

## FACULTY OF SCIENCE

B.Sc. I-Semester (CBCS) Examination, December 2017

Subject : Electronics

Paper – I : Circuits Analysis

Time : 3 Hours

Max. Marks: 80

PART – A (5 x 4 = 20 Marks)

(Short Answer Type)

Note : Answer any FIVE of the following questions.

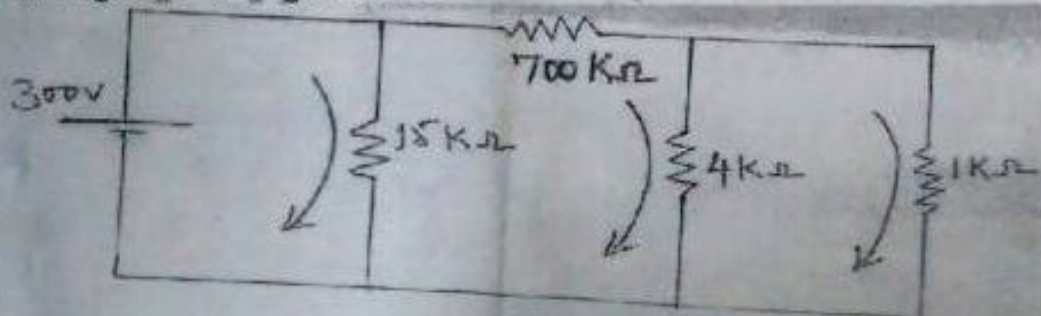
- 1 Derive the expression for RMS value of AC current.
- 2 What is complex impedance?
- 3 State Super position Theorem.
- 4 State Norton's theorem.
- 5 Explain different types of filters.
- 6 Explain the working of RC integrating circuit with neat diagrams.
- 7 Explain the phenomenon of resonance.
- 8 Explain in action of fluorescent screen of a CRO.

PART – B (4 x 15 = 60 Marks)

(Essay Answer Type)

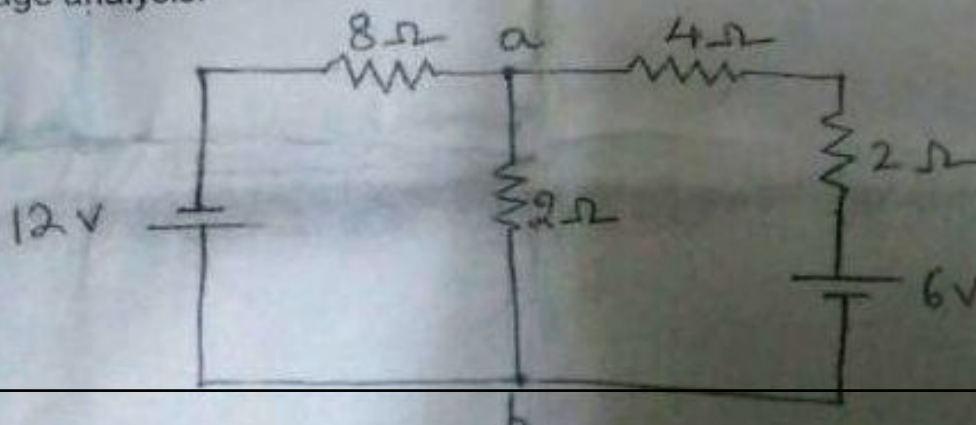
Note: Attempt ALL the questions.

- 9 (a) State and prove Kirchoff's current law. For the following circuit. Find the current flowing through the voltage source.



OR

- (b) What do you mean by node voltage method of analysis? Explain. Find the voltage  $V_{ab}$  between points 'a' and 'b' in the following circuit of the method of node-voltage analysis.



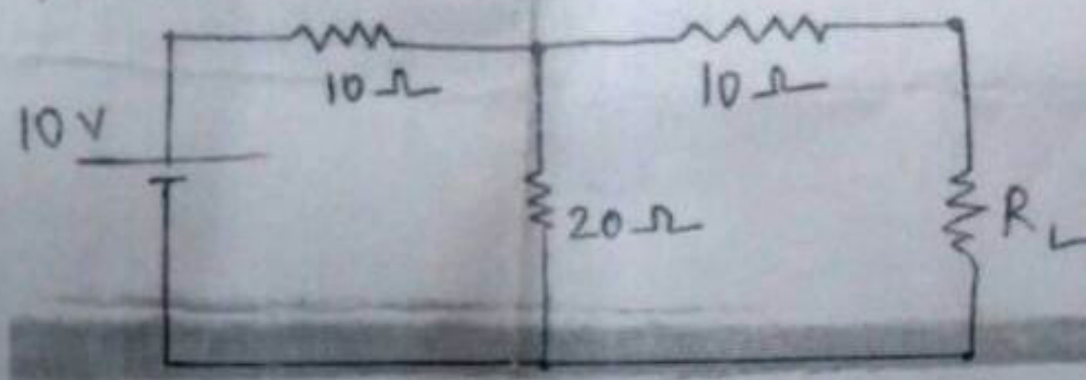
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10 (a) State and prove Thevenin's theorem.

OR

(b) State and prove maximum power transfer theorem. Find the value of  $R_L$  for maximum power in the following circuit.



11 (a) What is transient response? Discuss the transient response of RC circuit with step input.

OR

(b) What is a high pass filter? Derive an expression for the cutoff frequency of high pass RC circuit with necessary figures.

12 (a) Derive an expression for resonance frequency and quality factor of a series LCR circuit.

OR

(b) Draw the diagram of CRT and briefly explain function of each part.

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