R09

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

Time: 3 hours   Max. Marks: 75

Answer any five questions
All questions carry equal marks
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1.a) Draw the CE amplifier with unbypassed emitter resistance and derive expression for R_i and A_v.

 b) A transistor in CB circuit has the following set of 'h' parameters. $h_{ib} = 20$, $h_{fb} = 0.98$, $h_{rb} = 3 \times 10^{-4}$, $h_{ob} = 0.5 \times 10^{-6}$. Find the values of Ri, Ro, Ai and Av if $R_s = 600\Omega$ and $R_L = 1.5\ k\Omega$.

2.a) Derive the expression for the bandwidth of multistage amplifier.

 b) What is the use of transformer coupling in the output of multistage amplifier?

3.a) Draw the hybrid-Π-model of common emitter configuration and describe each component in the Π-model.

 b) Derive the equation for voltage gain bandwidth product for CE amplifier.

4.a) Discuss the effect of different type of loads to a common source MOS amplifier.

 b) Draw the CS FET amplifier equivalent circuit looking into the drain & find its gain and output impedance.

5.a) Show that bandwidth increases in negative feedback amplifiers.

 b) An amplifier has a input resistance of 200 K ohms, with a certain negative feedback introduced in the above amplifier the input resistance is found to be 20 M ohms and overall gain is found to be 1000. Calculate the loop gain and feedback factor.

6.a) Draw the circuit diagram of RC-Phase shift oscillator using BJT and derive the expressions for frequency of oscillations and condition on gain.

 b) Derive the expression for frequency of Oscillation in a Hartley Oscillator.

7.a) Derive the expression for maximum conversion efficiency for a simple series fed Class A power amplifier.

 b) List out the advantages of complementary symmetry configuration over push pull configuration.

8.a) Derive the expressions for bandwidth and Q-factor of single tuned, capacitively coupled amplifiers.

 b) In a single tuned amplifier the circuit bandwidth is 5 KHz and the voltage gain has a maximum value at 1000 KHz, when tuning capacitor is adjusted 500 pF. Calculate the Q of the circuit and coil inductance.

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