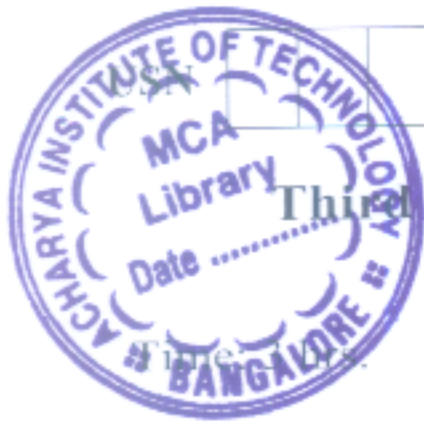




Third Semester B.E/B.Tech. Degree Examination, June/July 2025
Analog Electronic Circuits

Max. Marks: 100

Note: 1. Answer any FIVE full questions, choosing ONE full question from each module.
2. M : Marks , L: Bloom's level , C: Course outcomes.

Module – 1			M	L	C
1	a.	Explain the operation of negative series clipper.	8	L2	CO1
	b.	Define $S_{(I_{CO})}$, $S_{(V_{BE})}$, $S_{(\beta)}$. Hence derive expression for $S_{(I_{CO})}$ for voltage divider bias circuit.	6	L1 L3	CO1
	c.	For emitter – bias network shown ; determine : i) I_B ii) I_C iii) V_{CE} iv) V_C v) V_E vi) V_B	6	L3	CO1
Fig. Q.1(c)					
OR					
2	a.	With circuit diagram, explain the analysis of fixed bias circuit. (Base and collector circuits).	8	L2	CO1
	b.	Explain the operation of positive clamping circuit.	6	L2	CO1
	c.	In a Voltage Divider bias circuit, (BJT) $V_{CC} = 20\text{ V}$, $R_C = 10\text{ K}\Omega$, $R_E = 1.5\text{ K}\Omega$, $R_1 = 40\text{ K}\Omega$, $R_2 = 4\text{ K}\Omega$, $\beta = 150$, Find I_C , V_{CE} , I_{CCsat} (exact analysis)	6	L1	CO1
Module – 2					
3	a.	State and Prove Millers's Theorem.	8	L1	CO2
	b.	Derive the expressions for current gain, voltage gain, i/p impedance, o/p impedance for an emitter follower circuit.	8	L3	CO2
	c.	The bandwidth of an amplifier extends from 20 HZ to 20 KHZ. Find the frequency range over which the voltage gain is down less than 1 dB from its midband value.	4	L1	CO2
1 of 2					

OR

4	a.	Analyze CB amplifier using Simplified Hybrid Model.	8	L3	CO2
	b.	Explain exact analysis using Dual of Miller's Theorem.	8	L2	CO2
	c.	Define cut – off frequency, Band-width, Gain with respect to RC coupled amplifier.	4	L1	CO2

Module – 3

5	a.	Explain 2 – stage cascaded amplifier with neat block diagram.	6	L3	CO3
	b.	Explain the classification of Feedback Amplifiers.	8	L3	CO3
	c.	List the advantages of negative feedback.	6	L1	CO3

OR

6	a.	Explain 2 – stage Darlington connection.	6	L3	CO3
	b.	Explain the concept of feedback.	8	L3	CO3
	c.	Derive the expression for output resistance for voltage series feedback amplifier.	6	L3	CO3

Module – 4

7	a.	Compare the different Power Amplifier classes.	6	L3 L5	CO4
	b.	Explain transformer coupled class A amplifier. Prove that maximum efficiency is 50%.	8	L3 L2	CO4
	c.	Explain R – C phase shift oscillator.	6	L3	CO4

OR

8	a.	Compare RC and LC Oscillators.	6	L3 L5	CO4
	b.	Explain the concept of cross-over distortion. Suggest suitable method to eliminate cross – over distortion in Push – Pull class B Amplifier.	8	L3 L5	CO4
	c.	A class B amplifier using a supply of $V_{cc} = 30\text{ V}$, driving a load of $16\ \Omega$. Determine the maximum input power, output power and transistor dissipation.	6	L5	CO4

Module – 5

9	a.	Explain the structure and operation of n – channel JFET.	8	L3	CO5
	b.	Differentiate between BJT and FET.	8	L3 L5	CO5
	c.	Give an outline on MOSFET amplifiers.	4	L2	CO5

OR

10	a.	Compare BJT and MOSFET.	10	L3 L5	CO5
	b.	Explain construction, operation, characteristics of n – channel, enhancement MOSFET.	10	L3	CO5
