Code No: **RT31042** **R13** SET - 1

III B. Tech I Semester Supplementary Examinations, August -2021

LINEAR IC APPLICATIONS

(Common to Electronics and Communication Engineering, Electronics and Instrumentation 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) Write the ideal characteristics of an operational amplifier. [3M]
   b) Describe different package types of op-amps. [4M]
   c) List out the applications of V-I and I-V converters. [4M]
   d) Draw the circuit diagram of op-amp all pass filter. [4M]
   e) Write the various applications of VCO 566. [4M]
   f) Define accuracy and resolution of the digital-to-analog converters. [3M]

PART –B **(48 Marks)**

2. a) Derive an expression for voltage gain for dual input balanced output differential amplifier. [8M]
   b) Explain the operation of level translator with the help of a neat circuit diagram. [8M]

3. a) With suitable sketches, explain the measurement procedure for the slew rate. [8M]
   b) An op-amp has a slew rate of 3 V/μs. What is the maximum frequency of an output sinusoid of peak value 5 V at which the distortion sets in due to the slew rate limitation? [8M]

4. a) Explain the operation of a square wave generator using op-amp with a neat circuit diagram. [8M]
   b) What is the output voltage of integrator when step input voltage of 5 V with 5 ms is applied to the circuit. [8M]

5. a) Explain the operation of IC 1496 balanced modulator with a neat sketch. [8M]
   b) Explain the operation of 2^{nd} order band pass filter with a neat diagram. [8M]

6. a) Design a symmetrical square wave generator with 4V peak value and 2 KHz frequency using 555 timer. Assume necessary data. [8M]
   b) Draw the circuit diagram of monostable multivibrator by using 555 IC timer and explain its operation. [8M]

7. a) Explain the operation of dual slope ADC with a neat circuit diagram. [8M]
   b) Describe the advantages and disadvantages of flash type ADC. [8M]

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