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B.E. III Semester Examination

BE(LE) - III/02 (A)

25026

COMP. ENGG.

Course No. EE - 317

(Principles of Elec. Engg.)

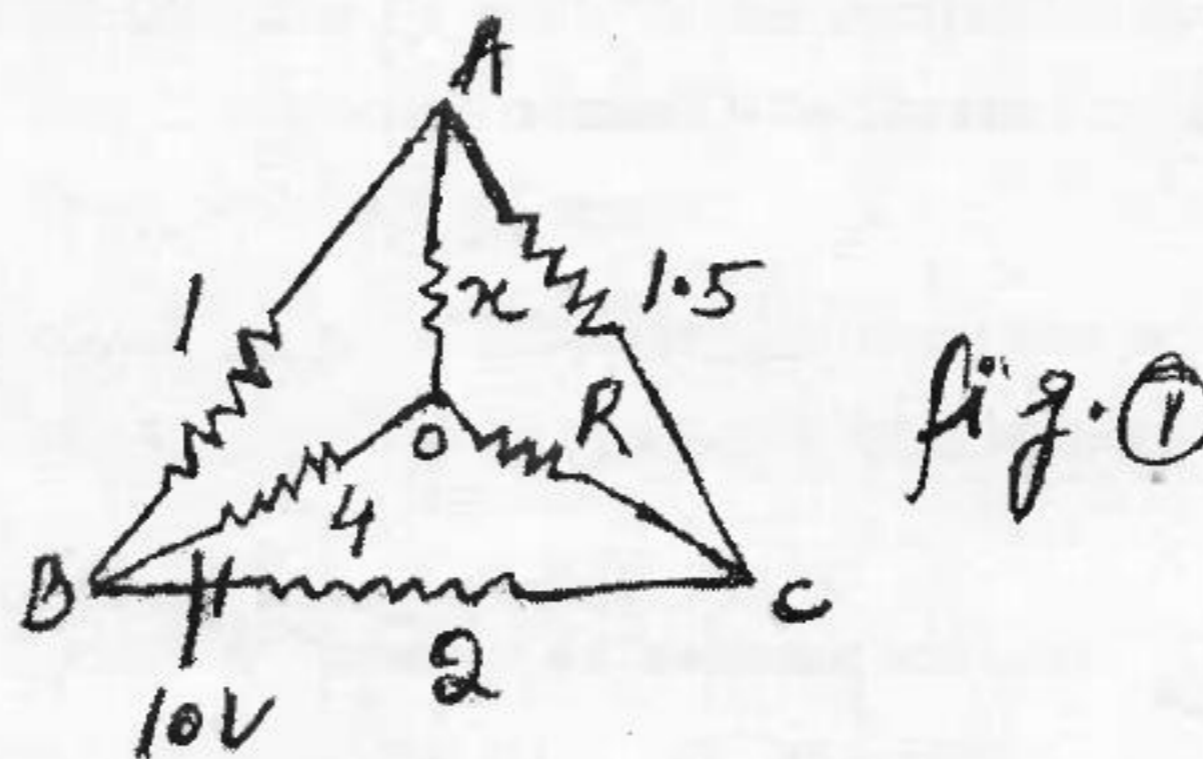
Time Allowed- 3 Hours

Maximum Marks-100

Note:- Attempt **five** questions selecting at least **one** question from each unit. Use of calculator is allowed. Assume missing data if any.

