Q.P. Code: 16EC407 **R16**

Reg. No: | | | | | | | | | | |

SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR

(AUTONOMOUS)

B.Tech II Year II Semester Supplementary Examinations July-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.	L2	6M
	b	Draw the h-parameter equivalent model for a BJT Amplifier in CE configuration.	L2	6M
		OR		
2	a	Compare the CE, CB and CC transistor amplifier parameters.	L2	6M
	b	Draw the circuit diagram of JFET Common Source amplifier with voltage divider bias for bypassed Rs and determine the expression for input impedance, output impedance and voltage gain.	L2	6M

UNIT-II

3	a	Discuss the dependency of hybrid-pi parameters upon collector current, V_{CE} and Temperature.	L2	6M
	b	A BJT has the following parameters measured at Ic=1mA, h_{ie}=3kΩ, h_{fe}=100, C_c=2pF and C_e=18pF. Find g_m, $r_{b'e}$, and $r_{bb'}$ for R_L=1 KΩ.	L4	6M
		OR		
4	a	Derive the expression for Hybrid- π capacitance of CE transistor at high frequency.	L3	6M
	b	Describe the relationship between low frequency h-parameters and high frequency Parameters.	L1	6M

UNIT-III

5	a	What is Darlington Connection? Mention the advantages of Darlington Pair Amplifier.	L1	4M
	b	With diagram, derive the expression for current gain and input resistance of Darlington amplifier.	L2	8M
		OR		
6	a	Explain the effect of cascading of amplifiers on bandwidth.	L1	6M
	b	An amplifier consists of 3 identical stages in cascade, the bandwidth of overall amplifier extends from 20 Hz to 20 kHz. Calculate the bandwidth of individual stage.	L4	6M

UNIT-IV

7	a	Discuss various Feedback topologies with neat diagrams.	L1	8M
	b	Derive the expressions of input and output resistances for Voltage Series Feedback Amplifier.	L3	4M
		OR		
8	a	Derive the expression for frequency of oscillations for RC phase shift Oscillator.	L4	8M
	b	State Barkhausen Criterion for oscillations. Explain the principle of operation of oscillator.	L1	4M

UNIT-V

9	a	Describe Complementary Symmetry Class B Power Amplifier with diagram and write about crossover distortion in class B power amplifiers.	L1	6M
	b	A class B push pull amplifier supplies power to a resistive load of 12Ω. The output transformer has a turns ratio of 3:1 and efficiency of 78.5%. Obtain (i) Maximum power output, (ii) maximum power dissipation in each transistor and (iii) Maximum base and collector current. For each transistor, assume $h_{fe} = 25$ and $V_{CC} = 20V$.	L4	6M
		OR		
10	a	Write notes on Class AB operation.	L1	6M
	b	Discuss the need of Heat sink for power transistors. Mention about thermal stability of power transistors.	L2	6M

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