



C14-AEI-503

4609

**BOARD DIPLOMA EXAMINATION, (C-14)**  
**OCT/NOV—2018**  
**DAEIE—FIFTH SEMESTER EXAMINATION**

**LINEAR INTEGRATED CIRCUITS AND APPLICATIONS**

Time : 3 hours]

[ Total Marks : 80

**PART—A**

3×10=30

- Instructions :** (1) Answer **all** questions.  
(2) Each question carries **three** marks.  
(3) Answers should be brief and straight to the point and shall not exceed *five* simple sentences.

1. State the requirement of an operational amplifier.
2. Define slew rate.
3. State the principle of open loop operational amplifier.
4. Draw the circuit of voltage to current converter.
5. Draw the ideal and practical frequency response plots for high pass filter(HPF).
6. State the merits of active filters over passive filter.
7. Write about the function of trigger and reset pins of 555 IC timer.
8. Write the formula for output frequency of astable multivibrator.
9. Draw the basic comparator circuit using op-amp.
10. List any three applications of PLL.

**PART-B**

10×5=50

- \* **Instructions :** (1) Answer *any five* questions.  
(2) Each questions carries **ten** marks.  
(3) Answers should be comprehensive and the criteria for valuation are the content but not the length of the answer.

**11.** Explain the operational of differential amplifier with circuit diagram.

**12.** Define the terms :

- |                            |                                |
|----------------------------|--------------------------------|
| (a) Voltage gain ( $A_v$ ) | (b) Output impedance ( $Z_o$ ) |
| (c) Input bias current     | (d) Input offset voltage       |

**13.** Explain the operation of summing and difference amplifier with circuit diagram.

**14.** Explain the operation of instrumentation amplifier with circuit diagram.

**15.** Explain the operation of low pass filter (LPF) using operational amplifier with circuit diagram.

**16.** Explain the operation of mono-stable multivibrator using 555 IC timer with circuit diagram.

**17.** Explain the operation of Wien-bridge oscillator with circuit diagram.

- 18.** (a) Draw the circuit diagram of Schmitt trigger circuit using op-amp.  
(b) Draw the block diagram of 555 IC timer.

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