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BIEL-005

B.Tech. – VIEP – ELECTRONICS AND COMMUNICATION ENGINEERING (BTECVI)

Term-End Examination

December, 2015

BIEL-005 : ANALOG ELECTRONIC CIRCUITS

Time : 3 hours *Maximum Marks : 70*

Note : *Attempt any **seven** questions. All questions carry equal marks.*

1. (a) Draw and explain the hybrid model of NPN BJT for each configuration. *5*

(b) A common emitter configuration has $h_{ie} = 2\ k\Omega$, $h_{fe} = 100$, $h_{re} = 10^{-5}$ and $h_{oe} = 25\ \mu A/V$. If $R_S = 1\ k\Omega$ and $R_L = 1\ k\Omega$, determine the voltage gain and current gain. *5*

2. Draw CE amplifier and its h-parameter equivalent circuit. Derive the expressions for input and output impedance, voltage gain and current gain. *10*

3. Explain RC coupled amplifier and its frequency response with suitable diagrams. *10*

4. Draw the hybrid-Π model of BJT and derive expressions for the analysis of transistor using this model. *10*

5. (a) Differentiate between power amplifier and voltage amplifier. *5*

   (b) Explain Class A, B and AB power amplifiers. Which one has better efficiency ? *5*

6. (a) Define Q-factor of tuned circuit and discuss the merits and demerits of tuned circuit. *5*

   (b) Compare single tuned and double tuned amplifiers. Also discuss the frequency response of single tuned amplifier. *5*

7. (a) Define the feedback concept and explain the characteristics of positive and negative feedback. *5*

   (b) Draw various feedback topologies. Mention the applications of feedback. *5*

8. Explain RC phase shift oscillator and derive the expression for frequency of oscillations. *10*

9. Draw the block diagram of IC 555 timer and explain its any one mode of operation with suitable waveforms. *10*

10. Write short notes on any ***two*** of the following : *2×5=10*

(a) Cascode amplifier

(b) CE short circuit current gain

(c) Analysis and design of Class C amplifier