Code No: R22025 **R10** SET - 1

II B. Tech II Semester Supplementary Examinations, April/May-2017
ELECTRICAL CIRCUIT ANALYSIS - II
(Electrical and Electronics Engineering)

Time: 3 hours Max. Marks: 75

Answer any **FIVE** Questions
All Questions carry **Equal** Marks
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1. a) Explain how reactive power can be measured in balanced three phase systems.
   b) A balanced three-phase star connected load of 200 kW takes a loading current of 150 A with a line voltage of 1200 V, 60 Hz, What are the circuit constants of the load per phase?

2. a) An unbalanced Y- connected load has a three wire supply with a line voltage of 400V and frequency 50 Hz. The load components are $R_1 = R_2 = R_3 = 60\Omega$ and $L_3 = 485mH$. Calculate the line currents and load currents.
   b) Explain the power factor measurement using two watt meters method and derive necessary expression.

3. A series RC circuit consists resistor of 20Ω and capacitor of 0.2 F as shown in Figure 1. A constant voltage of 30V is applied to the circuit at t = 0. Obtain the current equation. Determine the voltage across the resistor and the capacitor.

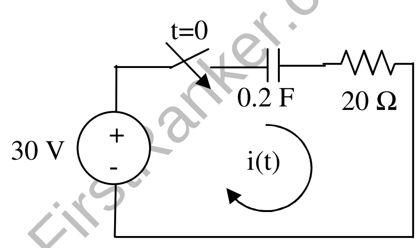

Figure 1

4. a) Derive the complete solution for transient response in series R-L circuit for AC excitation.
   b) Assuming zero initial conditions. Find the current response for the following network in below Figure 2.

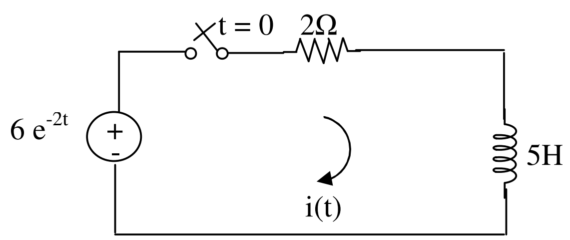

Figure 2
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5. a) Express z-parameters in terms of *y*-parameters and *h*-parameters
   b) Determine the Y- parameters of the network shown in Figure 3.

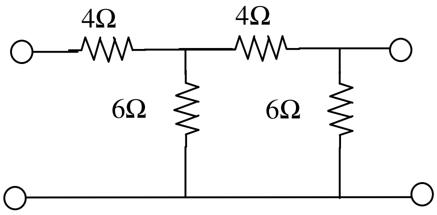

Figure 3

6. Find the y-parameters for the network shown in Figure 4 by considering it to be a parallel combination of a capacitive network referred to as N_a and a resistive network referred to as N_b.

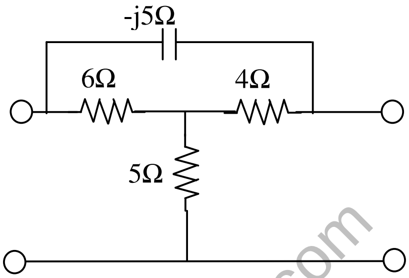

Figure 4

7. a) Explain about the exponential form of Fourier Series.
   b) A square wave symmetrical above and below ground has a peak amplitude of 6V, as illustrated in Figure 5. Determine the amplitude of each component up to the seventh harmonic.

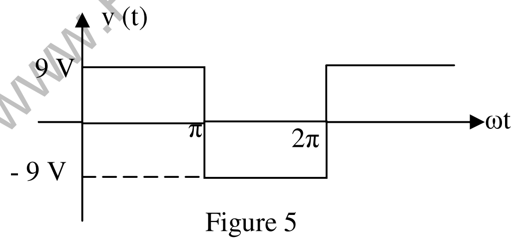

Figure 5

8. a) Calculate the fraction of the total energy dissipated by a 4Ω resistor in the frequency band $-10 < \omega < 10$ rad/s when the voltage across it is $V(t) = e^{-2t}\ u(t)$.
   b) Find the Fourier transform of the following functions.
   i) $e^{\ j\omega t}$ ii) $\cos\omega_o t$.