



R22 Regulation

Subject code:4E2AG

TKR COLLEGE OF ENGINEERING AND TECHNOLOGY

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

B.Tech II Semester Supplementary Examinations, January 2026
NETWORK ANALYSIS
(EEE)

Maximum Marks: 60

Date: 20.01.2026

Duration: 3 hours

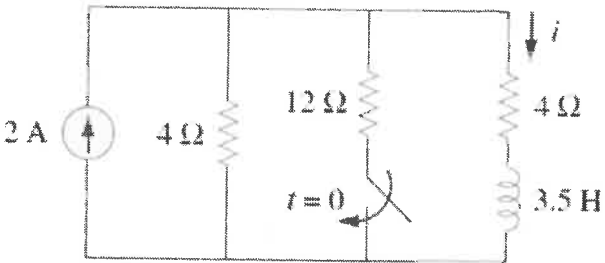
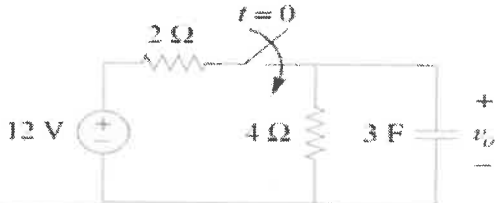
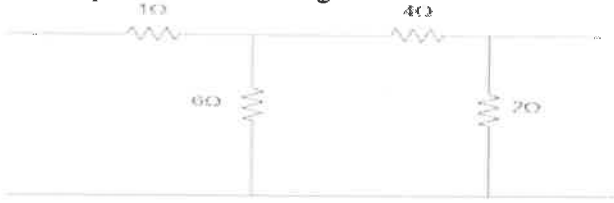
- Note:**
1. This question paper contains two parts A and B.
 2. Part A is compulsory which carries 20 marks. Answer all questions in Part A.
 3. Part B consists of 5 Units. Answer any one full question from each unit.
 4. Each question carries 10 marks and may have a, b, c, d as sub questions.

Part-A

All the following questions carry equal marks (10X1M=10 Marks)		Marks	CO	BTL
1.a	Define time constant of series R-C circuit	1M	1	1
b	What is transient response	1M	1	1
c	Draw and represent an ramp voltage function with magnitude V	1M	2	2
d	Draw the voltage response curve for a Parallel R-C circuit for step current	1M	2	2
e	What is Laplace transformation of a step signal having a magnitude of V	1M	3	2
f	What is Laplace transformation of the function $\cos \omega t$	1M	3	3
g	What is the condition for reciprocity in Y parameters.	1M	4	1
h	Which parameters are used to analyze series connected two-port networks.	1M	4	2
i	How many LC pairs are required to design a constant K band pass filter.	1M	5	1
j	What is the major drawback of constant K filter	1M	5	2

Part-B

Answer All the following questions. (5X10M=50Marks)		Marks	CO	BTL
2	a) Derive an expression for complete response of a series R-C circuit excited by constant DC Voltage source b) Determine the expression for inductor current for $t > 0$ sec in the circuit shown in figure below. Assume switch was closed for long time.	5M 5M	1	3
OR				
3	Derive an expression for transient response of series R-L circuit for sinusoidal excitation.	10M	1	1

4	<p>a) Explain transient response of parallel R-L circuit</p> <p>b) Determine the expression for inductor current for $t > 0$ sec in the circuit shown in figure</p>	5M 5M	2	2
				
OR				
5	Derive an expression for transient voltage of Parallel R-L-C circuit excited by step voltage.	10M	2	1
6	Define transient response. Derive an expression for transient response of series R-L circuit excited by constant DC voltage using Laplace transformation.	10M	3	2
OR				
7	Determine the expression for capacitor for $t > 0$ sec in the circuit shown in figure below using Laplace transformation. Determine the time constant of the circuit.	10M	3	4
				
8	<p>a) Determine the Y parameters of the given circuit shown below</p>  <p>b) Express Z parameters in terms of ABCD parameters.</p>	5M 5M	4	3
OR				
9	Derive an expression for overall Y parameters when two-port networks are connected in parallel.	10M	4	1
10	<p>a) What is filter. Give classification of filters</p> <p>b) Design a constant K high pass filter with cut-off frequency of 2KHz and nominal impedance of 500Ω.</p>	5M 5M	5	3
OR				
11	Explain M derived high pass filter operation and design procedure.	10M	5	2