



R18 Regulation *Subject code:2P3DC*
TKR COLLEGE OF ENGINEERING AND TECHNOLOGY
(Autonomous, Accredited by NAAC with 'A+' Grade)

B.Tech III Semester Supplementary Examinations, December 2024

ANALOG ELECTRONIC CIRCUIT ANALYSIS
(Electronics and Communication Engineering)

Maximum Marks: 70

Date:06.12.2024

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	State Miller's theorem.	1	L1
2	What is bandwidth of an amplifier?	1	L1
3	Define Db.	2	L1
4	Define an Amplifier.	2	L1
5	Draw the characteristics of JFET.	3	L1
6	Draw the symbol of N-channel JFET	3	L1
7	List any two advantages of negative Feedback.	4	L1
8	What is a Power Amplifier?	4	L1
9	What is Barkhausen criterion?	5	L1
10	List the types of tuned amplifiers.	5	L1

Part-B

Answer All the following questions. (5X10M=50Marks)		CO	Bloom Tx
11	Draw the circuit diagram of a common Emitter amplifier along with its equivalent circuit. Derive expressions for A_V, R_i, A_i and R_o . [10M]	1	L3
OR			
12	Derive expressions for overall voltage gain and overall current gain of a cascode Amplifier [10M]	1	L3
13	Using hybrid $-\pi$ model analysis, derive the expression for CE short circuit current gain. [10M]	2	L3
OR			
14	Derive the expression for gain band width product for voltage? [10M]	2	L3
15	Draw the small signal high frequency equivalent circuit for the source follower and find its voltage gain, input and output impedances? [10M]	3	L3
OR			
16	Draw the circuit diagram of a common source amplifier along with its equivalent circuit. Derive expressions for A_V, R_i and R_o . [10M]	3	L3
17	Explain the different types of Feedback and the advantages of negative	4	L2

	feedback. [10M]		
	OR		
18	a) Derive the expression for the frequency of Hartley oscillators. [5M] b) A Hartley oscillator is designed with $L = 20\mu\text{H}$ and a variable capacitance. Find the Range of capacitance values if the frequency of oscillation is varied between 950 KHz to 2050 KHz. [5M]	4	L3
	OR		
19	Derive the expression for Max. Theoretical efficiency in the case of class B push pull amplifier. [10M]	5	L2
	OR		
20	Explain Single tuned and Double tuned Amplifiers. [10M]	5	L2