

RAMAKRISHNA MISSION VIDYAMANDIRA

(Residential Autonomous College under University of Calcutta)

B.A./B.Sc. SECOND SEMESTER EXAMINATION, MAY 2015

FIRST YEAR

ELECTRONICS (Gen)

Paper : II

Date : 29/05/2015

Time : 11 am – 1 pm

Full Marks : 50

Answer **any five** questions from the following :

1. a) Implement the following equation using two OP –AMPS –

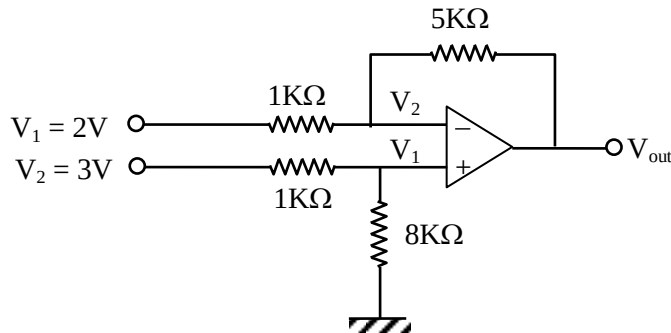
$$V_0 = -5V_1 + 2V_2 - 10V_3$$

Use minimum value of resistance as $10K\Omega$.

[6]

- b) Calculate V_0 for the circuit below $V_1 = 2V$ and $V_2 = 3V$

[4]



2. a) An amplifier with negative feedback gives an output of 10V for an input of 0.8V. When the feedback is removed an input 0.5V is sufficient to obtain the same output voltage of 10V. Find β . [5]
- b) Explain the advantages of Negative Feed Back with respect to Positive Feed Back. [5]
3. a) Determine the frequency of oscillation for a Colpitt's oscillator given $L=10mH$ and $C_1 = C_2 = 220pF$. [5]
- b) Determine the value of 'f' given $L=10mH$ and $C_1 = C_2 = 0.001\mu F$. Also determine the value of L for the following Cases - [5]
- i) Frequency is halved
- ii) Frequency is doubled.
4. Draw and explain the working principle of Crystal Oscillator or Hartley Oscillator. Mention also the frequency of oscillation. [10]
5. a) What is the difference between Voltage Amplifier and Power Amplifier?
- b) Draw and explain in brief the working principle of Class B Push pull Power Amplifier. [2+2+6]
6. a) What is Slew Rate?
- b) What is the basic difference between inverting amplifier and non-inverting amplifier.
- c) Discuss in brief the frequency of oscillation of Phase Shift Oscillator. [2+3+3+2]
7. Write Short Notes (**any two**) [5×2]
- a) CMRR
- b) Schmitt Trigger
- c) Barkhausen Criteria.
- d) Class A Power Amplifier.