Code No: 54020 **R09**

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY, HYDERABAD
B.Tech II Year II Semester Examinations, December-2014/January-2015
ELECTRONIC CIRCUIT ANALYSIS
(Common to ECE, EIE, ETM, ICE)

Time: 3 hours **Max. Marks: 75**

Answer any five questions
All questions carry equal marks
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1.a) For any single stage amplifier express Input Resistance in terms of current gain and h parameters only.

b) What are the different types of distortions in an amplifier? Explain them.

2. Consider the two stage simplifier circuit shown in figure 1. The transistor parameters at the corresponding quiescent points are h_{ie} =2KΩ, h_{fe} = 50, h_{re} = 6 × 10^{-4} and h_{oe}= 25μA /V. Find the input and output impedances, overall voltage and current gains for individual, as well as overall.

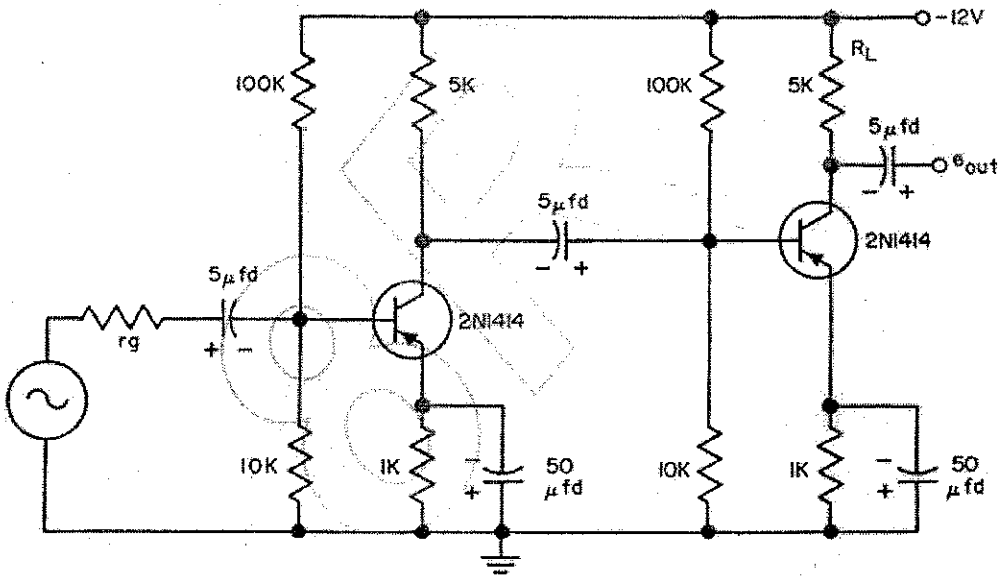

Figure: 1

3.a) When a transistor is biased at 20mA, 20V it has following h parameters at room temperature h_{ie} =500Ω, h_{fe} = 100, h_{re} =10^{-4} and h_{oe}= 25μA /V. It has f_T = 50MHz and Cc = 3pF. Find all the values of hybrid π components?

b) What is the significance of gain bandwidth product of a transistor amplifier?

4.a) Derive an expression for voltage gain of common drain FET amplifier and draw a neat circuit diagram.

b) Draw a circuit diagram and frequency response of cascode amplifier and explain.

5.a) What are the advantages and disadvantages of negative feedback in an Amplificrs?

b) Calculate A_{Vf}, A_{If} ,R_{if}, R_{of}, R'_{of} for the circuit shown in figure 2 use typical h parameters. $R_s = R_L = 10K\Omega$, $R_e = 1k\Omega$.

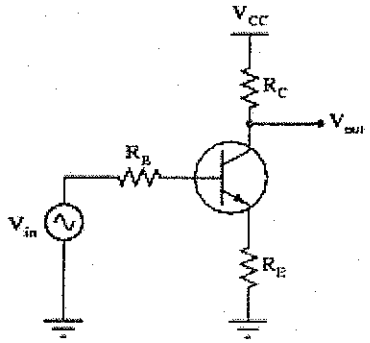

Figure: 2

6.a) Justify that crystal oscillators are more stable than other oscillators.

b) Draw the circuit of colpitts oscillator and derive the equation for frequency of oscillations.

7.a) A single transistor is operating an ideal class B amplifier with a $5K\Omega$ load. A dc meter in the collector circuit reads 20mA. How much signal power is delivered to the load?

b) What is class C amplifier? How are harmonics avoided in the output of such an amplifier?

8.a) Write applications of tuned amplifier.

b) What is coefficient of coupling in a double tuned amplifier? Explain its effect on the frequency response.

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