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BIEL-002

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

00963 **Term-End Examination**

June, 2018

BIEL-002 : ANALOG AND INTEGRATED CIRCUITS DESIGN

Time : 3 hours *Maximum Marks : 70*

Note : *Attempt any **seven** questions. All questions carry equal marks. Missing data may be suitably assumed and mentioned. Use of scientific calculators is permitted.*

1. Draw the circuit diagram of a temperature compensated logarithmic amplifier. Derive an expression for its output voltage and show it is temperature independent. *4+4+2=10*

2. Explain the following applications of PLL with the help of a neatly labelled block diagram : *5+5=10*
   (a) Frequency Synthesizer
   (b) FSK Demodulator

3. Draw the circuit diagram of a Sallen-Key VCVS second order low pass filter. Derive an expression for its transfer function and the filter parameters. *4+6=10*

4. Give the circuit diagram of a triangular-wave generator and hence obtain an expression for the frequency of the output waveform. *4+6=10*

5. What are comparators ? Explain the operation of an inverting comparator for positive and negative reference voltage with neatly labelled input and output waveforms. *2+4+4=10*

6. What is the basic difference between an ideal and a practical integrator circuit ? Draw their circuit diagrams, their frequency response curves and the expression for their transfer functions. *10*

7. Draw and explain the circuit diagram of an astable multivibrator. Derive an expression for the time-period of the output waveform. *5+5=10*

8. Draw the circuit diagram of a difference amplifier using two op-amps. Derive an expression for its output voltage and gain. *4+3+3=10*

9. Explain the advantages of active loaded differential amplifier. Draw its circuit diagram and derive its expression for voltage gain. *3+3+4=10*

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

(a) Instrumentation Amplifier

(b) Grounding and Shielding Techniques

(c) Sample and Hold Circuit

(d) F to V Converters