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 the help of necessary circuit diagrams and approximations, deduce the expression for CE short circuit current gain.	L4	8M
	b	A BJT has g_m = 38 mhos, r_{be} = 5.9kΩ, h_{ie} = 6kΩ, r_{bb} = 100Ω, C_{bc} = 12pF, C_{be}= 63pF and h_{fe} = 224 at 1 KHz. Calculate α , β cutoff frequencies and f_T	L3	4M

OR

2	a	Explain the effect of Cascading on bandwidth in multistage amplifiers.	L2	6M
	b	With neat diagram, explain Cascode amplifier and deduce the expressions for voltage gain.	L4	6M

UNIT-II

3	a	Explain Feedback amplifier topologies with necessary diagram.	L2	6M
	b	Show that bandwidth of an amplifier can be extended by using negative feedback amplifier.	L2	6M

OR

4	a	Explain the effect of negative feedback on input resistance for Current shunt and Voltage shunt Feedback amplifier.	L2	6M
	b	Compare various types of feedback amplifiers.	L4	6M

UNIT-III

5	a	Establish the condition for oscillation with suitable diagram	L3	6M
	b	Determine the frequency of oscillations when a RC phase shift oscillator has R=100 kΩ, C=0.01μF and RC = 2.2 KΩ. Also find the minimum current gain needed for this purpose.	L3	6M

OR

6	a	Explain the working principle of Wein-bridge oscillator using BJT and deduce the expression for frequency of oscillations.	L4	7M
	b	A Colpitts oscillator is designed with C1 = 150 pF and C2 = 6500 pF. The inductance is variable. Determine the range of inductance values, if the frequency of oscillation is to vary between 950 KHz to 2050 KHz.	L3	5M

UNIT-IV

7	a	Discuss Complementary Symmetry Class B Push Pull Power Amplifier with neat diagram and determine its efficiency.	L3	6M
	b	Write notes on crossover distortion in class B power amplifier.	L3	6M

OR

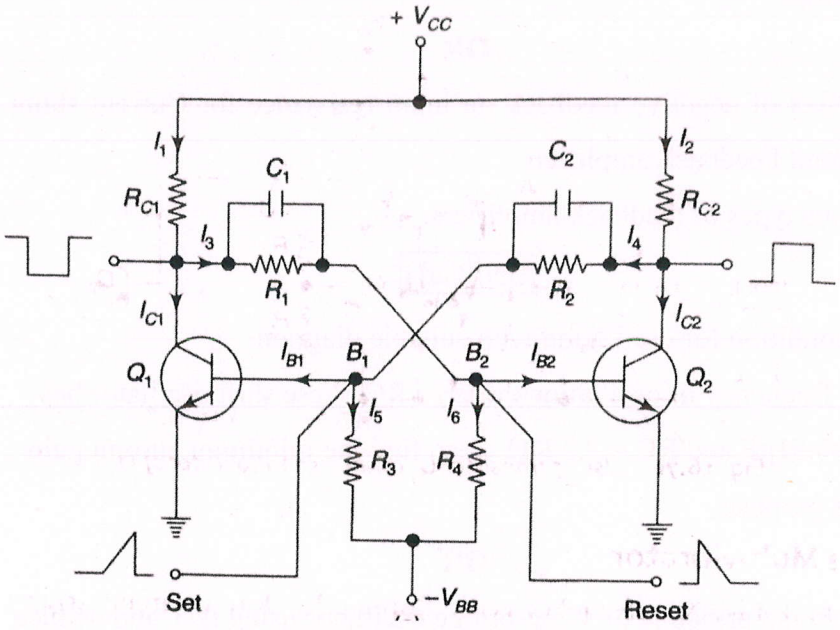
8	a	With circuit diagram, describe the stagger tuning operation. Sketch necessary graph.	L3	7M
	b	The bandwidth of a single tuned amplifier is 20 kHz. Determine the bandwidth if three such stages are cascaded. Also calculate the bandwidth for four stages.	L3	5M

UNIT-V

9	a	Deduce the expression for time period, T in Astablemultivibrator.	L4	8M
	b	List the applications of Astable and Monostable multivibrators.	L1	4M

OR

10	a	Why the triggering is needed for multivibrators? Explain a triggering method for monostable multivibrator.	L2	6M
	b	Calculate the stable state currents and voltages for the bistable multivibrator having VCC = 12 V, VBB = -12 V, RC1 = RC2 = 2.2kΩ, R1=R2 = 15kΩ, R3=R4 = 100kΩ, C1 = C2 = 0.1μF. Assume that a transistor having a minimum h_{fe} of 20 is used.	L4	6M



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