Q.P. Code: 18EE0242 **R18**

Reg. No: | | | | | | | | | | |

SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR

(AUTONOMOUS)

B.Tech II Year I Semester Supplementary Examinations November-2020

NETWORK THEORY

(Electronics & Communication Engineering)

Time: 3 hours Max. Marks: 60

PART-A

(Answer all the Questions **5 x 2 = 10** Marks)

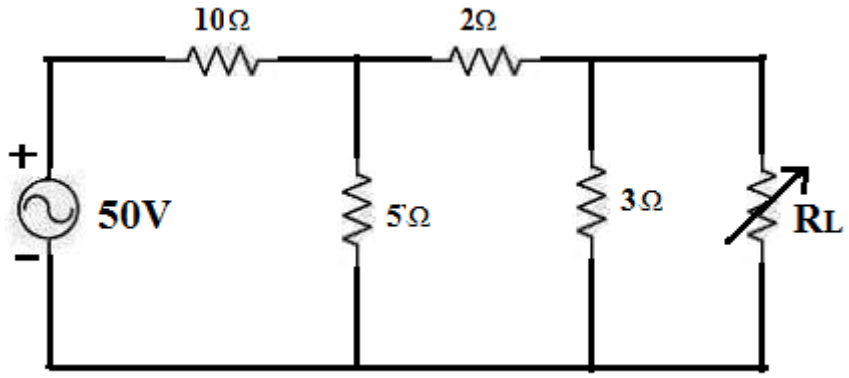
1	**a**	Define Duality & Dual networks.	**2M**
	b	Define Neper and Decibel.	**2M**
	c	Define steady state and transient state.	**2M**
	d	What is the condition for Symmetry in Z and Y parameters?	**2M**
	e	Define Fourier transform.	**2M**

PART-B

(Answer all Five Units 5 x 10 = 50 Marks)

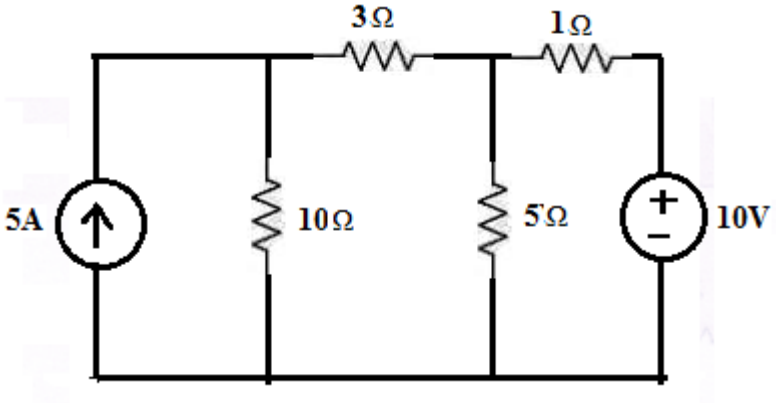
UNIT-I

2	**a**	State and prove Reciprocity theorem.	**5M**
	b	Determine the maximum power delivered to the load in the circuit shown in below figure.	**5M**



OR

3	**a**	Explain about Mesh analysis and write the steps for writing mesh analysis.	**5M**
	b	Determine the current in 10Ω resistor for the following network by using nodal analysis.	**5M**



UNIT-II

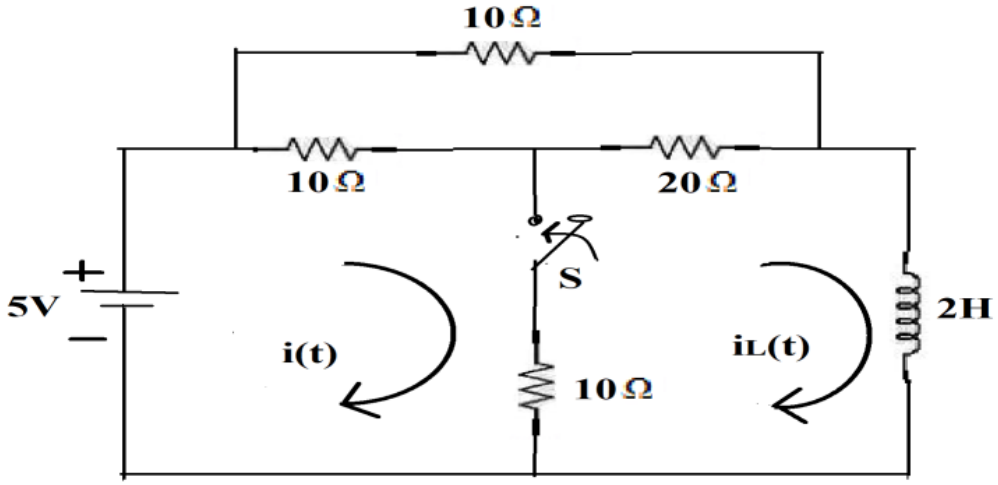
4	**a**	Explain about Quality factor and Bandwidth of Series resonance.	**5M**
	b	Design constant-K band pass filter having a design impedance of 500Ω and cut-off frequencies.f_1= 1kHz and f_2= 10 kHz.	**5M**