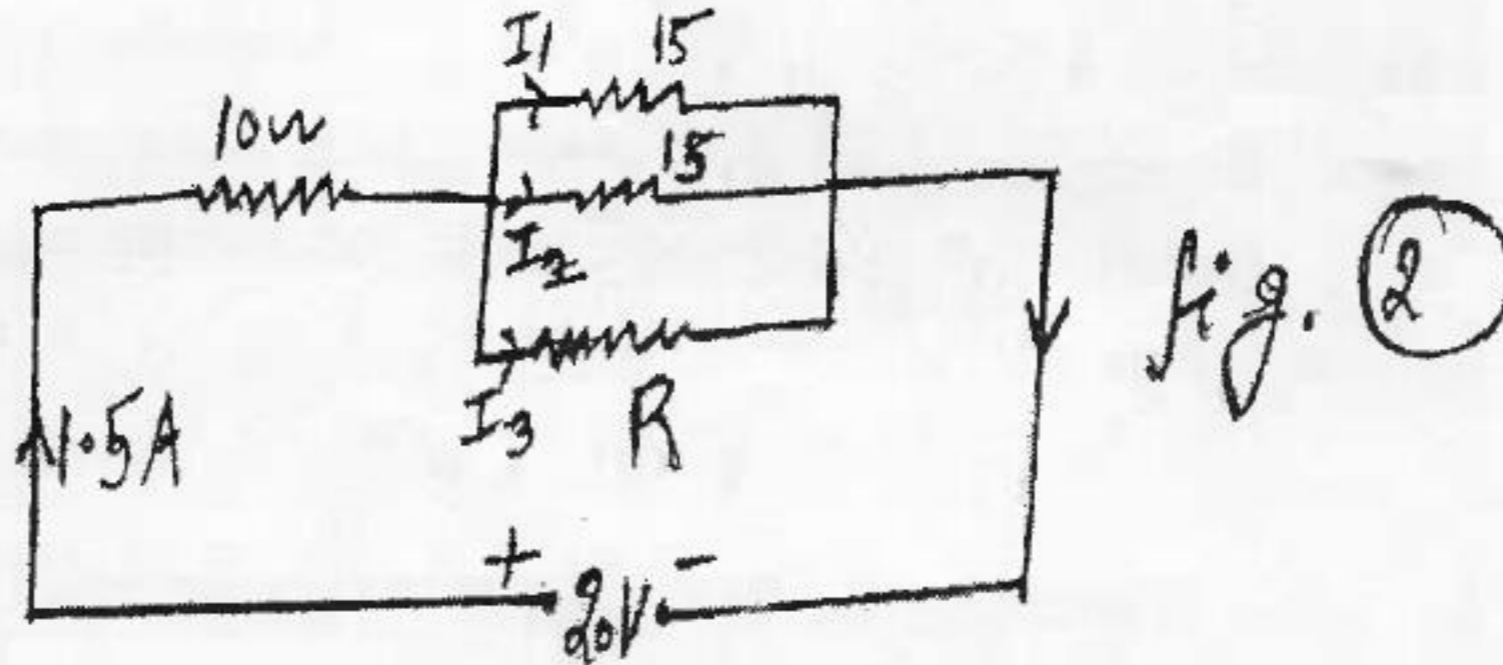
UNIT - I

1. a) Determine the value of R and current through it in fig. (1), if current through branch A O is zero. (10)



- b) Discuss ohm's Law, Voltage divider rule, and current divider rule with example. (10)

