

ANURAG Engineering College

(An Autonomous Institution)

II B.Tech II Semester Supplementary Examinations, December-2024

ELECTRONIC CIRCUIT ANALYSIS**ELECTRICAL COMMUNICATION ENGINEERING****Time: 3 Hours****Max.Marks:75****Section – A (Short Answer type questions)****(25 Marks)****Answer All Questions**

	Course Outcome	B.T Level	Marks
1. Why is a CE amplifier widely used? List down its main limitations.	CO1	L1	2M
2. What is the expression for harmonic distortion in single stage amplifiers?	CO1	L1	3M
3. Explain various hybrid π capacitances of a BJT.	CO2	L2	2M
4. Define Gain-Bandwidth Product in detail.	CO2	L1	3M
5. Why direct coupling is not suitable for amplification of high frequency.	CO3	L1	2M
6. What is darlington pair? What is its significance?	CO3	L1	3M
7. Define the terms collector dissipation and conversion efficiency of class A power amplifier.	CO4	L1	2M
8. Classify large signal amplifiers based on its operating point.	CO4	L2	3M
9. Define Q factor of tuned amplifier	CO5	L1	2M
10. Explain about tank circuit?	CO5	L2	3M

Section B (Essay Questions)**Answer all questions, each question carries equal marks.****(5 X 10M = 50M)**

11. A) Compare the transistor amplifiers circuits in the three configurations with the help of h-parameters values.	CO1	L4	10M
OR			
B) A transistor in CB circuit has the following set of 'h' parameters. $h_{ib} = 20$, $h_{fb} = 0.98$, $h_{rb} = 3 \times 10^{-4}$, $h_{ob} = 0.5 \times 10^{-6}$. Find the values of R_i , R_o , A_i and A_v , if $R_s = 600 \Omega$ and $R_L = 1.5 k\Omega$.	CO1	L3	10M
12. A) Solve the expression for f_{α} , f_{β} and unity gain bandwidth of CE Amplifier or Short circuit current gain of CE Amplifier.	CO2	L3	10M
OR			
B) A BJT has following parameters measured at $I_c = 2mA$, $h_{ie} = 2000$, $h_{fe} = 100$, $f_T = 5M Hz$, $C_C = 2pF$ and $C_E = 18pF$. Calculate $r_{b'e}$, $r_{bb'}$, g_m , f_H at $R_L = 10000 Ohms$.	CO2	L3	10M
13. A) Classify the amplifiers based on type of coupling and bandwidth.	CO3	L4	10M
OR			
B) Derive the expression for input resistance of a Cascade amplifier circuit.	CO3	L3	10M
14. A) Analyze transformer coupled class A power amplifier and derive efficiency, Maximum efficiency, power dissipation.	CO4	L4	10M
OR			
B) Illustrate Complementary symmetry Class B push pull power amplifier with neat sketches and prove Maximum efficiency is 78.5%.	CO4	L3	10M

15. A) Compare Single Tuned and Double Tuned Amplifiers. CO5 L3 10M
- OR**
- B) i) Calculate the quality factor of a parallel resonance circuit having capacitance of $100\mu\text{F}$, inductance of 0.7mH , $R_L=10\text{K}\Omega$ and frequency of 100KHz ? CO5 L3 5M
- ii) When bandwidth of single tuned amplifier is 80KHz then what is the bandwidth of five stages cascaded single tuned amplifier. 5M