14EC501

Hall Ticket Number:

IV/IV B.Tech DEGREE EXAMINATION

OCTOBER, 2016 **Electronics and Communication Engineering**

Sixth Semester **Linear Integrated circuits & Applications**

Time: Three Hours **Maximum :** 60 Marks

Answer Question No.1 compulsorily. (1X12 = 12 Marks)

Answer ONE question from each unit. (4X12=48 Marks)

1. Answer all questions (12X1=12 Marks)

a) Define i/p offset voltage.
b) What are the ideal characteristics of an op-amp?
c) What is precision rectifier?
d) Define Slew rate of an op-amp.
e) What is frequency stability?
f) What are the limitations of comparator?
g) What is V_O for a 4bit DAC whose V_R is 10V and the i/p binary number is 0101?
h) Define Hysteresis.
i) What is clamping?
j) Define percentage resolution.
k) What is capture range of PLL?
l) Draw the circuit diagram of All pass filter.

UNIT – I

2.a Explain about voltage series feedback amplifier. (6M)
2.b Consider the lossy integrator if R_1=20k,R_F=200k,C_F=10nF,determine the lower frequency limit of Integration, also sketch o/p wave form for an i/p of 1V peak sine wave at 5 kHz. (6M)

(OR)

3.a Explain the ac characteristics of an op-amp. (6M)
3.b Explain differential instrumentation amplifier with a neat diagram. (6M)

UNIT – II

4.a Derive f_{osc}& A_V for a RC phase shift oscillator using an op-amp and also design the oscillator to Oscillate at 500Hz. (8M)
4.b Explain about Voltage controlled oscillator with a neat sketch. (4M)

(OR)

5.a Explain the operation of a triangular wave generator also derive the frequency of oscillations of the triangular wave generator . (6M)
5.b Explain about Schmitt trigger. Find V_H if R_1=100Ω,R_2=56Ω & supply voltage±15v. (4+2=6M)

UNIT – III

6.a Explain the types of clippers with necessary waveforms. (6M)
6.b Draw the circuit of R-2R 2 bit DAC and derive expression for analog o/p. (6M)

(OR)

7.a Give the Schematic circuit diagram of successive approximation type ADC and explain the operation with the given digital representation 11010100. (8M)
7.b Explain about Absolute value output circuit. (4M)

UNIT – IV

8.a Explain the operation of Astable multivibrator using 555 timer. Obtain the expression for duty cycle. (6M)
8.b Explain about 723 general purpose voltage regulator. (6M)

(OR)

9.a With the aid of circuit diagram explain & derive the transfer function of second order High pass filter. (6M)
9.b Design a wide band pass filter having f_l=400Hz,f_H=2kHz & pass band gain of 4 .Find the value of Q of the filter. (6M)