

R18

Code No: 154AW

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD

B. Tech II Year II Semester Examinations, September/October - 2023

ELECTRONIC CIRCUIT ANALYSIS

(Common to ECE, EIE)

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) List the advantages of Multistage Amplifier. [2]
- b) Compare direct coupled and Transformer coupled amplifier. [3]
- c) What are the four feedback topologies? [2]
- d) What is meant by feedback and outline advantages of feedback amplifiers? [3]
- e) List the various types of Oscillators. [2]
- f) Compare Wein Bridge and Colpitts Oscillators. [3]
- g) Classify the Large signal Amplifiers. [2]
- h) What is the need of tuned amplifier circuits? [3]
- i) What are the applications of Monostable Multivibrator? [2]
- j) How could you improve Linearity in Time base Generators? [3]

PART – B

(50 Marks)

- 2.a) Explain the importance of Coupling the Amplifiers and draw two stage direct coupled amplifier.
 - b) Construct the circuit of CE configuration and develop its simplified hybrid π model. [4+6]
- OR**
- 3.a) Construct the equivalent circuit of Darlington pair amplifier.
 - b) Develop multistage amplifier using RC elements and discuss its limitations. [4+6]
- 4.a) Explain the working of Voltage Shunt feedback amplifier with a neat sketch.
 - b) Determine the voltage gain, input impedance and output impedance of a voltage amplifier having an open loop gain $A=200$, $R_i = 1.5K\Omega$, $R_o = 50K\Omega$ and $\beta = 0.05$. [6+4]
- OR**
- 5.a) Explain the effect of negative feedback on amplifiers characteristics.
 - b) Compare Voltage – Series feedback and Current –series feedback amplifier. [6+4]

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6.a) Determine the frequency of oscillations for Wein bridge oscillator with RC network consists of resistors 200Kohms and capacitors of 300pF.

b) Draw the circuit diagram of Hartley oscillator and derive the equation for oscillating frequency. [4+6]

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OR

7.a) Determine the frequency of oscillations for Colpitts oscillator with $L = 12\mu\text{H}$, $C_1 = 1000\text{pF}$ and $C_2 = 20000\text{pF}$.

b) Derive the equation for frequency of oscillations in RC phase-shift oscillator. [4+6]

8.a) Discuss about stability of tuned amplifiers.

b) A single transistor is acting as ideal class B amplifier with a load of $1\text{K}\Omega$, if DC collector current is 15mA, $V_{cc} = 20\text{V}$. Determine its efficiency. [5+5]

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OR

9.a) Explain the working of class -B push-pull amplifier with a neat sketch.

b) Construct stagger tuned amplifier circuit and explain its working. [6+4]

10.a) Compare Bistable and Monostable Multivibrators.

b) Explain briefly various methods of generating the Time base signal. [4+6]

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OR

11.a) How could you generate time base signal using Miller Time base Generator? Explain.

b) How to generate a square wave using Astable multivibrator? [5+5]

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