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BIEL-038

DIPLOMA – VIEP – ELECTRONICS AND COMMUNICATION ENGINEERING (DECVI)

Term-End Examination

00363

December, 2016

BIEL-038 : LINEAR INTEGRATED CIRCUITS

Time : 2 hours *Maximum Marks : 70*

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

1. Draw the circuit diagrams of the following :
   (a) Dual-Input Balanced Output (DIBO) differential amplifier
   (b) Single-Input Unbalanced Output (SIUO) differential amplifier

   For the above two circuits, derive the expressions for input resistance (R_i), output resistance (R_o) and voltage gain (A_v). *7+7=14*

2. Define the following terms : $4 \times 3\frac{1}{2} = 14$
   (a) Input offset voltage
   (b) Input bias current
   (c) CMRR
   (d) Slew rate

3. Draw the following circuits using op-amp and derive an expression for the output voltage : $4 \times 3\frac{1}{2} = 14$

   (a) Practical Integrator

   (b) Practical Differentiator

   (c) Subtractor

   (d) Averaging Amplifier

4. Explain the operation of the following circuits using op-amp : $7+7=14$

   (a) Logarithmic amplifier with temperature compensation circuit

   (b) Voltage-to-current converter (floating and grounded load)

5. Draw the circuit diagram of an inverting comparator and explain its operation both for (+ve) and (–ve) reference voltages. State the condition needed for the above circuit to work as a zero-crossing detector. $10+4=14$

6. What are the advantages of active filters over passive filters ? Give the classification of active filters. Draw the circuit diagram of wide-band pass filter and derive an expression for its transfer function. $4+4+6=14$

7. Explain the operation of the following : *7+7=14*

(a) Bistable multivibrator using IC-555

(b) IC-566 as voltage-controlled oscillator