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

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

SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR

(AUTONOMOUS)

B. Tech II Year I Semester Supplementary Examinations August-2021

NETWORK THEORY

(Electronics and Communication Engineering)

Time: 3 hours Max. Marks: 60

PART-A

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

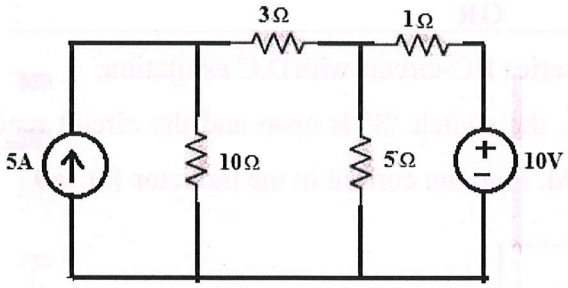
1	a	Write statement of Reciprocity theorem.	**2M**
	b	Define Quality-factor and Selectivity.	**2M**
	c	Define steady state and transient state	**2M**
	d	Draw the equivalent circuit of Z-parameters.	**2M**
	e	Define Fourier series.	**2M**

PART-B

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

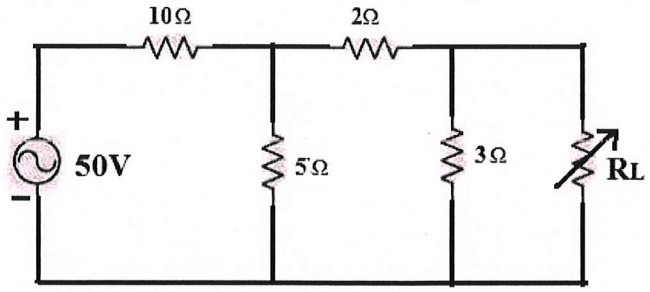
UNIT-I

2	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**



OR

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

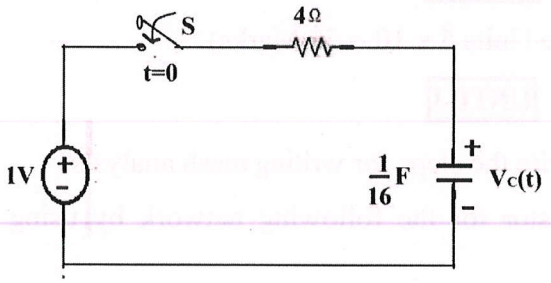
5 a Design a High –pass filter having a cut-off frequency of 1kHz with a load resistance of 600Ω **5M**

b Design Low Pass Filter in both T& Π section having a cut off frequency of 2KHz to operate with a terminated load resistance of 500 Ω **5M**

UNIT-III

6 a Derive the Transient Response of series RL-circuit with D.C excitation. **5M**

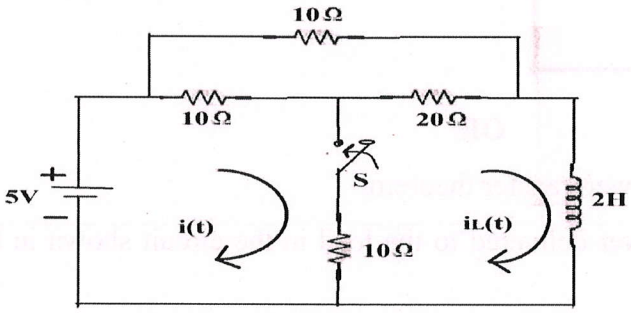
b Using classical method of solution of differential equations, find the value of $V_c(t)$ for t>0 in the circuit shown in figure. Assume $V_c(0^-) = 9v$. **5M**



OR

7 a Derive the Transient Response of series RC-circuit with D.C excitation. **6M**

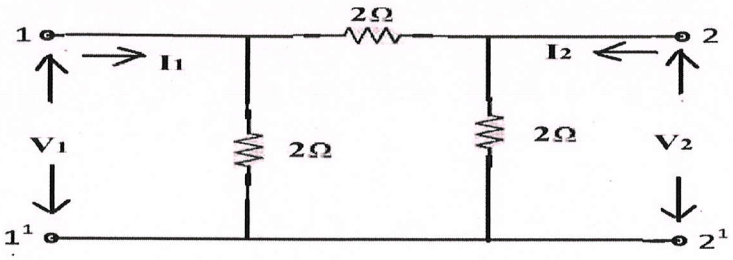
b The circuit shown in below figure, the switch 'S' is open and the circuit reaches a steady state. At t=0, the 'S' is closed. Find the current in the inductor for t>0. **4M**



UNIT-IV

8 a Explain about Impedance parameters. **6M**

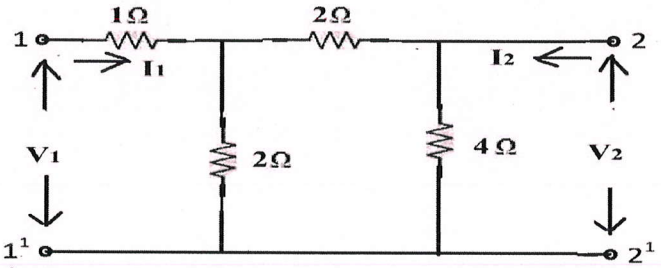
b Find the transmission parameters for the circuit shown in figure. **4M**



OR

9 a Explain about short-circuit parameters **5M**

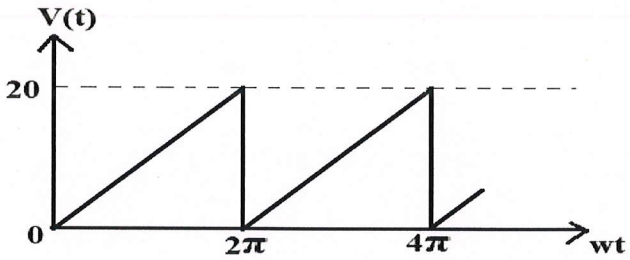
b Find the h-parameters of the network shown in figure **5M**



UNIT-V

10 a Derive the Trigonometric form of Fourier series. **5M**

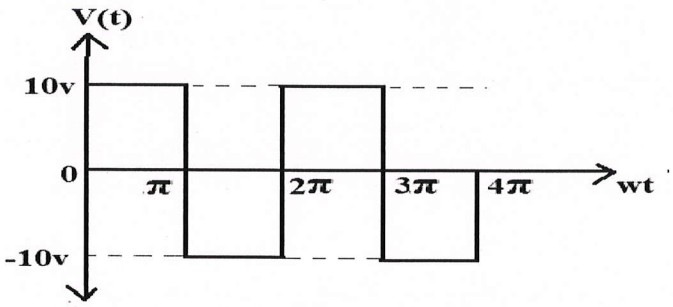
b Find the Fourier series for the following waveform. **5M**



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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