DRONACHARYA ACADEMY
Subject Wise TEST
BRANCH- ELECTRICAL ENGINEERING
Subject - Network Theory

Maximum marks :- 20 **Time :- 30 min**

Name :- .....

Date:- .....

Marks Obtained :- .....

INSTRUCTIONS TO STUDENTS

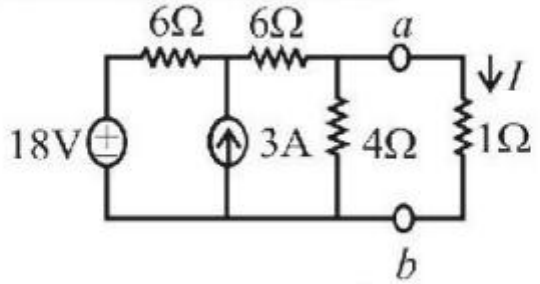
1. **Write your name on your test booklet.**
2. **Rough work to be done in the test booklet only.**
3. **Each question carries 1.0 marks. For each correct answer 1.0 mark shall be awarded. Question not attempted shall be ignored. For wrong answer 0.25 marks will be deducted. There is negative marking in the test.**

Use of electronics/manual calculator and any electronics equipment like mobile phone etc. is not allowed.

1. **Superposition theorem is valid for which of the following circuit elements?**
   (a) Non-linear elements
   (b) Passive elements
   (c) Linear bilateral elements
   (d) Resistive elements

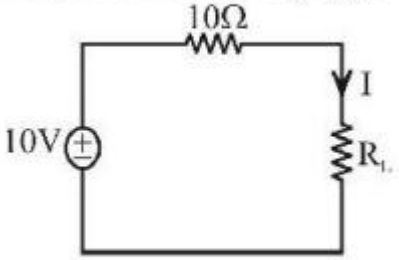
2. **Thevenin's theorem converts a circuit to an equivalent form consisting of**
   (a) a current source and a series resistance
   (b) a voltage source and a parallel resistance
   (c) a voltage source and a series resistance
   (d) a current source and a parallel resistance

3. **For the circuit shown here find the current I using Thevenins's theorem.**



   (a) 1.50 A
   (b) 1.75 A
   (c) 2.25 A
   (d) 1.25 A

4. **Find the maximum power transferred to the load resistance (R_L).**



   (a) 1.0W
   (b) 2.5W
   (c) 6.0W
   (d) 4.0W

5. **When a source is delivering maximum power to the load, the efficiency will be-**

(a) 50% (b) 100%

(c) 99% (d) 25%

6. **A two terminal network is connected to a resistive load whose resistance is equal to Norton resistance of the network. What will be the load current if Norton current is I_n?**

(a) $2I_n/3$ (b) $I_n/2$

(c) $2I_n$ (d) I_n

7. **Which of the below statements is true?**

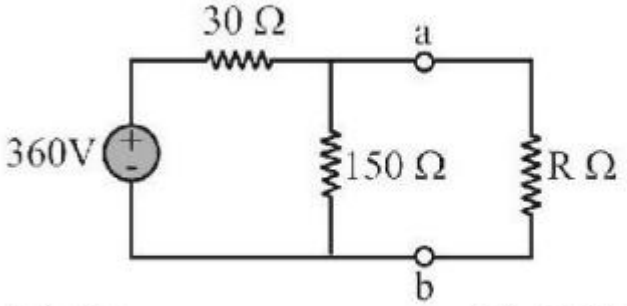
(a) Any two terminals of a network can be replaced by an equivalent voltage and equivalent series resistance in Norton theorem

(b) Source transformation of Thevenin theorem is known as Norton theorem

(c) In Thevenin theorem, voltage source is replaced by open circuit and current source is replaced by short circuit

(d) Super mesh is defined as the combination of two meshes that have voltage source on their boundary

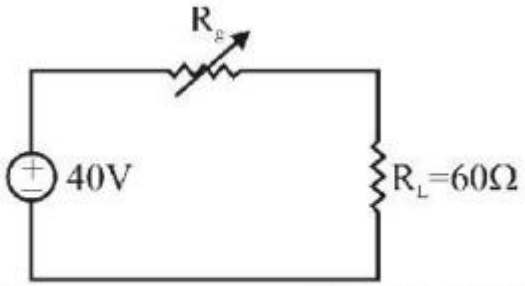
8. **The Norton's current in the circuit shown below is-**



(a) 2A (b) 120A

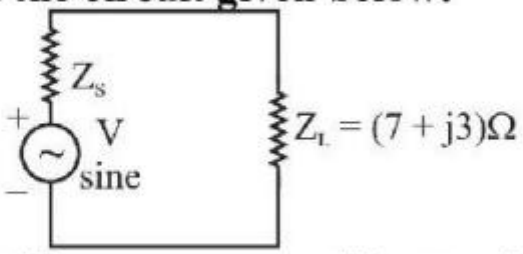
(c) 4A (d) 12A

9. **If R_g in the circuit shown in figure 1 is variable between 20 Ω and 80 Ω then maximum power transferred to the load R_L will be :**



(a) 15 W
(b) 13.33 W
(c) 6.67 W
(d) 2.4 W

10. **Determine the value of source impedance (in Ohms) for transmitting maximum power to the load in the circuit given below:**



(a) $7+j3$
(b) $7-j3$
(c) $3+j7$
(d) $3-j7$

11. **Which of the following theorems enables a number of voltage (or current) source to be combined directly into a single voltage (or current) source?**

(a) Compensation theorem
(b) Reciprocity theorem
(c) Superposition theorem
(d) Millman's theorem

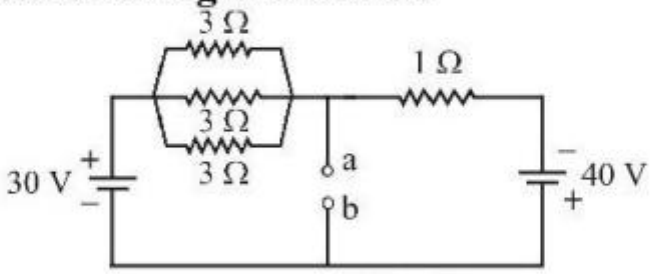
12. **The Superposition theorem is used when the circuit contains :**

(a) A single voltage source
(b) active elements only
(c) a number of voltage sources
(d) passive elements only

13. **Which one of the expression satisfies the condition of maximum power transfer theorem?**

(a) $Z_L = Z_S^*$ (b) $Z_L = R_L$
(c) $Z_L = 2Z_S$ (d) $X_L = R_L$

14. **Determining the Thevenin's equivalent resistance (in ohms) across the terminal a and b for the electrical circuit given below.**



(a) 1 (b) 0.5
(c) 0.3 (d) 0.2

15. **Which of the following statement is CORRECT?**

(a) Superposition theorem is applicable to only those circuits that only have active elements.
(b) Superposition theorem is applicable to only those circuits that only have passive elements.
(c) Superposition theorem is applicable to only those circuits that only have linear bilateral elements.
(d) Superposition theorem is applicable to only those circuits that only have non-linear bilateral elements.