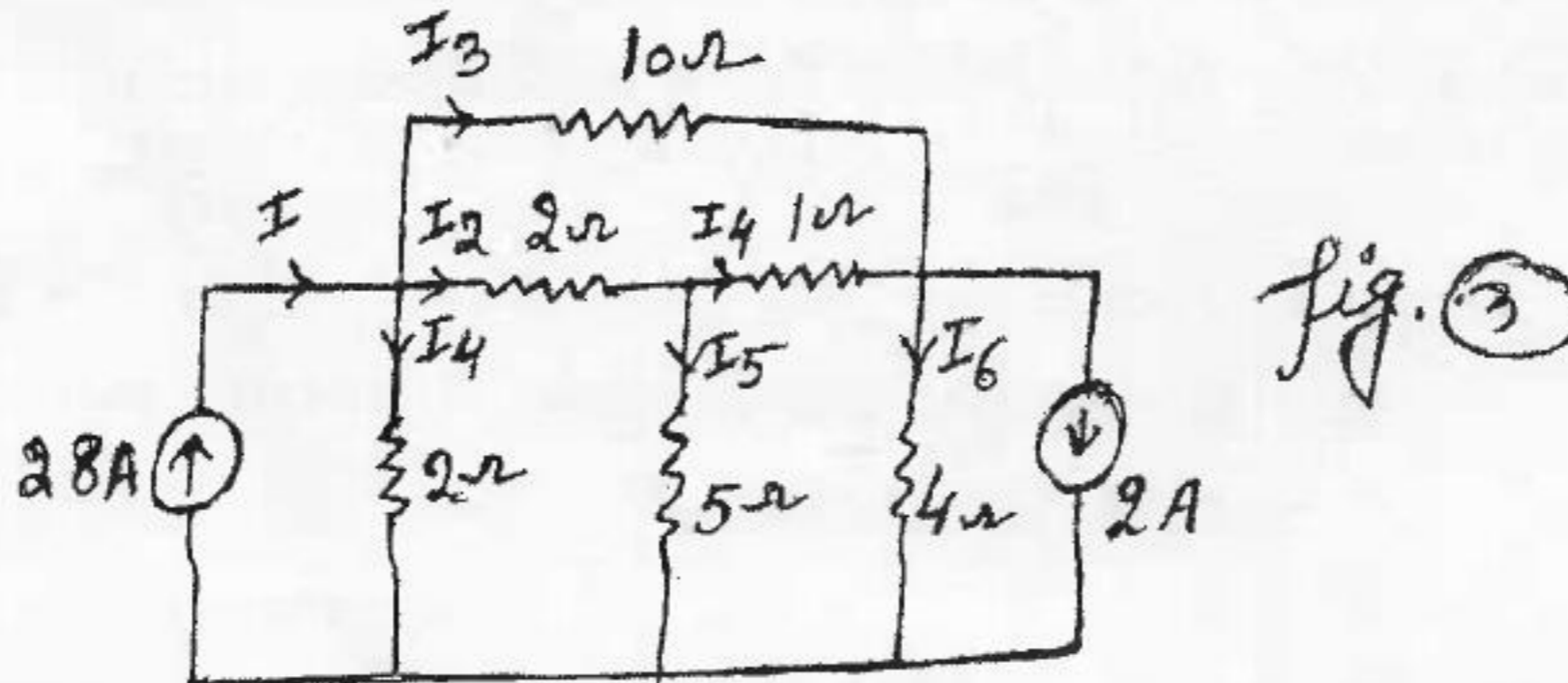
2. a) A resistance of $10\ \Omega$ is connected in series with two resistances each of $15\ \Omega$ arranged in parallel. What resistance must be shunted across this parallel combination so that the total current taken shall be $1.5\ \text{A}$ and $20\ \text{V}$ applied, Shown in fig. (2) (10)



- b) With the help of example explain the voltage and current source transformation technique. (10)