OR

5	**a**	Explain about classification of filters.	**5M**
	b	Explain about Propagation constant and Characteristic impedance in T-network filters.	**5M**

UNIT-III

6	**a**	Derive the Transient Response of series RC-circuit with D.C excitation.	**5M**
	b	The circuit shown in below figure, the switch „S" is open and the circuit reaches a steady state. At t=0, the „S" is closed. Find the current in the inductor for t>0.	**5M**

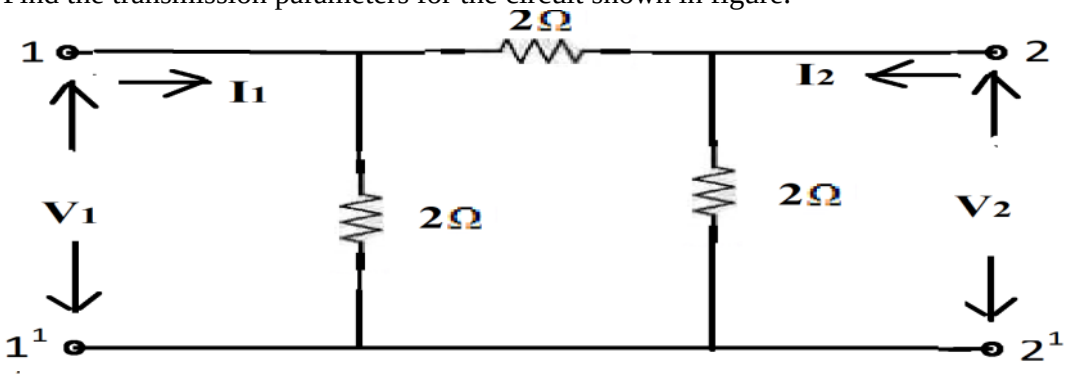


OR

7	**a**	Derive the Transient Response of Series RC circuits with Pulse excitation.	**6M**
	b	A series RL circuit with R=30Ω and L= 15H has a constant voltage V=60v applied at t=0. Determine the current "I", voltage across resistor and voltage across inductor.	**4M**

UNIT-IV

8	**a**	Explain about Impedance parameters.	**6M**
	b	Find the transmission parameters for the circuit shown in figure.	**4M**

