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

SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR

(AUTONOMOUS)

B.Tech II Year II Semester Supplementary Examinations October-2020

ELECTRONIC CIRCUIT ANALYSIS

(Electronics & 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		Design a single stage RC coupled BJT amplifier for the following values. Assume that for Silicon transistor, V_{cc} = 10V, I_C = 4mA, h_{fe} = 100, h_{ie} = 1KΩ, R_L = 100kΩ and f_L = 100Hz.	**12M**

UNIT-II

3	**a**	Mention the typical values of Hybrid- π parameters.	**6M**
	b	A BJT has the following parameters. g_m = 38m℧, $r_{b'e}$ = 5.9KΩ, h_{ie} = 6KΩ, $r_{bb'}$ = 100Ω, $C_{b'c}$ = 12pF, $C_{b'e}$ = 63pF and h_{fe} =224 at 1 KHz. Calculate f_α, f_β and f_T cutoff frequencies.	**6M**

OR

4	**a**	Describe the relationship between low frequency h-parameters and high frequency Parameters.	**8M**
	b	Write about Collector junction capacitance and Emitter junction capacitance of hybrid-π model.	**4M**

UNIT-III

5	**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**

OR

6		The following figure shows CE-CE cascade amplifier with their biasing arrangements. Calculate Ri, Ai, Av, Ri', Avs and Ais if circuit parameters are: Rs=1K, Rc1 = 15K, RE1= 100Ω, RC2 = 4 KΩ, RE2 = 330Ω with R1 = 200K and R2 = 20K for first stage and R1 = 47K and R2 = 4.7K for second stage. Assume that hie = 1.2kΩ, hfe = 50, hre = 2.5 x 10-4 and hoe = 25 x 10-6 A/V.	**12M**

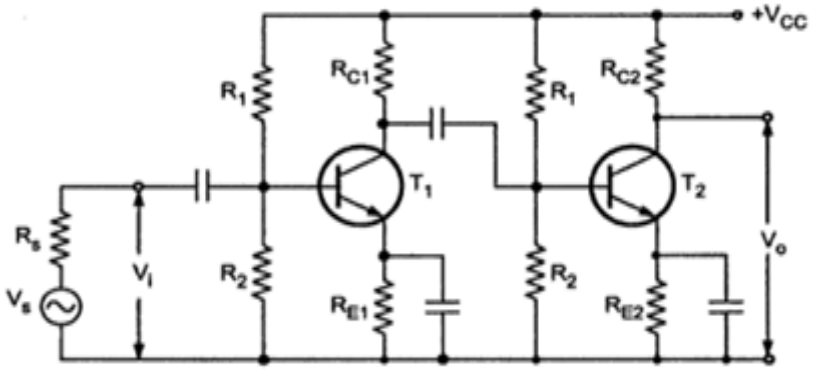

Fig. CE-CE Cascade amplifier

UNIT-IV

7	**a**	Discuss Feedback topologies	**6M**
	b	Derive the expressions of input and output resistances for Voltage Series FBA.	**6M**
		OR	
8	**a**	Classify the different types of oscillators	**4M**
	b	With neat diagram, explain Hartley Oscillator and derive the expression for frequency of oscillation	**8M**

UNIT-V

9	**a**	Write notes on Class AB operation	**6M**
	b	Discuss the need of Heat sink for power transistors. Mention about thermal stability of power transistors	**6M**
		OR	
10	**a**	Explain the effect of cascading single tuned amplifiers on bandwidth.	**6M**
	b	The bandwidth of single tuned amplifier is 20KHz. Calculate the bandwidth if such three stages are cascaded. Also calculate the bandwidth for four stages.	**6M**

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