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BIEL-011

B.Tech. – VIEP – ELECTRONICS AND COMMUNICATION ENGINEERING (BTECVI)

Term-End Examination

December, 2015

BIEL-011 : LINEAR INTEGRATED CIRCUITS

Time : 3 hours *Maximum Marks : 70*

Note : *Attempt any **seven** questions. All questions carry equal marks. Missing data, if any, may be suitably assumed. Use of scientific calculator is permitted.*

1. Draw the circuit diagram of a modified BJT current source and derive an expression for its current gain and output resistance. *10*

2. Give the schematic symbol of an op-amp specifying the functions of each pin. Also draw the block diagram of an op-amp and briefly describe the function of each block. *10*

3. Define the terms – SVRR and CMRR. Briefly explain the procedure for determining the CMRR value of an op-amp. *5+5=10*

4. Draw the high frequency equivalent circuit of an op-amp. Derive an expression for the open-loop voltage gain as a function of frequency. *4+6=10*

5. Derive an expression for the output voltage of a non-inverting adder amplifier using op-amp having three inputs. Also draw its circuit diagram. *10*

6. Draw the circuit diagram of a circuit voltage-to-current converter with grounded load and floating load. Also derive an expression for the output voltage of the two circuits. *5+5=10*

7. Give the circuit diagram of a second-order Butterworth low-pass filter. Derive an expression for its transfer function and hence determine the value of various filter parameters. *3+7=10*

8. Give the circuit diagram of a square wave generator using an op-amp. Also derive an expression for the frequency of output waveform. *4+6=10*

9. Explain the operation of a sample and hold circuit with the help of a neatly labelled diagram. *10*

10. Write short notes on any ***two*** of the following : *2×5=10*

(a) Voltage-Controlled Oscillation

(b) Anti-Logarithmic Amplifier

(c) Level Translator