Code No: 154AW **R18**

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
B. Tech II Year II Semester Examinations, November/December - 2020
ELECTRONIC CIRCUIT ANALYSIS
(Common to ECE, EIE)

Time: 2 Hours **Max. Marks: 75**

Answer any Five Questions
All Questions Carry Equal Marks
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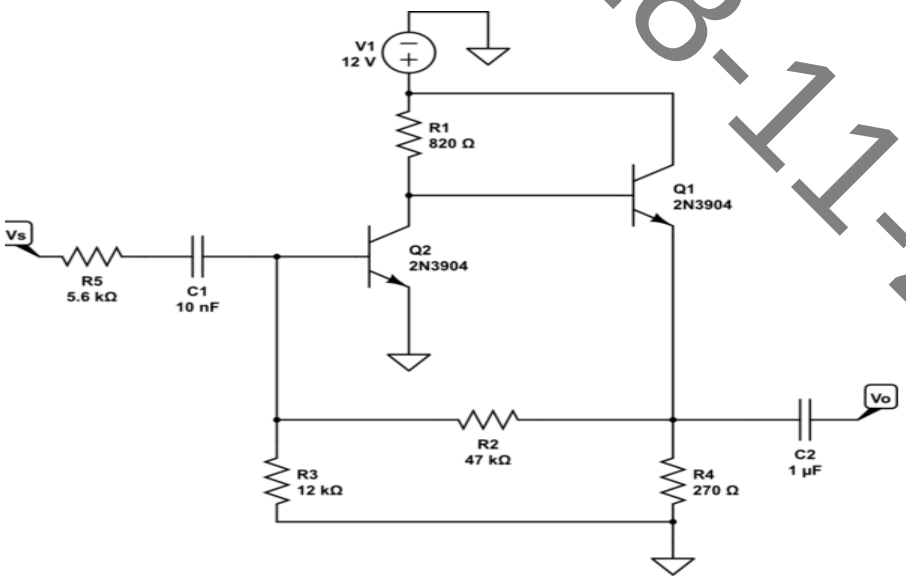
1.a) Derive the upper and lower cutoff frequencies of the common emitter amplifier.
b) Why 3dB frequency for the current gain is not same as the 3dB frequency for voltage gain? [9+6]

2.a) The bandwidth of a single stage amplifier extends from 10Hz to 100kHz. Find the frequencies at which the voltage gain is down by 1dB from its mid-band value.
b) Draw the circuit diagram of Darlington pair and explain how it provides high input impedance. [6+9]

3.a) A voltage amplifier is characterized by an open loop voltage gain of 100. Input resistance of 50KΩ and output resistance of 2KΩ, Negative feedback of 10% of output voltage is introduced in series with the input to bring the distortion below acceptable level. Find the modified values of these parameters.
b) Draw the current shunt feedback circuit diagram. [8+7]

4. Determine the feedback factor, current gain, voltage gain, input and output impedances for the following circuit. Assume ideal h parameters for the transistors. [15]



5. Derive the expression for the phase shift as a function of frequency for the feedback network of RC phase shift oscillator. [15]

6.a) How does the frequency stability of an LC oscillator depend upon the Q-factor of the LC circuit? Explain.

b) Determine the minimum amplifier gain and the phase shift required to be introduced by the amplifier for the following case: Feedback factor =2%, oscillator type is Hartley oscillator. [8+7]

7.a) A class B amplifier provides a 15V peak output signal to 10Ω load. The system operates on a power supply of 20V. Determine the efficiency of the amplifier.

b) Draw the circuit diagram of push-pull class-B power amplifier and explain its working. [7+8]

8.a) Define the terms slope error, displacement error, transmission error.

b) With the help of circuit diagram explain the principle of operation of a constant current sweep circuit. [7+8]

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