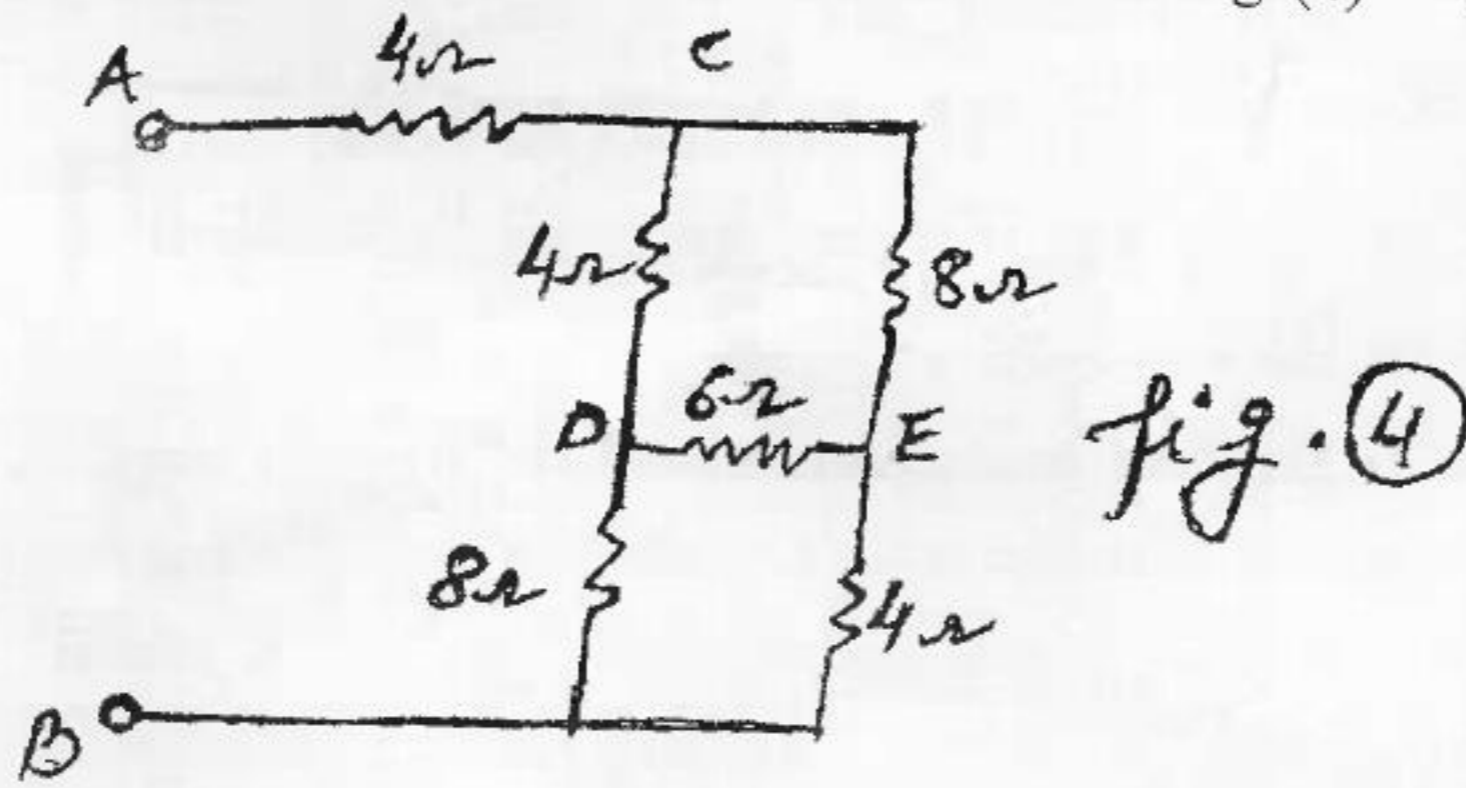
UNIT - II

3. Discuss the Nodal analysis method and by using the same find the currents in all the resistors of the circuit shown in fig. (3)(20)



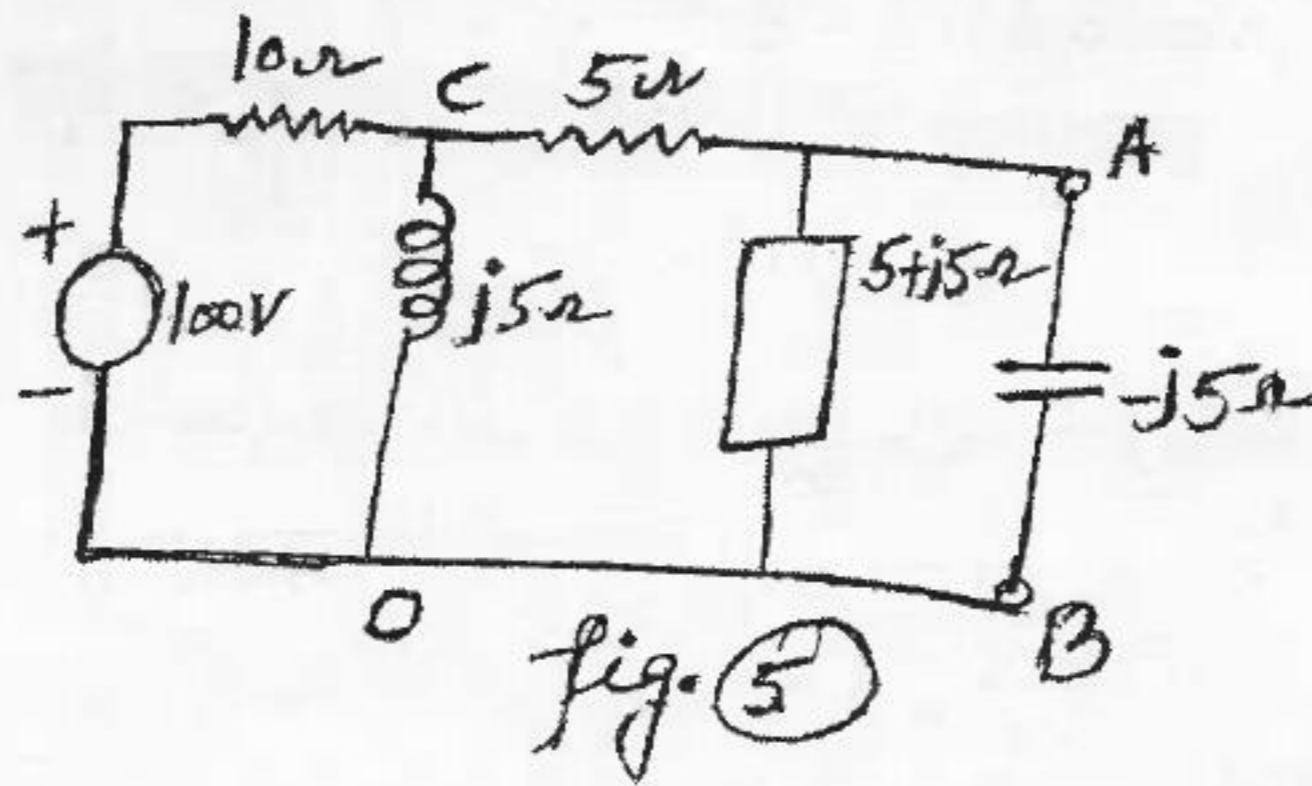
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Discuss the Delta - star transformation and vice versa and using same find resistance between points A and B of fig. (4) (20)



