R20 Regulation *Subject code: 3P3DC*

TKR COLLEGE OF ENGINEERING AND TECHNOLOGY

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

B.Tech III Semester Supplementary Examinations, July 2024

ELECTRONIC CIRCUIT ANALYSIS

(ECE)

Maximum Marks: 70 Date:20.07.2024 Duration: 3 hours

Note: 1.This question paper contains two parts A and B.
2. Part A is compulsory which carries 20 marks. Answer all questions in Part A.
3. Part B consists of 5 Units. Answer any one full question from each unit which carries 10M.
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 (10X2M=20 Marks)		CO	Bloom Tx
1	List the various possibilities of inter-stage coupling of amplifiers.	1	L1
2	Draw the circuit diagram of Darlington amplifier	1	L1
3	Define the gain bandwidth product of common emitter amplifier in terms of high frequency parameters	2	L1
4	Define the following (i)$r_{b'e}$ (ii)r_{bb}	2	L2
5	Compare different MOS amplifiers	3	L2
6	What are the advantages and disadvantages of negative feedback	3	L2
7	What are the conditions for sustained oscillations or what is Barkhausen criterion	4	L3
8	State the frequency for RC phase shift oscillator.	4	L3
9	What is thermal runaway?	5	L4
10	What are different types of tuned amplifiers?	5	L4
	Part-B		
Answer All the following questions. (5X10M=50Marks)			
11	a)Draw the circuit diagram of a common Emitter amplifier along with its equivalent circuit by using approximate analysis .Derive expressions for A_V ,R_I,A_I and R_0. (5M) b)What is non-linear distortion? List the causes for this type of distortion in amplifiers. (5M)	1	L3
	OR		
12	Draw the circuit for Cascode Amplifier. Explain its working, obtaining overall values of the circuit in terms of h-parameters. (10M)	1	L3
13	Derive the expression for the CE current gain A_i with resistive load in hybrid π model. (10M)	2	L3
	OR		
14	a)Prove that (i) $h_{fe}=g_m * r_{b'e}$ for a Hybrid -π model of CE amplifier (5M)	2	L4

	b) Derive the expression for the CE short current gain A_i in hybrid π model.5M		
15	Explain the Analysis of CG JFET Amplifier. (10M)	3	L4
	OR		
16	Explain the Analysis of CD JFET Amplifier. (10M)	3	L3
17	Derive the expression for the input resistance with feedback R_{if} and output resistance with feedback R_{Of} in the case of (10M) (a) Voltage series feedback amplifier. (b) Voltage shunt feedback amplifier	4	L4
	OR		
18	a) Differentiate between RC and LC type oscillators. (5M) b) Derive the expression for frequency of oscillation in a Wein bridge Oscillator. (5M)	4	L2
19	In a class B complementary power amplifier Vcc=+15V, -Vcc=15V and RL=4Ω. Calculate: (i)Maximum a.c power which can be developed (ii)Collector dissipation while developing maximum a.c power (iii)Efficiency (iv)Maximum power dissipation per transistor (10M)	5	L3
	OR		
20	Draw the circuit and explain the working principle of a complementary symmetry push-pull power amplifier and state its disadvantages? (10M)	5	L2