

Name:	 UPES UNIVERSITY WITH A PURPOSE
Enrolment No:	

UNIVERSITY OF PETROLEUM AND ENERGY STUDIES
Online End Semester Examination, Dec 2020

Course: Electrical circuit analysis	Semester: VII
Program: B. Tech. Electrical	Time 03 hrs.
Course Code: EPEG 2009	Max. Marks: 100

SECTION A

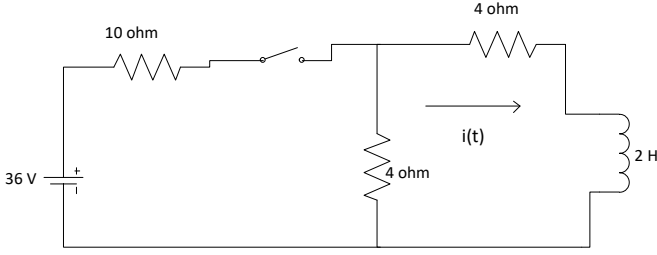
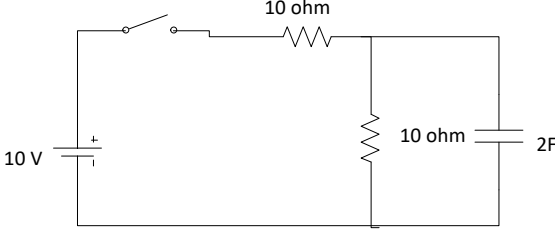
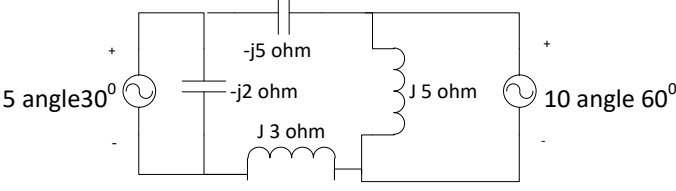
- 1. Each Question will carry 5 Marks**
- 2. Instruction: Complete the statement / Select the correct answer(s)**

S. No.	Question	CO
Q 1	The product of apparent power and cosine of the phase angle between circuit voltage and current is (A) True power (B) Reactive power (C) Volt-amperes (D) Instantaneous power	CO1
Q2	Time constant of a capacitive circuit (A) Increases with the decrease of capacitance and decrease of resistance (B) Increases with the decrease of capacitance and increase of resistance (C) Increases with the increase of capacitance and decrease of resistance (D) Increase with increase of capacitance and increase of resistance	CO2
Q3	In each of the three coils of a three phase generator, an alternating voltage having an r.m.s. value of 220 V is induced. Which of the following values is indicated by the voltmeters? (A) 220 V (B) $220\sqrt{3}$ V (C) $220/\sqrt{3}$ V (D) None of the above	CO3
Q4	A junction where two (or) more than two network elements meet is known as a _____	CO1
Q5	By using source transformation voltage source in series resistor is replaced by _____	CO1
Q6	_____ is the expression for the thevenin's current if there is an external resistance in series with the R_{Th} ?	CO1

SECTION B

- 1. Each question will carry 10 marks**
- 2. Instruction: Write short / brief notes**

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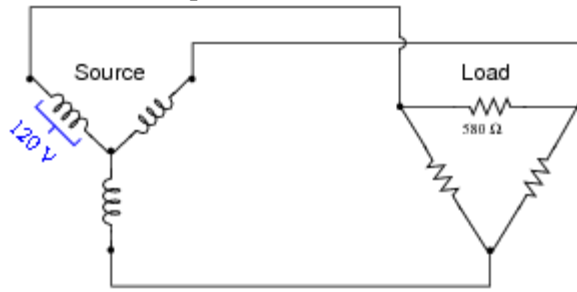
<p>Q 7</p>	<p>The network shown in figure has acquired steady state with the switch closed for $t < 0$. At $t = 0$, the switch is opened. Obtain $i(t)$ for $t > 0$.</p>  <p style="text-align: center;">OR</p> <p>The switch in the network shown in figure is closed at $t = 0$. Determine the voltage $V_c(t)$ across the capacitor.</p> 	<p>CO2</p>
<p>Q 8</p>	<p>Find the current through $j3$ ohm branch using super position theorem</p> 	<p>CO1</p>
<p>Q 9</p>	<p>Find $L\{f'(t)\}$ of $f(t) = \frac{1-\cos 2t}{t}$, also verify the initial value and final value theorem for $f(t)$.</p>	<p>CO2</p>
<p>Q 10</p>	<p>The Z-parameter of a two port network are $Z_{11} = 2.1\Omega$, $Z_{12} = Z_{21} = 0.6\Omega$, $Z_{22} = 1.6\Omega$. A resistor of 2Ω is connected across port 2. What voltage must be applied at port 1 to produce a current of 0.5 A in the 2Ω resistor.</p>	<p>CO3</p>
<p>Q 11</p>	<p>How is two terminal pair network characterized in terms of input output variables? Also mention various two port parameters and write equations in terms of these parameters with their equivalent circuit diagram.</p>	<p>CO3</p>

Section C

1. Each Question carries 20 Marks.
2. Instruction: Write long answer.

Q12

Calculate all voltages, currents, and total power in this balanced Y-Delta system:



CO4