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**B. TECH. IN ELECTRONICS AND
COMMUNICATION ENGINEERING**

Term-End Examination

June, 2011

**BIEL-002 : ANALOG INTEGRATED CIRCUITS
DESIGN**

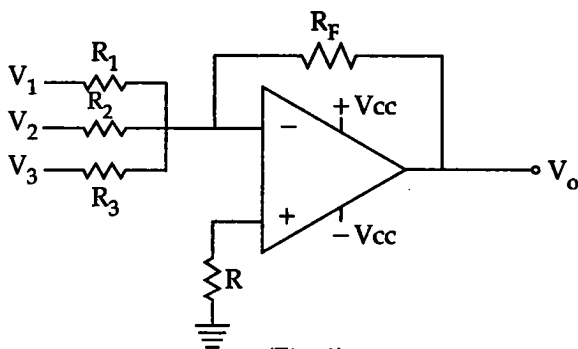
Time : 3 hours

Maximum Marks : 70

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- Note :** (i) *Attempt any five questions.*
(ii) *All questions have equal marks.*
(iii) *Assume necessary data if required.*
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1. (a) What is current mirror ? Give name of various types of active current sources. Explain any one in detail. **7**
- (b) Explain the concepts of virtual short and virtual ground related to op- amp. Also write parameters of an ideal op-amp. **7**
2. (a) What is a differentiator ? Draw the circuit diagram of basic differentiator and derive expression for its output. **7**

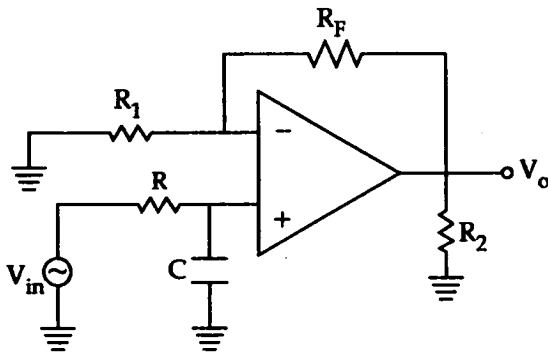
- (b) Explain the limitations of op-amp as a comparator ? Draw the circuit of Schmitt Trigger and explain its operation. 7
3. (a) Draw the circuit diagram of a full wave precision rectifier and explain its operation with the help of input and output waveforms. 7
- (b) With the help of circuit diagram explain the operation of a Triangular wave generator. 7
4. (a) Derive the expression for output voltage, V_o for given circuit. (fig. 1) 7



- (b) What is monostable multivibrator ? Draw the circuit diagram and explain its operation with the help of waveforms. 7

5. (a) For the low pass Butter worth filter given in Fig. 2. Prove that the cut off frequency f_H is given as. 7

$$f_H = \frac{1}{2 \pi R C}$$



(Fig. 2)

- (b) Draw the Block diagram of PLL and explain the function of each blocks in detail. 7
6. (a) With the help of circuit diagram find the expression of output of a Log-Amplifier. 7
- (b) Draw a V to I Convertor and explain how voltage is converted into current. 7
7. Write short notes (*Any two*). 14
- (a) Sample and hold circuit
 - (b) Integrator
 - (c) Instrumentation amplifier
 - (d) PLL as FM demodulator