



Regulation R17

Subject code:1P3DB

TKR COLLEGE OF ENGINEERING AND TECHNOLOGY

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

B.Tech III Semester Supplementary Examinations, February 2024

ANALOG ELECTRONICS

(Electronics and Communication Engineering)

Maximum Marks: 70

Date:19.02.2023 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 10 questions. Answer any 5 questions 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)

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| 1 | State Miller's theorem. |
| 2 | Write any two different types of coupling schemes |
| 3 | Define Voltage gain |
| 4 | Define f_{β} |
| 5 | Define the gain bandwidth product of common emitter amplifier in terms of high frequency parameters |
| 6 | Draw the characteristics of MOSFET |
| 7 | What is the effect of negative feedback on amplifier gain. |
| 8 | State the frequency for Wien bridge oscillator. |
| 9 | Define Nonlinear Distortion |
| 10 | What is a Tuned circuit |

Part-B

Answer all the questions

(5X10M=50Marks)

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| 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) |
| | OR |
| 12 | Derive an expression for the lower 3dB frequency of an RC coupled amplifier by taking the effect Coupling capacitor into account. (10M) |
| 13 | Obtain an expression for CE short circuit current gain. (10M) |
| | OR |
| 14a | The CE short circuit current gain of transistor is 20 at a frequency of 2MHZ, if $f_{\beta}=200\text{khz}$. calculate (i) f_T (ii) h_{fe} (iii) $ A_i $ at a frequency of 10MHZ. (4M) |
| 14b | Draw the Hybrid Pi Model of a transistor and explain its parameters (6M) |
| 15 | Derive the expression for voltage gain of common source MOS amplifier with resistive load. (10M) |
| | OR |
| 16 | Draw the small-signal model of common source FET amplifier. Derive expressions for voltage gain and output resistance? |

17	Derive the expression for the input resistance with feedback R_{if} and output resistance with feedback R_{of} in the case of (a) Voltage series feedback amplifier. (b) Current shunt feedback amplifier. (10M)
	OR
18	Draw the circuit and Derive the expression for the frequency of oscillations of RC phase-shift oscillator circuit. (10M)
19	Draw the circuit and explain the working principle of a complementary symmetry push pull power amplifier.
	OR
20	Differentiate between single tuned and double tuned amplifiers (10M)