**R18**

**Code No: 151AG**

**JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD**
**B.Tech I Year I Semester Examinations, September/October - 2021**
**BASIC ELECTRICAL ENGINEERING**
**(Common to EEE, CSE, IT, CSIT, ITE, CE(SE), CSE(CS), CSE(DS), CSE(Networks))**

**Time: 3 Hours** **Max. Marks: 75**

**Answer any five questions**
**All questions carry equal marks**
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1. Find the current supplied by 10V battery for the following network shown in figure 1. [15]

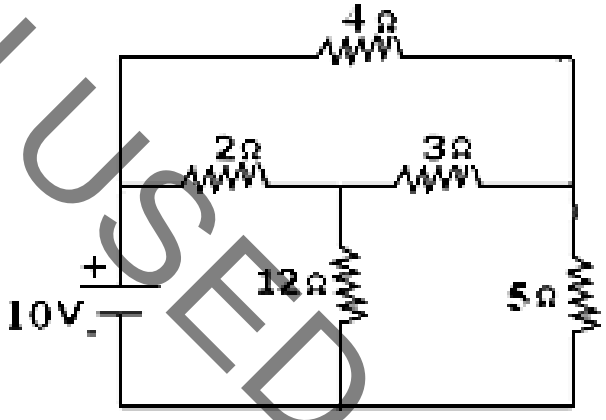


**Figure: 1**

2. By using Norton's theorem, determine the current through 5Ω resistor for the circuit shown in figure 2. [15]

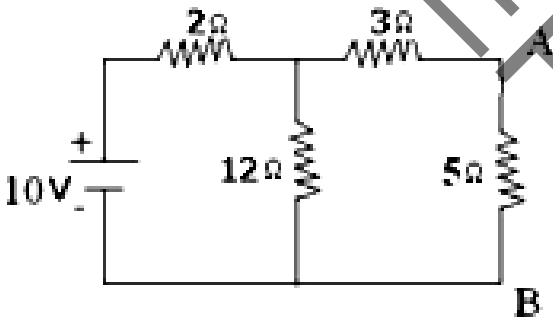


**Figure: 2**

3.a) Derive the expression for the average value and form factor of a sinusoidal waveform.
b) Find the RMS voltage of the signal shown in figure 3. [7+8]

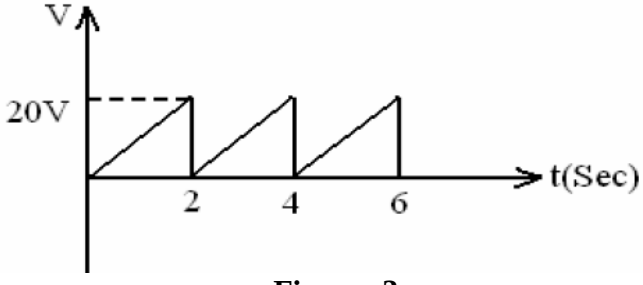


**Figure: 3**

4.a) What is series resonance? Explain with respect to series R-L-C circuit connected across sinusoidal voltage source.

b) Show that the resonant frequency $\omega_0$ of an RLC series resonant circuit is the geometric mean of $\omega_1$ and $\omega_2$, the lower and upper half power frequencies respectively. [7+8]

5.a) Derive an emf equation of a single phase transformer.

b) Explain about hysteresis and eddy current losses occur in a transformer. [8+7]

6.a) Explain the operation of a transformer under no load and load conditions with the help of phasor diagrams.

b) Explain different poly phase transformers connections. [8+7]

7.a) Give the constructional details of 3-phase Induction motor.

b) Explain the torque speed characteristics of 3-phase Induction motor. [8+7]

8.a) Differentiate between MCB and MCCB.

b) Explain the different types of batteries in detail. [6+9]

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