

**III B. Tech I Semester Supplementary Examinations, February-2022**  
**LINEAR INTEGRATED CIRCUIT APPLICATIONS**

(Electronics and Communication Engineering)

Time: 3 hours

Max. Marks: 70

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

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**PART -A**

**(22 Marks)**

1. a) What is the use of level translator? [3M]
- b) A certain op-amp has an open-loop differential voltage gain of 100,000 and a common-mode gain of 0.2. Determine the CMRR and express it in decibels. [4M]
- c) Write the advantages and applications of precision rectifiers. [4M]
- d) What is Sample and Hold amplifier? Write its applications. [4M]
- e) Write the applications of 555 Timer in monostable mode. [4M]
- f) Draw the IC 1408 D/A converter. [3M]

**PART -B**

**(48 Marks)**

2. a) Draw the DC equivalent circuit of single input unbalanced output differential amplifier and analyze it. [8M]
- b) Derive the expressions for differential input resistance and output resistance of single input balanced output differential amplifier. [8M]
3. a) Draw the block diagram of op-amp and explain it in detail. [8M]
- b) What is the need of frequency compensation? Explain the basic principles of pole-zero compensation. [8M]
4. a) Explain how op-amp can be used as adder and subtractor. [8M]
- b) Explain the working principle of antilog amplifier using op-amp. [8M]
5. a) Draw the first order bandpass filter using op-amp and explain its working. [8M]
- b) Define active filter. List out different filters and sketch the frequency response of them. [8M]
6. a) Explain how 555 timer can be used as an astable multivibrator. [8M]
- b) Draw the block diagram of IC 566 VCO and explain its working. [8M]
7. a) Explain the working principles of R-2R ladder DAC. [8M]
- b) Discuss about successive-approximation type ADC. [8M]

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