

Department of Electronics & Communication Engineering
(Faculty of Technology, Dharmsinh Desai University, Nadiad)

Academic Year: 2022 - 2023

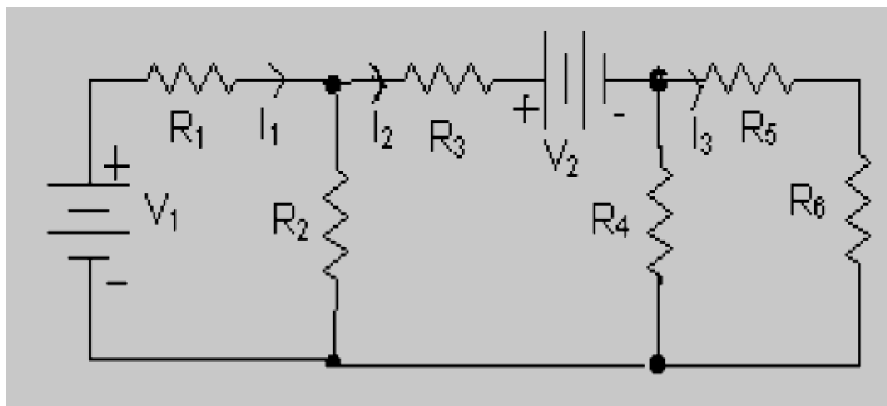
TUTORIAL – 5

Subject: (ESC101) BASIC ELECTRICAL ENGINEERING

Class : B. Tech. Sem.I (EC/CE/IT)

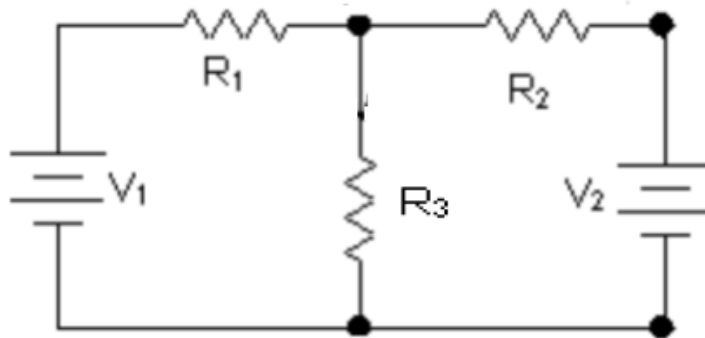
Topics: Superposition theorem, representation of sinusoidal waveforms, peak and rms values

1. Verify the superposition theorem for the following circuit.



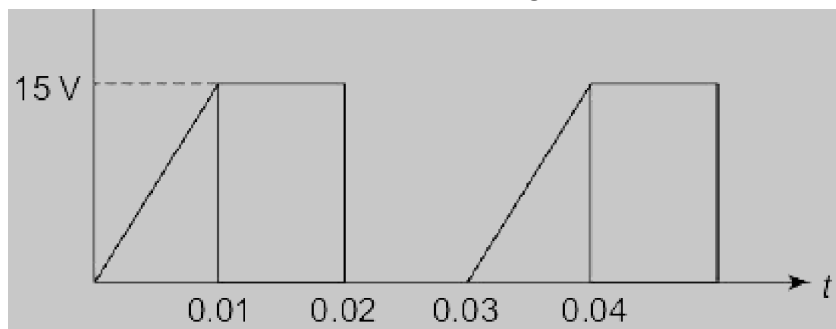
Take, $R_1 = R_4 = 1 \text{ k}\Omega$, $R_3 = R_6 = 3.3 \text{ k}\Omega$, $R_2 = R_5 = 2.2 \text{ k}\Omega$, $V_1 = 12 \text{ V}$, and $V_2 = 5 \text{ V}$

2. Verify the superposition theorem for the following circuit.



Take, $R_1 = R_2 = 10 \text{ k}\Omega$, $R_3 = 2.2 \text{ k}\Omega$, $V_1 = 10 \text{ V}$ and $V_2 = 20 \text{ V}$.

3. Find the Form factor and Peak factor for the waveform given below.



4. An alternating voltage is defined by $v = 220 \sin 377 t$. It is applied to a circuit having a resistance of 22Ω . Determine (a) the RMS value (b) the frequency (c) the power loss.
5. An alternating current varying sinusoidally with a frequency of 50 Hz has an RMS value of 20 A. Write down the equation for the instantaneous value and find this value (a) 0.0025 second (b) 0.0125 second after passing through a positive maximum value. At what time, measured from a positive maximum value, will the instantaneous current be 14.14 A?

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