

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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- 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?
- 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.
- A series RC circuit consists resistor of  $20\Omega$  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.

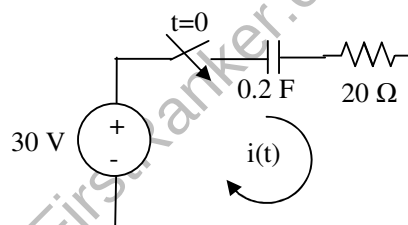


Figure 1

- 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.

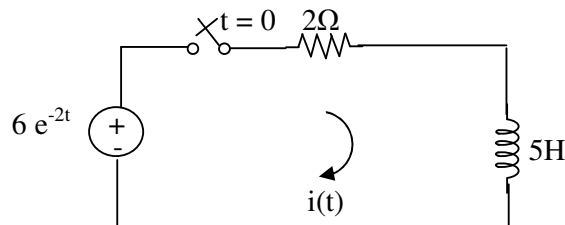


Figure 2

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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.

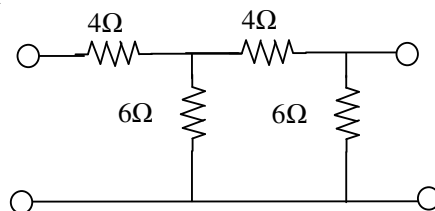


Figure 3

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  $N_b$ .

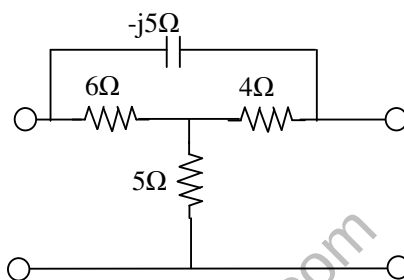


Figure 4

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.

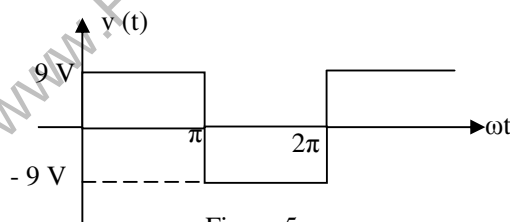


Figure 5

8. a) Calculate the fraction of the total energy dissipated by a  $4\Omega$  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)  $\cos \omega_0 t$ .