

**III B. Tech I Semester Supplementary Examinations, August - 2021**  
**LINEAR IC APPLICATIONS**

(Common to Electronics and Communication Engineering, Electronics and  
Computer Engineering)

Time: 3 hours

Max. Marks: 70

- Note: 1. Question Paper consists of two parts (**Part-A** and **Part-B**)  
 2. Answer **ALL** the question in **Part-A**  
 3. Answer any **FOUR** Questions from **Part-B**

**PART -A****(14 Marks)**

1. a) What is the difference between Balanced output and Unbalanced output Configurations. [2M]
- b) Define input offset voltage and Bias Current. [2M]
- c) Draw the I to V convertor. [2M]
- d) What are the applications of All Pass Filter? [3M]
- e) Draw the pin diagram of 555 timer. [3M]
- f) List the ADC Specifications. [2M]

**PART -B****(56 Marks)**

2. a) What is Differential amplifier? Derive the expressions for emitter current and collector to emitter voltage of a differential amplifier using DC analysis. [7M]
- b) Draw the circuit diagram of differential amplifier with dual input and unbalanced output. Derive expressions for differential gain  $A_d$ , input resistance  $R_i$ , and output resistance  $R_o$ . [7M]
3. a) Draw the block diagram of Op-amp and explain its operation. [7M]
- b) What is the significance of Frequency Compensation techniques of op-amp? Explain. [7M]
4. a) With neat sketch explain the operation of Instrumentation amplifier. [7M]
- b) Explain the operation of Square wave generator along with a circuit diagram. [7M]
5. a) Design the band pass filter using operational amplifiers so that the  $f_c = 1$  KHz,  $Q=3$  and  $A_F=10$ . [7M]
- b) With neat sketch explain the operation of Sample and Hold circuits. [7M]
6. a) Explain the working of Monostable multivibrator using 555 Timer with relevant circuits and waveforms. [7M]
- b) Discuss the significance of Low pass filter and VCO in PLL. [7M]
7. a) Draw the schematic circuit diagram of dual-slope A/D converter and explain its operation. [7M]
- b) Explain about inverter R – 2R ladder DAC. Write advantages of it. [7M]

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