R20 Regulation *Subject code:3P3DC*

TKR COLLEGE OF ENGINEERING AND TECHNOLOGY

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

B.Tech III Semester Regular/Supplementary Examinations, March/April 2023

ELECTRONIC CIRCUIT ANALYSIS

(Electronics and Communication Engineering)

Maximum Marks: 70 Date:29.03.2023 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.
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)

1 State Millers theorem.
2 What is the need for cascading?
3 Draw the small signal high frequency CE model of a transistor and list its elements?
4 Define Gain band width product.
5 Write the advantages of FET.
6 Define rd and gm?
7 Write the advantages of negative feedback.
8 Define the Oscillators.
9 Define the Efficiency.
10 List out the applications of tuned amplifier.

Part-B

Answer All the following questions. (5X10M=50Marks)

11 Explain about different types of distortions that occur in amplifier circuits. 10M

OR

12 Write the analysis of a CE amplifier circuit using h-parameters and derive the expression for Ai, Ri, Av and Ro. 10M

13 Analyze the expression for CE Current gain with RL and explain the variation of frequency response with RL using hybrid-π model. 10M

OR

14 The input power to a device is 10,000W at a voltage of 1000V. The output power is 500W and the output impedance is 20Ω.Find the (a) Voltage gain in decibels (b) Power gain in decibels. 10M

15 Common Source FET amplifier circuit has the following circuit parameters: RD = 5KΩ, RG = 10MΩ, rd = 35KΩ, μ=50. Determine AV, Ri & RO? 10M

OR

16 A. Draw the small-signal model of common source FET amplifier. 5M
B. Derive expressions for voltage gain and output resistance? 5M

17 Derive the expression for the input resistance with feedback Rif and output resistance with feedback Rof in the case of (a) Voltage series feedback amplifier (b) Current shunt feedback amplifier. 10M

OR

18 Draw the circuit and explain the principle of operation of RC phase-shift oscillator circuit. 10M

19 Derive the expression for maximum theoretical efficiency in the case of class B push pull amplifier. Illustrate its advantages and disadvantages? 10M

OR

20 Draw the circuit diagram of a tuned amplifier. Derive expression for its voltage gain at resonance and bandwidth. 10M