

**SAPTHAGIRI NPS UNIVERSITY**  
**BE 1<sup>st</sup> Semester 2024-25**  
 First Internal Assessment Test

**Course Code:** 24BEELY104

**Semester:** I

**Course:** Basics of Electrical & Electronics

**SRN:**

Engineering

**Time:** 10.30AM-12.00PM

**Max Marks:** 50

**PART –A**

**Answer any Ten of the following:**

**2x10=20**

1. What is the current produced with a 9-V battery through a resistance of  $100\Omega$ ?
2. Mention two differences between active and passive elements.
3. Define Power with SI Unit.
4. Define Apparent Power.
5. Draw voltage and power triangle for RL circuit.
6. Define peak factor of ac circuit.
7. Define RMS Value of an alternating quantity.
8. Write the relationship between phase and line quantities for 3 phase delta connection.
9. Give the expression for the voltage and current in a capacitor.
10. Define power factor and its significance.
11. At what frequency will the reactance of a 22pF capacitor be  $500\Omega$ ?
12. Find the equivalent resistance between points A and B in the given figure (1).

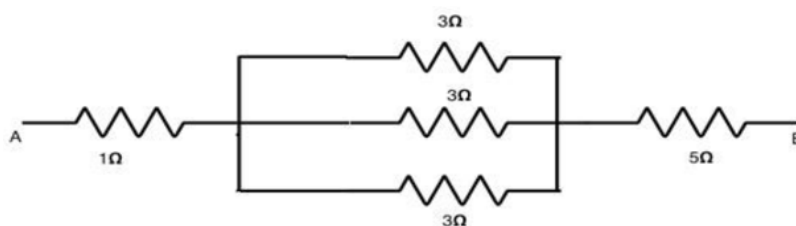


Figure (1).

**PART –B**

**Answer any Four of the following:**

**5 x 4 =20**

1. Explain Kirchhoff's Laws with example.
2. Derive an expression for voltage, current and power for a pure capacitive circuit with necessary waveforms.

3. List the advantages of three phase system over single-phase system.
4. For the given network shown in Figure (1) find the current in various branches of the circuit.

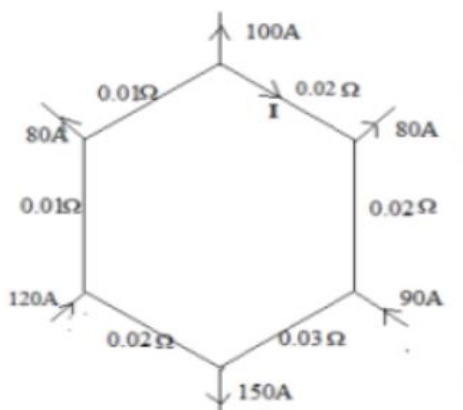


Figure (1)

5. Three resistors are connected together to form a current divider circuit as shown in figure (2). If the circuit is fed from a 100 volts supply with a capacity of 1.5kW. Calculate the individual branch currents using the current division rule and find the equivalent circuit resistance.

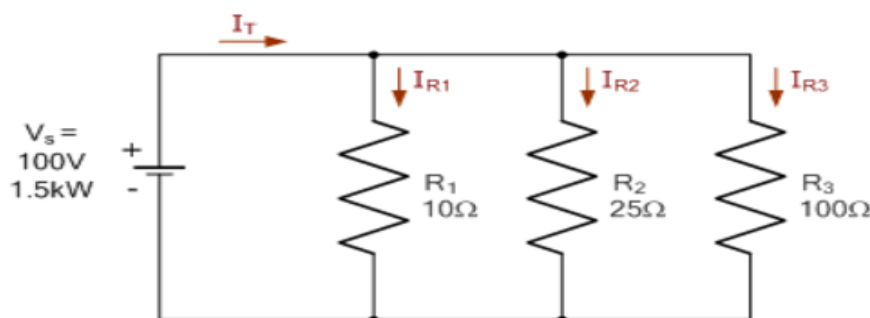


Figure (2)

## PART – C

Answer any One of the following:

10 x 1 =10

1. A balanced star connected load of  $(8+j6)$  phase is connected to a 3 phase, 230V, and 50 Hz supply. Find : (i) Line current, (ii) Power factor, (iii) Power, (iv) Reactive volt amperes and (v) Total volt amperes.
2. A 230V, 50Hz a.c supply is applied to a coil of 0.06H inductance and  $2.5\Omega$  resistance connected in series with a  $6.8\mu\text{F}$  capacitor. Calculate:
  - (i) Impedance
  - (ii) Current
  - (iii) Phase angle between current and voltage.
  - (iv) Power factor and
  - (v) Power consumed.