

## QUIZ – ANSWER KEY

QUIZ NO: 141

TOPIC: ELECTRICAL ENGINEERING

DATE: 31/12/2022

1. To check for the Reciprocity Theorem we consider \_\_\_\_\_ of response to excitation ?

- [A] ratio
- [B] addition
- [C] product
- [D] subtraction

**Answer: A**

**Explanation:** For the Reciprocity Theorem to satisfy the ratio of response to the excitation of the circuit should be equal to the ratio of response to excitation after the source is replaced.

2. For the Reciprocity Theorem to satisfy the ratio of response to excitation before and after the source is replaced should be?

- [A] different
- [B] same
- [C] before source is replaced is greater than after the source is replaced
- [D] before source is replaced is less than after the source is replaced

**Answer: B**

Join our social media



## QUIZ – ANSWER KEY

**Explanation:** For the Reciprocity Theorem to satisfy the ratio of response to excitation before and after the source is replaced should be same and if that condition satisfies the reciprocity theorem is valid for the given circuit.

3. The circuit which satisfies Reciprocity Theorem is called?

- [A] Short circuit
- [B] Open circuit
- [C] Linear circuit
- [D] Non-linear circuit

**Answer: C**

**Explanation:**

The circuit which satisfies Reciprocity Theorem is called linear circuit. A linear circuit is an electronic circuit in which, for a sinusoidal input voltage of frequency  $f$ , any steady-state output of the circuit (the current through any component, or the voltage between any two points) is also sinusoidal with frequency  $f$ .

4. While considering Reciprocity theorem, we consider ratio of response to excitation as ratio of?

- [A] voltage to voltage
- [B] current to current
- [C] voltage to current
- [D] none of the mentioned

**Answer: C**

**Explanation:** While considering Reciprocity theorem, we consider ratio of response to excitation as ratio of voltage to current or current to voltage.

Join our social media



## QUIZ – ANSWER KEY

5. In Reciprocity Theorem, which of the following ratios is considered?

- [A] Voltage to current
- [B] Current to current
- [C] Voltage to voltage
- [D] No ratio is considered

**Answer: A**

**Explanation:** The Reciprocity Theorem states that if an Emf  $E$  in one branch produces a current  $I$  in a second branch, then if the same emf  $E$  is moved from the first to the second branch, it will produce the same current in the first branch, when the Emf  $E$  in the first branch is replaced with a short circuit. Therefore the ratio of Voltage to Current is considered in case of Reciprocity Theorem.

6. The Reciprocity Theorem is valid for \_\_\_\_ ?

- [A] Non-Linear Time Invariant circuits
- [B] Linear Time Invariant circuits
- [C] Non-Linear Time Variant circuits
- [D] Linear Time Variant circuits

**Answer: B**

**Explanation:** A reciprocal network comprises of linear time-invariant bilateral elements. It is applicable to resistors, capacitors, inductors (including coupled inductors) and transformers. However, both dependent and independent sources are not permissible.

7. The Reciprocity Theorem is applicable for \_\_\_\_\_ ?

- [A] Single-source networks
- [B] Multi-source networks
- [C] Both Single and Multi-source networks

**Join our social media**



## QUIZ – ANSWER KEY

[D] Neither Single nor Multi-source networks

**Answer: A**

**Explanation:** According to Reciprocity Theorem, the voltage source and the resulting current source may be interchanged without a change in current. Therefore the theorem is applicable only to single-source networks. It therefore cannot be employed in multi-source networks.

8. Name some devices where maximum power has to be transferred to the load rather than maximum efficiency ?

[A] Amplifiers

[B] Communication circuits

[C] Both amplifiers and communication circuits

[D] Neither amplifiers nor communication circuits

**Answer: C**

**Explanation:** Maximum power transfer to the load is preferred over maximum efficiency in both amplifiers and communication circuits since in both these cases the output voltage is more than the input.

9. The maximum power is delivered to a circuit when source resistance is \_\_\_\_\_ load resistance ?

[A] Greater than

[B] Equal to

[C] Less than

[D] Greater than or equal to

**Answer: B**

**Explanation:** The circuit can draw maximum power only when source resistance is equal to the load resistance.

Join our social media



## QUIZ – ANSWER KEY

10. The maximum power drawn from source depends on \_\_\_\_\_ ?

- [A] Value of source resistance
- [B] Value of load resistance
- [C] Both source and load resistance
- [D] Neither source or load resistance

**Answer: B**

**Explanation:** The maximum power transferred is equal to  $E^2/4 \cdot R_L$ . So, we can say maximum power depends on load resistance.

Join our social media

