R22 Regulation *Subject code: 4E3DD*

TKR COLLEGE OF ENGINEERING AND TECHNOLOGY

(Autonomous, Accredited by NAAC with 'A+' Grade)

B.Tech III Semester Regular/Supplementary Examinations, December 2024

ELECTRONIC CIRCUIT ANALYSIS

(ECE)

Maximum Marks: 60 Date:09.12.2024 Duration: 3 hours

Note: **1.This question paper contains two parts A and B.**
2. Part A is compulsory which carries 10 marks. Answer all questions in Part A.
3. Part B consists of 5 Units. Answer any one full question from each unit.
4. Each question carries 10 marks and may have a, b, c, d as sub questions.

	Part-A	CO	Bloom Tx
All the following questions carry equal marks (10X1M=10 Marks)			
1.a)	Mention the benefits of h-parameters.	1	L2
b)	What is the purpose of coupling device?	1	L2
c)	What is significance of all resistive components of hybrid π model?	2	L2
d)	Define frequency response of an amplifier	2	L2
e)	What are the features of Source follower?	3	L2
f)	Compare BJT and JFET	3	L2
g)	Define Negative feedback.	4	L2
h)	What are the classifications of Oscillators?	4	L2
i)	What is Harmonic Distortion?	5	L2
j)	What are the advantages of stagger tuned amplifier?	5	L2
	Part-B		
Answer All the following questions. (5X10M=50Marks)		CO	Bloom Tx
2	Analyze the expression for current gain, input resistance, voltage gain and output resistance of CB amplifier using simplified h parameter model [10M]	1	L4
	OR		
3	Explain the operation of CE amplifier and determine voltage gain, current gain, input resistance, and output resistance using h parameters. [10M]	1	L3
4	Sketch the hybrid-π model of a transistor and explain each component of it. [10M]	2	L3
	OR		
5	Construct Hybrid-pi (π) model for Common Emitter transistor amplifier and give the analysis for CE amplifier short circuit current gain. [10M]	2	L3
6	Sketch and analyze the circuit diagram of CS amplifier. [10M]	3	L4
	OR		

7	A common source amplifier uses a MOSFET with the following parameters gm=1.5mA/V, rd=40kohms, Cgs=3pF, Cds=1pF, Cgd=3.2pF. The value of Rd=200Kohms. The amplifier operates at 30KHz. Compute Voltage gain, input resistance, output resistance and input capacitance. [10M]	3	L3
8	Sketch the voltage series and current shunt topologies of feedback amplifiers and list out the characteristics of each topology. [10M]	4	L3
	OR		
9	Determine the expression for frequency of RC phase shift oscillator. [10M]	4	L3
10	a) Sketch the circuit diagram of Direct coupled class-A power amplifier and explain its operation. [5M] b) Show that the maximum conversion efficiency of class-A power amplifier is 25%. [5M]	5	L3
	OR		
11	Explain about tuned amplifiers. [10M]	5	L3