## Total nos. of printed pages: 2

PRANVEER SINGH INSTITUTE OF TECHNOLOGY

B. Tech. First Semester Basic Electrical Engineering (KEE-101T) Odd Semester

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CO4	Analyze [L4: Analysis] and Analyze (1-phase and 3-phase).	
	Circuit	a Mar

Time: 1.5 Hrs.

Section A

(1X3 = 3 Marks)CO<sub>1</sub>

Draw the volt ampere characteristics of an ideal and practical voltage source.

CO1 Q1. Attempt all questions: Define linear and nonlinear circuits.

CO1

CO<sub>2</sub>

CO<sub>2</sub>

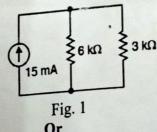
CO<sub>4</sub>

List the various types of sources used in electrical circuits. b) c)

## Section B

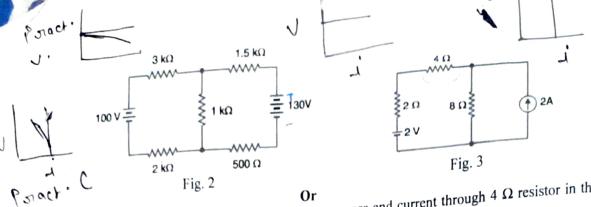
(2X4 = 8 Marks)

Find the current in 6  $k\Omega$  resistor in Fig. 1. by converting the current source to a voltage Q2. Attempt all questions: a i) source.



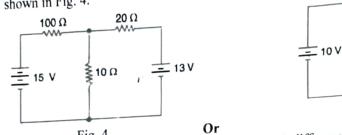
Two coils connected in series have a resistance of 18  $\Omega$  and when connected in parallel have a resistance of 4  $\Omega$ . Find the value of resistances. ii)

Using mesh analysis, calculate the voltage drop across the 1  $k\Omega$  resistor in the circuit bi) shown in Fig. 2.



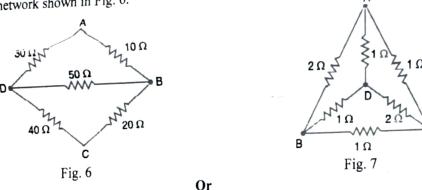
Use nodal analysis to calculate the voltage across and current through 4  $\Omega$  resistor in the CO<sub>4</sub> ii) circuit shown in Fig. 3.

Using superposition principle, calculate the current through 10  $\Omega$  resistor in the circuit CO<sub>4</sub> c i) shown in Fig. 4.



Using Thevenin's theorem, calculate the potential difference across branch AB of the **C**O4 ii) network shown in Fig. 5.

Using delta/star transformation, calculate the resistance between terminals A and C of the CO<sub>3</sub> d i) network shown in Fig. 6.

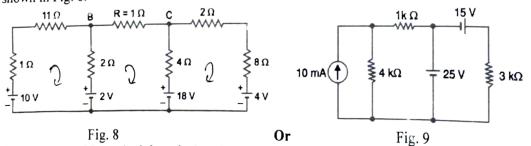


In the network shown in Fig. 7, calculate the resistance between terminals B and C using star/delta transformation.

## Section C Attempt all the questions. Q3.

ii)

Using Thevenin's theorem, calculate the current through the resistor  $R=1\Omega$  of the network i) CO<sub>4</sub> shown in Fig. 8.



Using superposition principle, calculate the voltage across 4 k $\Omega$  resistor in Fig. 9.

CO<sub>4</sub>

CO<sub>3</sub>

(4X1 = 4 Marks)

**≩1Ω** 

≩2Ω

B

Fig. 5

 $2\Omega$