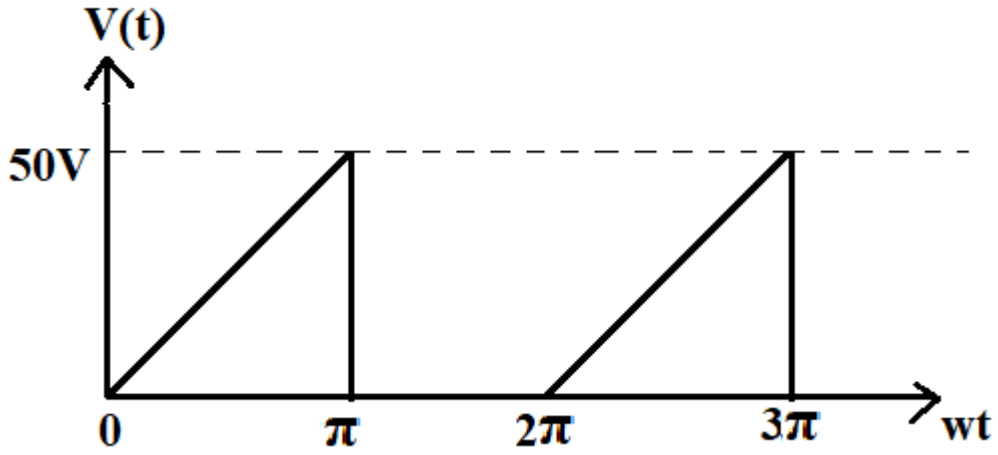


OR

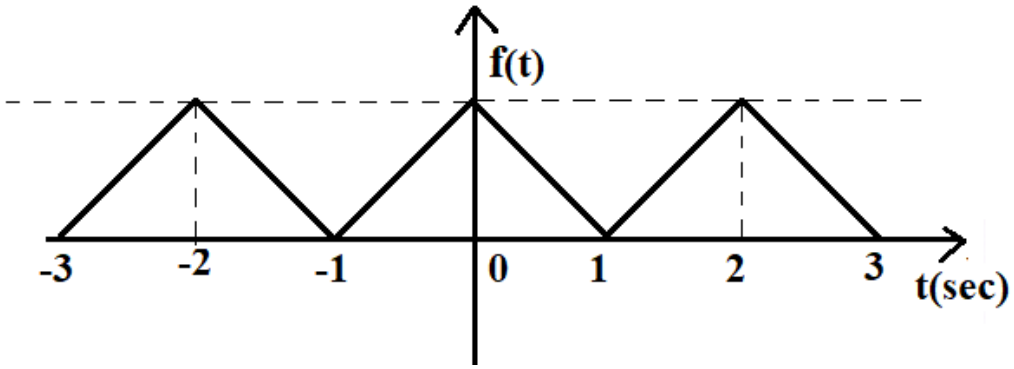
9	**a**	The given ABCD parameters are, A=2, B=0.9, C=1.2, D= 0.5. Find Y-parameters.	**5M**
	b	The given Y-parameters are, Y_{11}= 0.5, Y_{12}= Y_{21}= 0.6, Y_{22}= 0.9.Find Impedance parameters.	**5M**

UNIT-V

10 **a** Find the Trigonometric Fourier series for the following waveform shown in figure. **5M**



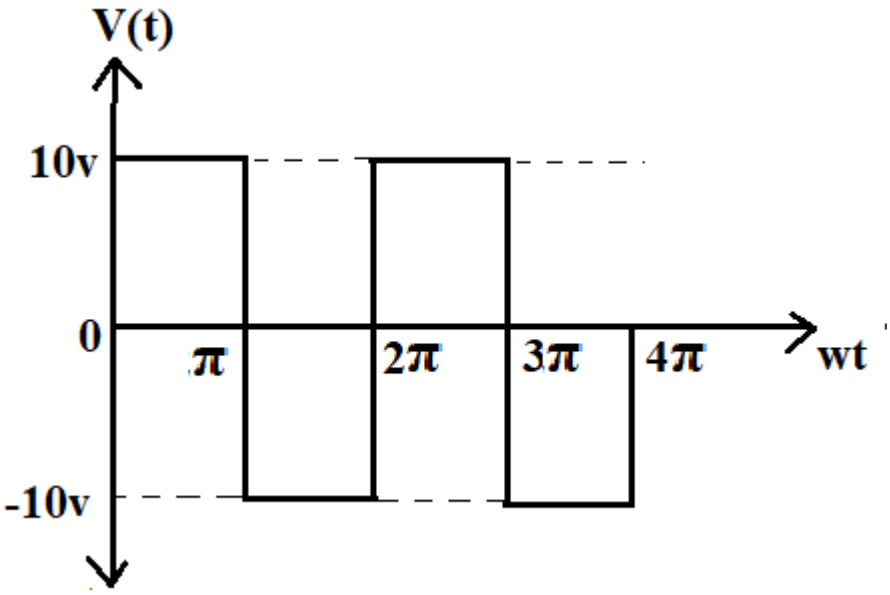
b Find the Exponential Fourier series for the following waveform shown in figure. **5M**



OR

11 **a** Derive the Exponential form of Fourier series. **5M**

b Obtain the Fourier series for the following waveform shown in figure. **5M**



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