R25 Regulation *Subject code:5ES2AM*

TKR COLLEGE OF ENGINEERING AND TECHNOLOGY

(Autonomous, Accredited by NAAC with 'A+' Grade)

B.Tech II Semester Regular Examinations, June2026

NETWORK ANALYSIS AND SYNTHESIS

(ECE)

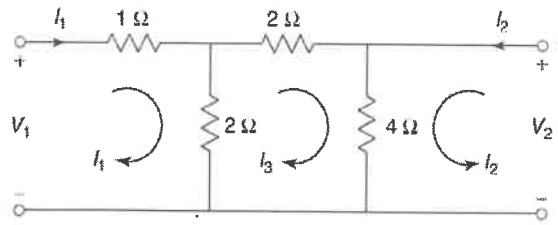
Maximum Marks: 60 Date:19.06.2026 Duration: 3 hours

Note: **1.This question paper contains two parts A and B.**
2. Part A is compulsory which carries 10 marks. Answer all questions in Part A.
3. Part B consists of 5 Units. Answer any one full question from each unit.
4. Each question carries 10 marks and may have a, b, c, d as sub questions.

Part-A

All the following questions carry equal marks (5X2M=10Marks)		Marks	CO	BTL
1.a	Define tie set and cut set?	2M	1	1
b	What is quality factor?	2M	2	2
c	What is meant by pole of network function?	2M	3	1
d	What is meant by band stop filter?	2M	4	1
e	What are the Properties of Hurwitz Polynomial?	2M	5	2

Part-B

Answer All the following questions. (5X10M=50Marks)		Marks	CO	BTL
2	a) Explain about the concept of Dot convention in detail.. b) Two inductively coupled coils have self-inductances of 50mH and 200mH. Find the maximum possible value of mutual inductance between the coils.	5M 5M	1	2 2
	OR			
3	Derive the expressions for self-inductance and mutual inductance.	10M	1	3
4	Derive resonance frequency of a series RLC circuit. Draw the resonance curve indicating bandwidth, lower and higher cut-off frequencies clearly.	10M	2	3 3
	OR			
5	a) Derive the step response of a series RL circuit? b) Explain series and parallel resonance curves with neat sketch?	5M 5M	2	3 2
6	Calculate hybrid parameters for the network of figure shown below. Determine whether the network is reciprocal. 	10M	3	2 3

	OR			
7	a) Define Z parameters and derive their matrix form? b) Explain driving point impedance?	5M 5M	3	2
8	a) Classify the different types of filters and discuss them briefly. b) Design a constant-k high pass filter (T-section) having cut-off frequency of 1KHz with load resistance of 600Ω.	5M 5M	4	2
	OR			
9	a) Explain and design Constant K-low pass filter? b) Explain Asymmetrical T attenuator?	5M 5M	4	2
10	a) Explain the poles and zeroes of network functions. b) Explain about Hurwitz polynomials.	5M 5M	5	2
	OR			
11	a) Explain positive real function with its properties? b) Explain the synthesis of RC function by Foster-1 method with suitable example.	5M 5M	5	2