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BIEL-038

01650

DECVI

Term-End Examination

June, 2013

BIEL-038 : LINEAR INTEGRATED CIRCUITS

Time : 2 hours *Maximum Marks : 70*

Note : *1. First question is **compulsory** and attempt **any four** from the rest.*

*2. Use of scientific calculator is **permitted.***

1. (a) The maximum values of $+Vcc$ and $-Vcc$ that can be given to op - amp are _____ . 2

(b) A common - mode rejection ratio in dB can be expressed as : 2

(i) $20 \log_{10} \frac{Acm}{Adm}$

(ii) $20 \log_{10} \frac{Acm}{2}$

(iii) $10 \log_{10} \frac{Adm}{Acm}$

(iv) $20 \log_{10} \frac{Adm}{2}$

(c) A good op - amp has : 2

(i) very high bandwidth

(ii) narrow bandwidth

(iii) high selectivity

(iv) all of the above.

(d) An op-amp circuit can function as a comparator if the feedback resistor is made equal to _____ . 2

(e) The other name of schmitt trigger is : 2

(i) regenerative comparator

(ii) square wave generator

(iii) backlash circuit

(iv) all of the above

(f) IC-555 can be used as : 2

(i) monostable multivibrator

(ii) pulse detector

(iii) ramp generator

(iv) all of the above

(g) Select correct statement of PLL : 2

(i) capture range smaller than lock range

(ii) lock range smaller than capture range.

(iii) capture range is equal to lock range

(iv) none of the above.

2. (a) Explain the meaning of bias, offsets, and drift as applied to OP-AMPs. 6

(b) Sketch an OP-AMP Inverter and explain the circuit operation with relevant waveforms. 8

3. (a) Describe the operation of basic comparator, with relevant waveforms. 6

(b) Sketch the schematic diagram of a monostable multivibrator and give the expression for the oscillation frequency. 8

4. Draw the circuit diagram of a second order Butterworth high pass filter and explain the principle of operation. 14

5. (a) Explain the operation of PLL. 7

(b) Design a monostable multivibrator for the output pulse width of 10 ms. 7

6. (a) Draw the set - up for a voltage to current converter, for a grounded load. Mention briefly its operation. 7

(b) Bring out the important features of a multiplier IC. 7

7. (a) For the three input summing amplifier, derive the expression for the output voltage interms of the inputs and circuit components. 7

(b) Draw and explain the block diagram of IC-555 Timer. 7

8. Write short notes on ***any four*** of the following : **3.5x4=14**

(a) Slew rate of OP - AMP

(b) Notch filter

(c) Importance of OP - AMP

(d) Sample and Hold circuit

(e) Practical Differentiator

(f) FM demodulator