(Please write your Exam Roll No.) Exam Roll No.

END TERM EXAMINATION

FOURTH SEMESTER [B.TECH] JUNE 2025

Paper Code: EEC-206 **Subject: Network Analysis and Synthesis**

Time: 3 Hours **Maximum Marks:60**

Note: Attempt any five questions including Q.No.1 which is compulsory. Select one question from each unit.

Q1 Attempt **ALL PARTS** **[4x5=20]**

a) Differentiate between f-cut sets and f-tie sets.

b) Synthesis the following waveforms using gate function:

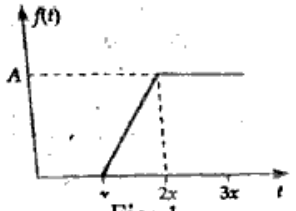

Fig: 1

c) Determine ABCD parameters in terms of Z-parameters.

d) Check the positive realness of the function $Y(s) = \frac{s^2+2s+20}{s+10}$

e) Differentiate between causal and non-causal systems.

UNIT–I

Q2 a) For the graph shown in fig: 2, consider tree formed by branches (1, 2, 5), using this tree write A_c, A, B_f *and* Q_f . **[10]**

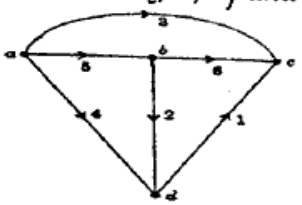

Fig: 2

Q3 Find the drop across 2Ω resistor in the network of Fig: 3 using mesh analysis. **(10)**

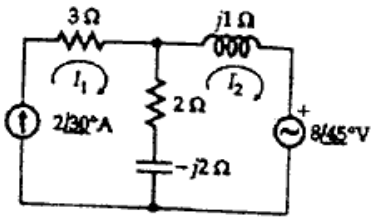

Fig: 3

UNIT–II

Q4 In a series R-L circuit, the application of a direct voltage results a steady state current of $0.632I$ in 1 second. I being the final steady state value of the current. However, after the current has reached its final value, a sudden short circuit is applied against the source. What would be the current after one second? **[10]**

P.T.O.

Q5 Derive the expression for initial value and final value theorem. **[10]**

Unit – III

Q6 Obtain the h-parameters of fig: 4? **[10]**

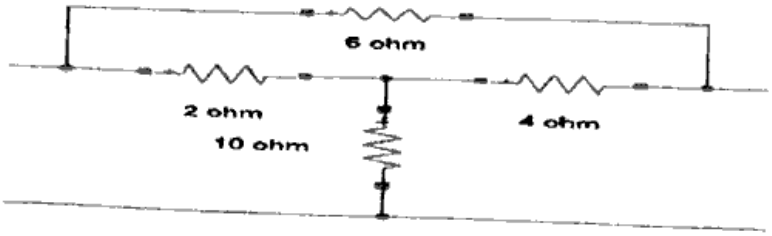

Fig IV

Q7 a) Drive input and output impedance in terms of ABCD-parameters.
b) Briefly Drive the expression parallel-parallel connection. **[5,5]**

UNIT–IV

Q8 Synthesize the network having driving point impedance $Z(s) = \frac{2s^5+10s^3+10s}{s^4+4s^2+3}$ in the Cauer's form. **[10]**

Q9 Write a short note on **[5,5]**
a) Low pass filter
b) High pass filter

****