

Unit - I

1. Explain with the help of a diagram how alternating voltage is generated.
2. Show that in a purely inductive circuit current lags the voltage by 90° .
3. Obtain expression for the current through the pure inductor, if voltage across it is $v = V_m \sin \omega t$.
4. Derive the relationship between voltage and current for a pure inductive circuit.
5. Prove that average power consumption in pure inductor is zero when ac voltage is applied.
6. Explain that power consumed in a pure capacitor is zero.
7. Discuss the phase relation between emf and current when ac flows through R-L circuit.

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8. Draw power triangle. Explain the relationship between various terms.

9. Define the following terms.

a) Active power

b) Reactive power.

c) Apparent power

d) Power factor.

10. Discuss the resonance in ^{series} RLC circuit.

What is the condition for it.

11. All numerical which is done in this unit.

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Unit - 2

1Q. Explain R-L parallel combination of AC circuit. Also draw admittance triangle of R-L parallel combination of AC circuit.

2Q:- Describe R-C parallel combination of AC circuit. Also draw admittance triangle of R-L parallel combination of AC circuit.

3Q:- Describe R-L-C parallel combination of AC circuit.

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4Q:- Discuss the resonance in R-L-C parallel circuit. What is the properties for it.

5Q:- Define the following term for parallel AC circuit.

a) Q-factor

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b) Bandwidth

6Q:- What is admittance triangle? Explain.

7Q: ~~Der~~ Derive the sinusoidal response of parallel R-C circuit.

8Q:- All numerical which is done in this unit.

Unit-3

1. What is a 3-phase system? Give its necessity and advantages. What is meaning of phase sequence.
2. Describe star connection method for interconnection of 3-phase supply.
3. Describe Delta connection method for interconnection of 3-phase supply.
4. Derive the relation between phase and line value of 3-phase balanced star-connected system. **Polytechnic Academy Patna**
5. Derive the relation between phase and line value of 3-phase balanced delta-connected system.
6. Prove that in a 3-phase balanced delta connection system $I_L = \sqrt{3} I_{ph}$.
7. Prove that in a 3-phase balanced star connection system $V_L = \sqrt{3} V_{ph}$ **Polytechnic Academy Patna**

8. Obtain the relationship between phase current and line current, phase voltage and line voltage in Delta or Star connection.

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Unit - 4

- 1Q:- All numerical which is done in class of source transformation.
- 2Q:- Derive the equation of delta to star transformation. **Polytechnic Academy Patna**
- 3Q:- Numerical of star to delta transformation
- 4Q:- Derive the equation of star to delta transformation.
- 5Q:- Numerical of star to delta transformation.
- 6Q:- Numerical of nodal analysis.
- 7Q:- Numerical of mesh analysis.
- 8Q:- Explain in detail voltage and current source. **Polytechnic Academy Patna**
- 9Q:- Differentiate between ideal voltage source and practical voltage source with the help of example.
- 10Q:- Explain obtain the current source equivalent of a practical voltage source.

Unit - 5

1Q:- State and explain the superposition theorem. with reference to an appropriate circuit.

2Q:- State and prove Thevenin's theorem. show with example.

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3Q:- All numerical which is done in class.

4Q:- State and prove Norton's theorem. show with example.

5Q:- All numerical which is done in class.

6Q:- State maximum power transfer theorem and also prove the condition when maximum power is transferred in a circuit.

7Q:- Numerical of maximum power transfer theorem.

8Q:- Numerical of reciprocity theorem.

~~8Q:-~~

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