TE / ETRX / Sem V / Rev
LIC & D.

P4–Con No–74

Con. 5701–10. **(REVISED COURSE)** **GT–6693**

(3 Hours) **[Total Marks : 100**

N.B. : (1) Question No. **1** is **compulsory**.
(2) Solve any **four** questions from remaining **six** questions.
(3) Assume **suitable** data wherever **necessary.**

Q.1 Attempt any five. **20 Marks**

A) What are the characteristics of an ideal operational amplifier?

B) Explain in detail voltage to current converter.

C) What is roll of rate of first order filter?

D) Draw the characteristics of an ideal comparator. Explain about zero crossing detectors.

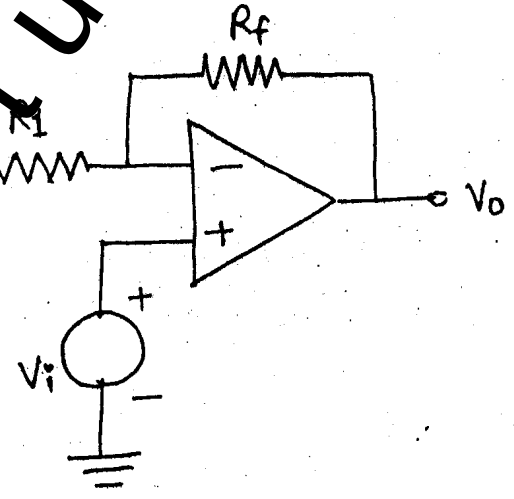
E) How current boosting is achieved in a 723 IC?

F) List the applications of Phase Locked Loop.

G) What are the different linear IC Packages?

Q.2 A) Explain briefly, why negative feedback is desirable in amplifier applications? List the four negative feedback configurations. **10 Marks**

B) Define the Common Mode Rejection Ratio. For the non-inverting amplifier in the below diagram, $R1 = 1K\Omega$ and $Rf = 10K\Omega$.



Calculate:

i) The maximum output offset voltage due to $Vios$ and Ib.
The amplifier is LM307 with $Vios = 10mV$, $Ib = 300nA$ and $Ios = 50nA$.
ii) Calculate the value of $Rcomp$ needed to reduce the effect of Ib.
iii) Calculate the maximum output offset voltage if $Rcomp$ as calculated in Q.2 B) ii, is connected in the circuit. **10 Marks**

Q.3 A) Design a forth order Butterworth low pass filter having upper cut-off frequency $1KHz$.

10 Marks

Q.4 A) With neat diagram and waveform, explain about **10 Marks**

i) Triangular wave generator

ii) Mono shot multivibrator

B) A Schmitt trigger is with the upper threshold level Vut=0V and hysteresis width$Vh = 0.2V$. Convert a $1KHz$ sine wave of amplitude $4Vpp$ into a square wave. Calculate the time duration of the negative and positive portion of the output waveform. **10 Marks**

Q.5 A) List the various techniques of analog to digital conversion. **10 Marks**

Also explain about i) R-2R Ladder digital to analog convertor

ii) The counter type analog to digital convertor

B) Explain in brief about fixed voltage series regulator. What is current limit protection?

10 Marks

Q.6 A) Explain in detail about Wien Bridge oscillator. **10 Marks**

B) What is Phase Locked Loop? Explain about monolithic phase locked loop. **10 Marks**

Q.7) Write short notes on any four of the following **20 Marks**

i) Integrator using operational amplifier

ii) Precision rectifier

iii) RC phase shift oscillator

iv) KRC filter

v)Summing amplifier