BIEL-011

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

Term-End Examination

00294

June, 2017

BIEL-011 : LINEAR INTEGRATED CIRCUITS

Time : 3 hours *Maximum Marks : 70*

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

1. What is a current mirror ? Discuss in detail about the Wilson current source. *10*

2. Find the slew rate of a frequency compensated op-amp at room temperature which has a unity crossover frequency of 5 MHz. *10*

3. Define CMRR, SVRR, input offset current. Also state the reasons for the offset currents at the input of the op-amp. *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. *10*

5. Draw the circuit of an Astable multivibrator using op-amp and derive an expression for its frequency of oscillation. *10*

6. What are the advantages of switch mode power supplies ? Also list the important parts of regulated power supply. *10*

7. (a) With neat schematic representations, explain the operation of Active Positive Clamper to clamp the input signal above ground state by 5 V. *6*

   (b) State the applications of Sample and Hold circuits. *4*

8. (a) Explain the basic comparator and its characteristics. *4*

   (b) Design an amplifier with a gain of -10 and input resistance of 10 K. *6*

9. (a) Draw an adder circuit using op-amp to get the output expression as

   $$V_o = -(0{\cdot}1V_1 + V_2 + 5V_3).$$ *6*

   (b) List the applications of Log amplifiers. *4*

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

(a) Current-to-Voltage Converters

(b) Frequency Response of Compensated Op-amp

(c) Wein Bridge Oscillator