UNIT - III

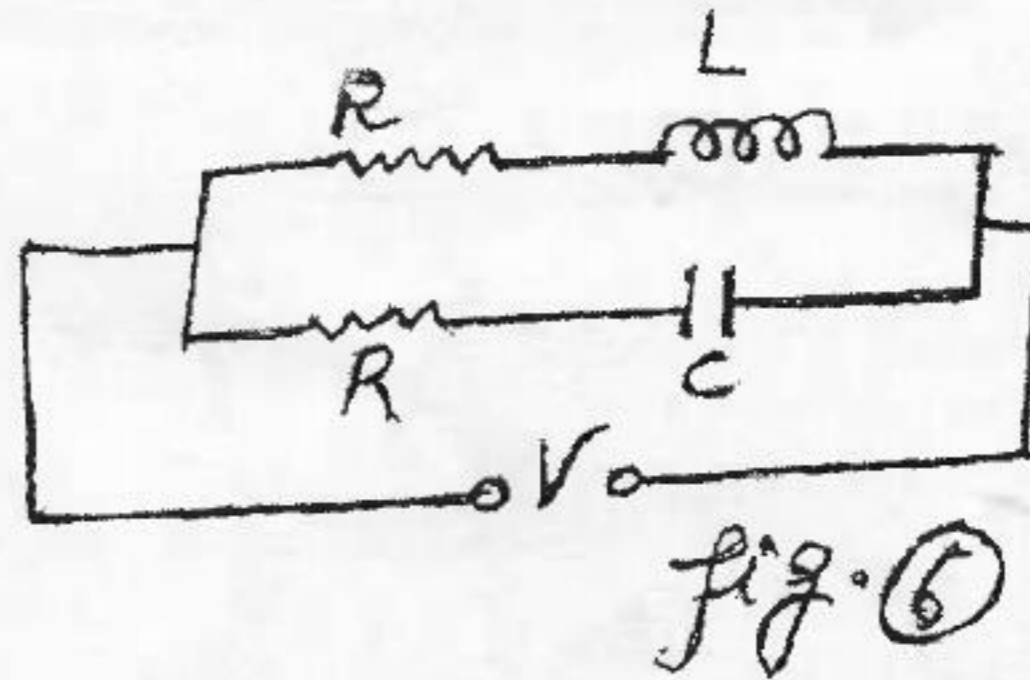
5. Two impedances given by $Z_1 = (10+j5)$ and $Z_2 = (8+j6)$ are joined in parallel and connected across a voltage of $V=200+j0$. Calculate the circuit current, its phase and the branch currents. Draw the vector and circuit diagram. (20)
6. a) Using Thevenin's theorem Find Voltage across capacitor AB. Also Voltage drop across CD shown in fig. (5)(10)



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- b) Derive an expression for the resonant frequency of the parallel circuit shown in fig. (6) (10)



UNIT - IV

7. A 220v 3- Phase voltage is applied to a balanced delta - connected 3 - ϕ load of phase impedance $(15 + j 20) \Omega$
- Find the phasor current in each line.
 - What is the power consumed per phase?
 - What is the phasor sum of the three line currents? Draw the circuit and phasor diagram. (20)
8. Explain and draw the phasor diagram of on - load actual transformer for three loads (i.e. resistive, inductive and capacitive) (20)