

DECVI

Term-End Examination

December, 2013

BIEL-038 : LINEAR INTEGRATED CIRCUITS

Time : 2 hours

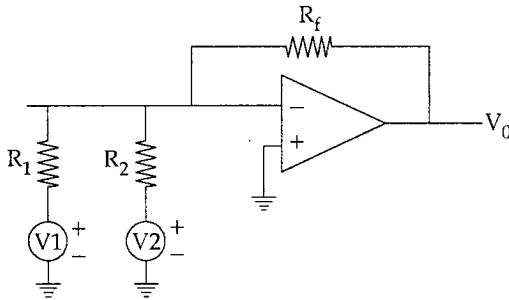
Maximum Marks : 70

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- Note :** 1. First question is *compulsory* and attempt *any four* from the rest.
2. Use of scientific calculator is *permitted*.
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1. (a) An ideal op - amp should have 2
- (i) Zero input impedance
 - (ii) Infinite input and output impedance
 - (iii) Infinite input impedance and zero output impedance
 - (iv) Zero input impedance and infinite output impedance
- (b) PLL consists of 2
- (i) Phase detector
 - (ii) VCO
 - (iii) Amplifier
 - (iv) All of the above
- (c) An op - amp current to voltage converter is also called_____. 2
- (d) An op - amp differentiator circuit can be used as a_____ filter. 2
- (e) The slow rate of ideal op - amp is_____. 2

- (f) The output of Schmitt trigger is 2
- (i) square waveform
 - (ii) sine waveform
 - (iii) triangular waveform
 - (iv) cos waveform
- (g) The gain of an op - amp decreases at high frequency due to 2
- (i) capacitance
 - (ii) resistors
 - (iii) gain
 - (iv) non of the above
2. (a) Explain the concept of virtual grounding in op - amp. 6
- (b) How can op - amp be used as 8
- (i) adder
 - (ii) voltage follower
3. (a) Draw the set - up for a voltage to current converter for a grounded load. Mention briefly its operation. 8
- (b) Bring out the essential features of a general purpose voltage regulator IC. 6
4. (a) Using a block schematic, mention briefly how a PLL operates. 7
- (b) Sketch the frequency response of a band pass filter. Mention one application for this filter. 7
5. (a) Draw the circuit for a monostable multivibrator, using the OP.Amp.IC. Write down the expression for the time delay. 8
- (b) Mention three applications of IC - 555 timer. 6

6. Find V_0 in the circuit if $R_f=10k\Omega$, $R_1=2k\Omega$, and $R_2=5k\Omega$ 14



7. (a) Design a second order HP (High Pass) active filter required to have a cut - off frequency of 5kHz. 10
- (b) Draw the ideal and actual characteristics of a first order active notch filter. 4
8. Write short notes on *any four* of the following.
- (a) Frequency divider 3.5x4=14
 - (b) Sample and Hold circuit
 - (c) Voltage follower
 - (d) CMRR and SVRR
 - (e) Merits of active filters over passive filters
 - (f) Zero crossing detector
