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R-17

Code: 7G334

II B.Tech. I Semester Supplementary Examinations June 2024

Analog Electronics-I

(Electrical and Electronics Engineering)

Max. Marks: 70

Time: 3 Hours

Answer any five full questions by choosing one question from each unit (5x14 = 70 Marks)

UNIT-I

1. a) Distinguish between Exact and approximate models of BJT using h-parameters. 5M
b) State and prove millers theorem. Explain its significance in transistor circuit analysis. 9M

OR

2. Draw and discuss the Frequency response of RC Coupled, Direct coupled and Transformer coupled amplifiers with relevant diagrams. 14M

UNIT-II

3. a) Derive the expression for transfer gain with feedback? 7M
b) What is Sampling. Explain about it with neat diagrams. 7M

OR

4. a) An amplifier has an open loop gain 1000 and a feedback ratio of 0.04. if the open loop gain changed by 10% due to temperature, then find the percentage change in gain of the amplifier with feedback. 7M
b) Derive the expressions for input impedance, output impedance for current series feedback. 7M

UNIT-III

5. a) Explain about the crystal oscillators and mention their advantages 7M
b) Write short notes on Frequency stability of oscillators 7M

OR

6. a) Determine the Resistance of RC phase shift oscillator for operation at $f_o = 10 \text{ KHz}$, $K=45$ and $C= 2\text{pF}$. 4M
b) Explain the Working of transistorized wein-bridge oscillator with neat diagram. 10M

UNIT-IV

7. a) Discuss about class B push-pull amplifier operation with neat diagrams and derive the expression for collector circuit efficiency 7M
b) For a class-B Power Amplifier providing a 22V Peak signal to an 8 Ω load and a power supply of $V_{CC}=25\text{V}$. determine:(a)Input Power, $P_i(\text{dc})$ (b)Output Power, $P_o(\text{ac})$ and (c)Circuit efficiency, % . 7M

OR

8. a) Derive the expression for efficiency in class B amplifier 7M
b) What is the Max power dissipation per each transistor and derive the expression for it. 7M

UNIT-V

9. a) What is RC low-pass circuit? What is meant by ringing circuit? 7M
b) Explain the RC Integrator with Exponential input. 7M

OR

10. a) In a low pass RC circuit, $R=2 \text{ k}\Omega$ and $C= 1\mu\text{F}$ is applied as exponential input, and then determine the output wave form. 7M
b) What are the applications of Linear wave shaping. 7M
