Question Bank (G scheme)

Name of subject:LINEAR INTEGRATED CIRCUITS **Unit Test : I**
Subject code: 17445 **Course : IS/IE/EJ**
Semester :IV

CHAPTER 1: OPERATIONAL AMPLIFIER(10 MARKS)

3 Marks :

1) Define CMRR, Slew Rate, Gain Bandwidth Product
2) Define Input Offset voltage, Output Offset Voltage, PSRR.
3) Draw equivalent circuit and voltage transfer characteristics of an op-amp.

4 Marks :

4) Draw the block diagram of an op-amp and write the function of each block.
5) What is the use of level shifter stage? Draw its circuit diagram.
6) Write ideal and practical values of any four characteristics of an op –amp.
7) Assuming slew rate for 741 is 0.5 V/μsec. What is the maximum frequency of undistorted sine wave that can be obtained for a. 12V peak b. 2V peak

CHAPTER 2: OP AMP CONFIGURATION(18 MARKS)

3 Marks :

8) Distinguish open loop and close loop configuration. (6 pts.)
9) Describe the concept of virtual ground and virtual short.
10) Why open loop configuration is not used for linear applications?
11) Draw the unity gain amplifier. State any two applications of it.
12) Draw the input and output waveform of practical integrator and differentiator when the input is sine wave and square wave.
13) In an inverting amplifier let R_F = 100 KΩ , R_1 = 10KΩ and V_1 = 1V calculate

a.Input current b. Output Voltage c. Closed loop gain

4 Marks Question:

14) Draw the circuit diagram of close loop non- inverting amplifier and derive expression of its voltage gain.
15) Design the circuit to get output voltage Vo = 5V and draw designed circuit.
16) It is desired to get an output using op-amp, given by the equation Vo= 5(V1-V2)+3V3

Design the circuit and draw the designed circuit.

17) Draw the circuit of closed loop difference amplifier using one op-amp. Derive the expression of its output voltage.
18) Draw the circuit diagram of basic integrator and practical integrator.

19) Draw the circuit diagram of basic differentiator and derive expression of its output voltage.

CHAPTER 3: APPLICATIONS OF OP AMP(22 MARKS)

3 Marks:

20) State the need of signal conditioning.
21) Draw and explain temperature compensated logarithmic amplifier using op-amp.
22) Draw the circuit diagram of I. A. using three op – amp and write its output equation.
23) Explain current to voltage converter. Write its applications.
24) Draw and explain Window detector.
25) Compare between Schmitt Trigger and Comparator.
26) Define UTP, LTP, Hysteresis with respect to Schmitt trigger

4Marks :

27) Draw the circuit of a V-I converter and derive an expression for the output current in terms of input voltage.
28) Draw the diagram of log amplifier using op-amp. Derive the expression for its output voltage.
29) Draw the sample and hold circuit using op-amp. Explain its working and show input and output waveform.
30) Draw the neat diagram of analog multiplier using log-antilog amplifiers and explain its operation.
31) Draw and explain zero crossing detector with i/p and o/p waveform.
32) Draw and explain Inverting Schmitt Trigger using IC 741.
33) With suitable circuit diagram explain Active peak detector.