R22 Regulation *Subject code:4E3DD*

TKR COLLEGE OF ENGINEERING AND TECHNOLOGY

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

B.Tech III Semester Supplementary Examinations, June 2026

ELECTRONIC CIRCUIT ANALYSIS

(ECE)

Maximum Marks: 60 Date:18.06.2026 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

All the following questions carry equal marks (10X1M=10 Marks)		Marks	CO	BTL
1.a)	Define Coupling.	1M	1	1
b)	Sketch h parameter model of CB transistor model	1M	1	1
c)	Sketch Hybrid Pi Model of CE transistor model	1M	2	1
d)	Define f_α and f_β	1M	2	1
e)	Define Pinch off region.	1M	3	1
f)	Draw the equivalent model of CS Amplifier	1M	3	1
g)	What is the main advantage of a crystal oscillator over an LC oscillator	1M	4	1
h)	Derive the relation between Gain with and without feedback	1M	4	1
i)	Define harmonic distortion.	1M	5	1
j)	List out the applications of tuned amplifier.	1M	5	1

Part-B

Answer All the following questions. (5X10M=50Marks)		Marks	CO	BTL
2	Derive the expression for Current gain of a Darlington Pair.	10M	1	3
	OR			
3	Derive the expression for Current gain, input impedance, Voltage gain and output impedance for CE amplifier using h parameter model.	10M	1	3
4	Derive CE short circuit current gain with resistive load with hybrid pi-model	10M	2	3
	OR			
5	a) Sketch the Hybrid-pi (π)–Common Emitter transistor model and explain the parameters. b) Explain the terms : Frequency Response, 3 dB Gain, Cutoff Frequency and Bandwidth.	5M 5M	2	2
6	a) Apply small signal analysis and derive the expressions for voltage gain, input and output impedance with equivalent circuit of CS amplifier. b) Explain about FET CG amplifier and derive the expression for gain, input impedance output impedance.	5M 5M	3	2

	OR			
7	Explain about MOSFET Common source amplifier with resistive load and derive the expression for gain, input impedance output impedance.	10M	3	2
8	a) The RC network of a Wein bridge oscillator consists of resistors and capacitors of values R1=R2=220 kΩ and C1=C2=250 PF. Determine the frequency of oscillations. b) Explain the working of Colpitt's oscillator and also discuss the drawback of this oscillator.	5M 5M	4	2
	OR			
9	Explain the four basic feedback topologies with necessary block diagrams.	10M	4	2
10	How to reduce the instability in tuned amplifier? Explain them with neat circuit diagram.	10M	5	3
	OR			
11	Derive the expressions for maximum theoretical efficiency for Transformer coupled amplifier. What are their advantages and disadvantages.	10M	5	3