BTECH,MAY –2014
LINEAR INTERGRATED CIRCUITS
Paper Code (BTEC-503)
Paper Id. [A2105]

TIME 3 HOURS   MM: 60

NOTE:

1. **SECTION A is compulsory**
2. **SECTION B attempt any four.**
3. **SECTION C attempt in two**

2X10=20

SECTION A

Q1)
a) Draw the circuit diagram of voltage follower circuit and derive the gain .
b) Define the term input offset voltage , thermal drift.
c) Define slew rate and discuss its significance.
d) Define hysteresis as it related to the comparator.
e) List the differences between bistable, astable and monostable multivibrate circuits.
f) Explain the difference between active and passive filters and the advantage and disadvantages of each type.
g) State the principle of operation of switching regulator and indicate its primary advantage over a conventional regulator.
h) Define capture range and lock range.
i) Define cascade amplifier and determine its overall voltage gain.
j) Explain the operation of FSK demodulator using 565 PLL.

SECTION B
4X5=20

Q2) Analyze the operation of true differentiate circuit and discuss the difficulties with high frequency noise. Draw the frequency response of basic and practical differentiator circuit.

Q3)What is the difference between clippers and clampers? Design a positive clipper circuit and show its input and output waveform with $V_{ref}=1V$ and $V_{ref}= -1V$.

Q4)
a. Briefly explain the role of low pass filter and VCO in PLLs.
b. What are the advantages and disadvantages of monolithic PLLs over discretePLLs.
c. List one application of PLL.

Q5)What is a frequency response? Briefly explain the need for compensating network in op-amp. What is the difference between compensate and noncompensated op-amps?

Q6) Obtain the value for the current IC_{N1}, IC_{N2} and resistance R for the given circuit. $\beta=100$ and $e_0 = 5v$.
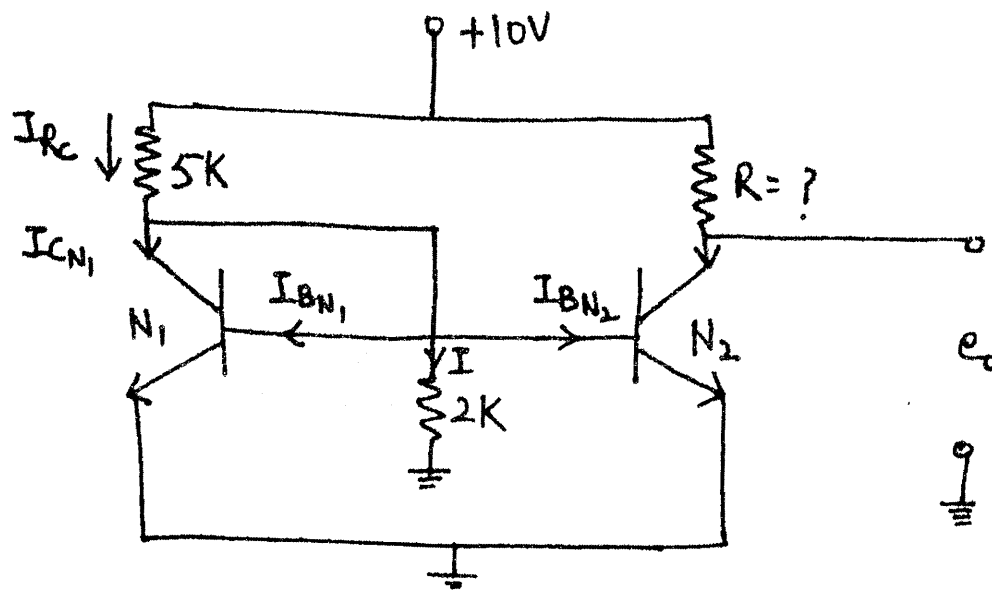
SECTION C

2X10=20

Q7) Analyze an instrumentation amplifier and discuss its advantages as compared to other basic amplifier circuits. Also discuss the nature of common mode spurious noise components and show how the instrumentation amplifier suppresses them.

Q8) Consider the Noninverting amplifier circuit show using 741 op amp. The circuit is to be used to amplify some complex analog signals. Investigate the frequency limits of operation when the input signals has a peak value of (a) 20mV and (b) 500mV. Assume that B=1Mhz and S=0.5V/μs.
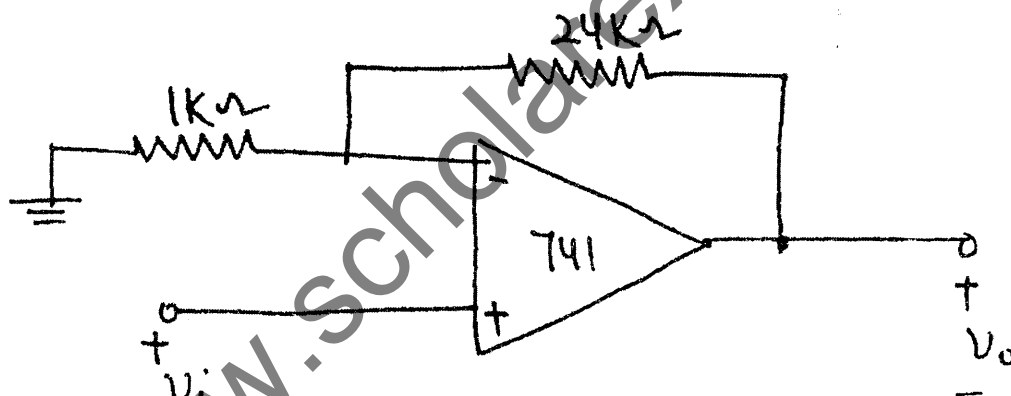
Q9) Draw the standard block diagram representation of a feedback amplifier and show how the noninverting amplifier fits the model. Calculate the actual values of the low frequency closed loop again, the input resistance and the output resistance for a noninverting op amp circuit.

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