Code No: 154AW **R18**

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
B. Tech II Year II Semester Examinations, February - 2024
ELECTRONIC CIRCUIT ANALYSIS
(Common to ECE, EIE, ECM)

Time: 3 Hours **Max. Marks: 75**

Note: i) Question paper consists of Part A, Part B.
ii) Part A is compulsory, which carries 25 marks. In Part A, answer all questions.
iii) In Part B, Answer any one question from each unit. Each question carries 10 marks and may have a, b as sub questions.

PART – A

(25 Marks)

1.a)	What is the frequency response of an amplifier, and why is it important?	[2]
b)	Discuss the applications where Darlington pairs are commonly used.	[3]
c)	Write the characteristics of current series feedback.	[2]
d)	Explain the importance of feedback in amplifier design and performance.	[3]
e)	Give the expression for frequency of oscillation RC phase shift oscillator.	[2]
f)	Define frequency stability in oscillators. How is it measured or quantified?	[3]
g)	How is biasing achieved in a series-fed Class A power amplifier?	[2]
h)	How do Class AB amplifiers combine features of Class A and Class B amplifiers?	[3]
i)	Write the concept of a bootstrap time base generator.	[2]
j)	Discuss how a Schmitt trigger can be used for signal conditioning.	[3]

PART – B

(50 Marks)

2. Draw the hybrid π equivalent of a CE transistor valid for high frequency and explain significance of each parameter. [10]

OR

3. Derive the expressions for higher and lower cut-off frequency of a multistage amplifier. [10]

4. Derive the expression for voltage gain, input resistance, output resistance of the current shunt negative feedback amplifier. [10]

OR

5.a) An amplifier requires an input signal of 60mV to produce a certain output with negative feedback to get the same output the required signal is 0.5V. The voltage gain with feedback is 90. Find the open loop gain and feedback factor.
b) List and explain the general characteristics of negative feedback amplifier. [5+5]

6. Derive the oscillation condition for LC circuits. [10]

OR

7. Derive the expression for frequency of oscillation of BJT RC phase-shift oscillator with necessary explanation. [10]

8. Draw the class A Power Amplifier. Derive the efficiency of a class A power amplifier with necessary diagram. [10]

OR

9. Demonstrate of an "n"-stage synchronously tuned amplifier, the highest achievable bandwidth occurs when each individual stage is set to a single-stage gain of 4.34 dB. [10]

10. Discuss the operation of an astable multivibrator. Also, derive it's the associated equations. [10]

OR

11. Describe the working principle of a transistor Miller time base generator in detail. [10]

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