

**2014**

**M.Sc.**

**1st Semester Examination**

**ELECTRONICS**

**PAPER—ELC-104**

*Full Marks : 50*

*Time : 2 Hours*

*The figures in the right-hand margin indicate full marks.*

*Candidates are required to give their answers in their own words as far as practicable.*

*Illustrate the answers wherever necessary.*

*(Analog Electronics)*

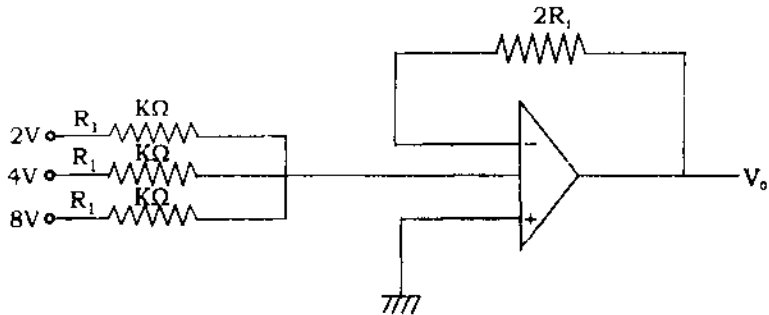
**Answer Q. No. 1 and any ~~three~~ questions from the rest.**

**1. Answer all questions : 2×5**

- (a) Write down the advantage of SMPS over ordinary power supply.
- (b) What is the difference between voltage and current sources ? Explain with circuit diagram.

*(Turn Over)*

(c) Find  $V_0$  of the following ckt :



Find the gain of the circuit.

- (d) Write down the advantages of active filter over passive filter.
- (e) What is linear interlaced scanning related to Television ?
2. Explain the operations with suitable diagram :
- (a) Instrumentation amplifier ;
- (b) A non-inverting comparator. 5+5
3. (a) Discuss how a PLL circuit can be used as an FM demodulators.
- (b) Draw the block diagram of a Television Transmitting system. Briefly explain each block. 5+(2+3)

4. (a) Give the circuit diagram and operation of a square wave generator. Derive the expression for frequency of output signal.
- (b) Design a first order low pass Butterworth filter with a cut-off frequency of 30 kHz and with a pass band gain of 1.5. (4+2)+4
5. (a) What is thermistor? Explain the operation of a phototransistor with suitable diagram.
- (b) Explain the operation of NE/SE 566 as a voltage controlled oscillator with the circuit diagram. (2+3)+5
6. (a) Give the block diagram of a SMPS. Explain the operation of series regulator using OP-AMP.
- (b) When an amplifier is called power amplifier? Derive the efficiency of a Class C power amplifier. (2+3)+(2+3)

**Internal Assessment — 10**

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