Reg. No:

SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY: PUTTUR
(AUTONOMOUS)
B.Tech II Year II Semester Supplementary Examinations February-2022
ELECTRONIC CIRCUIT ANALYSIS
(Electronics and Communication Engineering)

Time: 3 hours Max. Marks: 60

(Answer all Five Units **5 x 12 = 60** Marks)

UNIT-I

1 **a** With neat diagram, derive the CE amplifier parameters using approximate analysis. **6M**

 b Obtain the expressions for current gain, voltage gain, input impedance and output impedance of CB amplifier using simplified hybrid model. **6M**

OR

2 **a** Draw the circuit diagram of a single stage RC coupled Amplifier and discuss the steps used for designing it. **6M**

 b Determine Voltage Gain, Current Gain, Input resistance and Output resistance for a CE amplifier using NPN transistor with $h_{ie} = 1200\Omega$, $h_{re} = 0$, $h_{fe} = 36$ and $h_{oe} = 2 \times 10^{-6}$ mhos, $R_L = 2.5k\Omega$ and $R_S = 500\Omega$ (neglect the effect of biasing circuit). **6M**

UNIT-II

3 Derive the expressions for the hybrid π parameters g_m, $g_{b'e}$, $g_{b'c}$, $r_{bb'}$ and g_{ce}. **12M**

OR

4 **a** Short circuit CE current gain of a transistor is 25 at a frequency of 2MHz. If f_β is 200KHz Calculate (i) f_T (ii) h_{fe} (iii) Find $|A_i|$ at frequency of 10MHz and 100MHz. **6M**

 b Derive the expression for cut off frequencies f_α, f_β and f_T. **6M**

UNIT-III

5 Describe different methods used for coupling multistage amplifiers with their frequency response. **12M**

OR

6 **a** What is Darlington Connection? Mention the advantages of Darlington Pair Amplifier. **4M**

 b With diagram, derive the expression for current gain and input resistance of Darlington amplifier. **8M**

UNIT-IV

7 **a** Derive the expressions of input and output resistances for Voltage Series FBA. **6M**

 b Determine the input and output resistances of Current Shunt feedback amplifier. **6M**

OR

8 **a** With neat diagram, explain Hartley Oscillator and derive the expression for frequency of oscillation. **6M**

 b Discuss Colpitts Oscillator and obtain the expression for frequency of oscillation. **6M**

UNIT-V

9 **a** Describe Higher order harmonic distortion by five point method. **6M**

 b With neat diagram explain Push Pull Class B Power Amplifier and derive its maximum efficiency. **6M**

OR

10 **a** With circuit diagram, explain the stagger tuning operation. Give necessary graph. **6M**

 b Explain the stability considerations of a tuned amplifier. **6M**

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