

ANURAG Engineering College
(An Autonomous Institution)

II B.Tech I Semester Regular/Supplementary Examinations, December – 2024
ANALOG CIRCUITS

(ELECTRONICS AND COMMUNICATION ENGINEERING)

Time: 3 Hours

Max. Marks: 60

Section – A (Short Answer type questions)

(10 Marks)

Answer All Questions

Course Outcome	B.T Level	Marks
CO1	L1	1M
CO1	L2	1M
CO2	L2	1M
CO2	L2	1M
CO3	L1	1M
CO3	L1	1M
CO4	L1	1M
CO4	L2	1M
CO5	L1	1M
CO5	L2	1M

1. What are the different compensation techniques?
2. How the bypass capacitor affect the output of an amplifier?
3. Outline the characteristics FET as a voltage controlled device.
4. State the drain current equation of JFET
5. Give the different types of coupling mechanisms.
6. What is Darlington connection?
7. List out the characteristics of negative feedback
8. Infer about the effect of positive feedback on an amplifier.
9. State Barkausen criterion.
10. Calculate the frequency of oscillations of LC oscillators for $L=100\mu\text{H}$ and $C1=330\text{pF}$ and $C2=220\text{pF}$.

Section B (Essay Questions)

Answer all questions, each question carries equal marks.

(5 X 10M = 50M)

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|---|-----|----|-----|
| 11. A) Derive the expression for current gain, voltage gain, input resistance and output resistance for a common emitter amplifier. | CO1 | L3 | 10M |
| OR | | | |
| B) Define h-parameter. Obtain the equivalent hybrid model for the transistor. | CO1 | L2 | 10M |
| 12. A) Draw the circuit for JFET common source amplifier with voltage divider bias having by pass Resistor (R_s) and determine the expression for input impedance, output impedance and voltage gain. | CO2 | L3 | 10M |
| OR | | | |
| B) Compare the characteristics of CB, CE and CC amplifiers. | CO2 | L2 | 10M |
| 13. A) Explain the different coupling methods used in amplifier with necessary diagram. | CO3 | L2 | 10M |
| OR | | | |
| B) With a neat diagram, explain the Darlington connection. | CO3 | L2 | 10M |
| 14. A) Draw the block diagram of feedback amplifier and explain the concept of feedback. | CO4 | L2 | 10M |
| OR | | | |
| B) Explain the voltage series feedback amplifier configuration with relevant diagram. | CO4 | L2 | 10M |
| 15. A) Illustrate the RC phase shift oscillator and derive the frequency of oscillations. | CO5 | L2 | 10M |
| OR | | | |
| B) Define Q factor. With a neat diagram, explain the working principle of crystal oscillator. | CO5 | L2 | 10M |