R13

Code No: 114CV

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD

B.Tech II Year II Semester Examinations, July/August - 2021

ELECTRONIC CIRCUIT ANALYSIS

(Common to ECE, EIE)

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

Answer any five questions
All questions carry equal marks

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1. Draw the neat circuit diagram of CE amplifier using Voltage divider biasing technique. Draw the AC equivalent and the Hybrid equivalent model. Derive the expressions for Z_i, Z_o, A_v and A_I. [15]

2. Derive the expression for R_{in}, R_{out}, and A_v for the BJT CASCODE amplifier with a neat circuit diagram of AC equivalent circuit and the small signal model. [15]

3. Analyze the effect of coupling and Bypass capacitors on the frequency response of BJT Amplifier with the help of necessary equivalent circuits and equations. [15]

4.a) Develop small-signal High-frequency mode of CE amplifier and then derive its current gain expression with resistive load.
b) What is the importance of Gain-bandwidth product? [12+3]

5.a) Using the block diagram approach, derive an expression for i) input impedance of voltage series feedback amplifier ii) output impedance of current shunt feedback amplifier.
b) Prove that the bandwidth of an amplifier increases with negative feedback. [7+8]

6.a) State the conditions for oscillations.
b) Draw the circuit diagram of Wein-bridge oscillator using BJT and then derive the expression for frequency of oscillations. [3+12]

7.a) Show that a transformer coupled class A amplifier has a maximum power efficiency of 50%.
b) Describe the basic principles of thermal stability and Heat sinks. [7+8]

8.a) Draw and explain stagger tuned amplifier circuit.
b) Explain the effect of cascading single tuned amplifiers on bandwidth. [7+8]

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