

ANURAG Engineering College

(An Autonomous Institution)

I B.Tech II Semester Supplementary Examinations, June/July-2024

ELECTRICAL CIRCUIT ANALYSIS –II

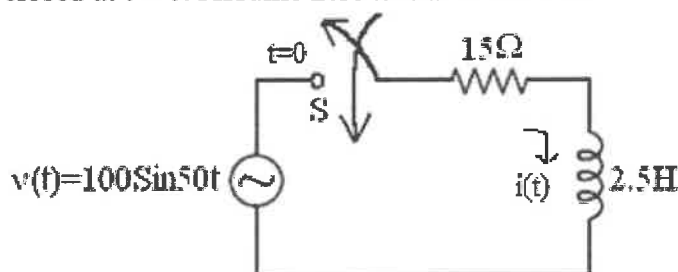
(ELECTRICAL AND ELECTRONICS ENGINEERING)

Time: 3 Hours**Max. Marks: 60****Section – A (Short Answer type questions)****(10 Marks)****Answer All Questions**

	Course Outcome	B.T Level	Marks
1. Derive transient response for R-L circuit using AC excitation.	CO1	L2	1M
2. Why the voltage drop across the capacitor does not change instantaneously.	CO1	L2	1M
3. What are the initial conditions? Why are they necessary?	CO2	L1	1M
4. What is the Laplace transform of unit impulse function?	CO2	L2	1M
5. Define the Y-parameters and give the conditions for symmetry and reciprocity.	CO3	L1	1M
6. Derive expressions for transmission parameters of two two-port networks connected in cascade.	CO3	L2	1M
7. List out the properties of Fourier theorem.	CO4	L1	1M
8. What is meant by positive real function?	CO4	L1	1M
9. Define low pass filters.	CO5	L1	1M
10. Write down the classification of filters on the basis of frequency characteristics.	CO5	L1	1M

Section B (Essay Questions)**Answer all questions, each question carries equal marks.****(5 X 10M = 50M)**

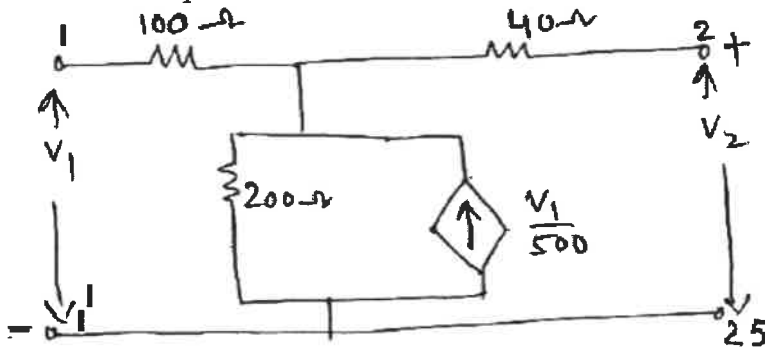
11. A) Discuss the transient analysis of parallel RL circuit excited by DC voltage.
- OR**
- B) Write the condition for resonance in RLC series circuit and also determine the resonant frequency of series RLC circuit considering of $R=10\Omega$, $L=0.1H$ and $C=10\mu F$.
12. A) Derive the expression for transient response in series RC circuit for AC excitation. Obtain the solution using Laplace transforms.
- OR**
- B) A sinusoidal voltage of $100\sin 50t$ is applied to a series circuit of $R = 15$ and $L = 2.5H$ at $t=0$ shown in below Figure. By Laplace transform method, determine the current $i(t)$, when the switch closed at $t = 0$. Assume zero initial conditions.



13. A) Derive the condition of symmetry and reciprocity for ABCD-parameters of given two port network. CO3 L3 10M

OR

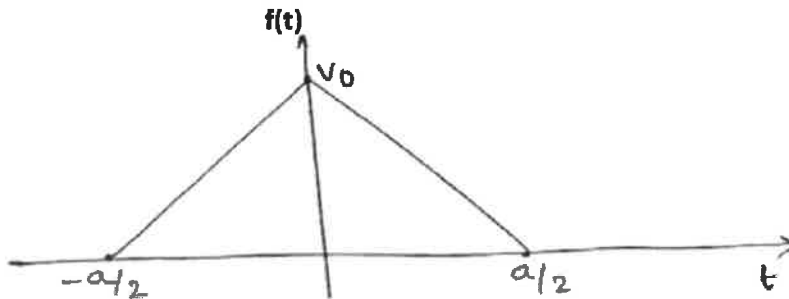
B) Determine Y – parameters of the network show. CO3 L3 10M



14. A) Derive the Fourier series in trigonometric form? And State and explain about the Fourier theorem? CO4 L3 10M

OR

B) Find the Fourier transform of the triangular wave shown in figure. CO4 L3 10M



15. A) Design a constant-k Low-pass filter. CO5 L3 10M

OR

B) A low-pass filter section is constructed from two capacitors of 0.5 μF each and a 10 mH inductance. Find CO5 L3 10M

- i) cut-off frequency,
- ii) infinite frequency characteristic impedance,
- iii) characteristic impedance at 200 Hz and 2000 Hz,
- iv) attenuation at 200 Hz and 2000 Hz, and
- v) phase constant at 200 Hz and 2000 H.