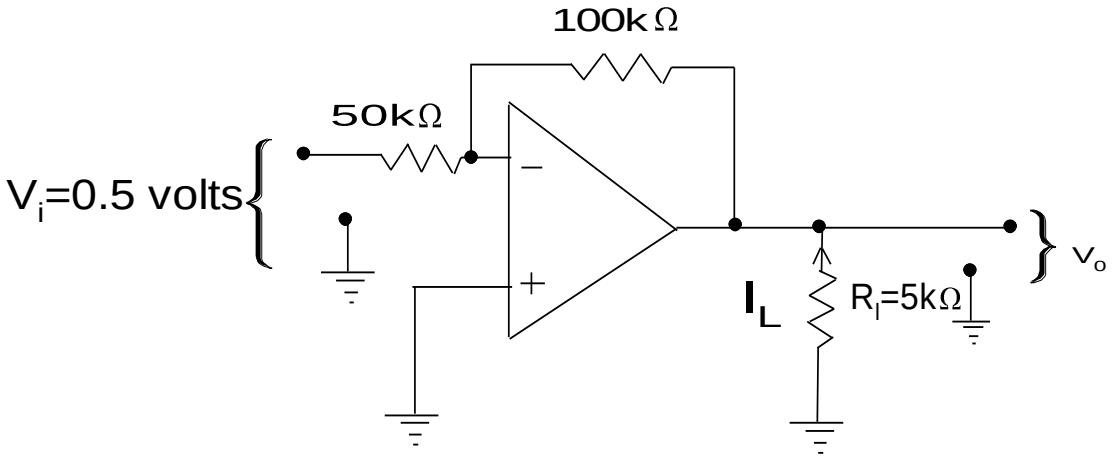
Paper : III

Full Marks : 50

Answer **any five** of the following questions: (5 × 10)

1. a) Draw the circuit diagram of a subtrator using OPAMP and derive the expression for its output voltage. (4)

   b)



(6)

Calculate

i) Voltage gain A_v.

ii) Calculates the load Current I_L.

iii) Output voltage.

2. a) What do you mean by stew rate of an OPAMP. (2)

   b) Explain the operation of OPAMP as integrator. From this, explain how it can act as Low pass filter. (4 + 2)

   c) What is CMRR? What is the value of CMRR for an ideal OPAMP. (2)

3. a) Explain with the help of block diagram the working principle of a negative feedback amplifier. Find out the expression for the voltage gain with feedback. (3 +3)

   b) State the effects of negative feedback in amplifiers. (4)

4. a) Explain the operation of an OPAMP as a Schmitt trigger along with a heat circuit diagram. (3 + 1)

   b) What are the different feedback topologies? Explain with neat circuit diagram. (6)

5. a) Explain a non-inverting amplifier using OPAMP. Derive the expression for voltage gain along with neat circuit diagram. (6)

   b) Explain how can you construct a voltage follower from a non-inverting amplifier using OPAMP. Write down any two important application of voltage follower. (2 + 2)

6. a) What is virtual ground? (2)

   b) What is Barkhausen Criteria? (2)

   c) What do you mean by input bias current of OPAMP? (2)

   d) What is output offset voltage of an OPAMP? Construct a circuit which can remove the effect of output offset voltage. (2 + 2)

7. a) Give the circuit diagram of a Hart Ley oscillator and explain its operation. (2 + 4)

   b) What are the fundamental differences between class A & class B amplifier. (4)