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Code No: RT21021 **R13** SET - 1

II B. Tech I Semester Supplementary Examinations, May/June - 2016
ELECTRICAL CIRCUIT ANALYSIS - II
(Electrical and Electronics Engineering)

Time: 3 hours Max. Marks: 70

Note: 1. Question Paper consists of two parts (**Part-A** and **Part-B)**
2. Answer **ALL** the question in **Part-A**
3. Answer any **THREE** Questions from **Part-B**

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PART – A

1. a) Write the equations for different types of powers in three phase circuits and write the equation for power factor in three phase systems. (3M)
   b) Explain how can a watt meter is used to measure reactive power. (3M)
   c) Give the application of h-parameter and also state the relation between h-parameter with transmission parameter. (4M)
   d) Write four properties of Laplace transform. (4M)
   e) What do we mean by Network synthesis? How is it different from network analysis. (4M)
   f) Write four properties of fourier transform (4M)

PART – B

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2. a) Three impedances each of (5-j6) Ω are connected in delta across a 3ph, 250V, 50 Hz balanced supply. Calculate the line and phase currents in the delta connected load. (8M)
   b) Explain how three phase active and reactive power is measured in three phase systems. (8M)

3. a) An unbalanced four wire, star connected load has a balanced voltage of 400V, the loads are Z_1= (4+j8) ohms; Z_2= (3+j4) ohms; Z_3= (15+j20) ohms. Calculate the neutral current and the total power. (8M)
   b) Explain how three phase power is measured using two watt meter method. (8M)

4. a) For an RL series circuit, a sinusoidal voltage of $v(t) = V_m \sin(\omega t + \phi)$ is applied at t=0. Find the expression for transient current. (8M)
   b) Explain the advantages of Laplace transformation and Obtain Laplace transform off (t) = exp (at) (8M)

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5. a) What are Y-Parameters and Z-Parameters. Derive the Expression for Z Parameters in terms of Y-parameters and vice – versa. (8M)
   b) Determine the Y- parameters of the network shown in Figure 1. (8M)

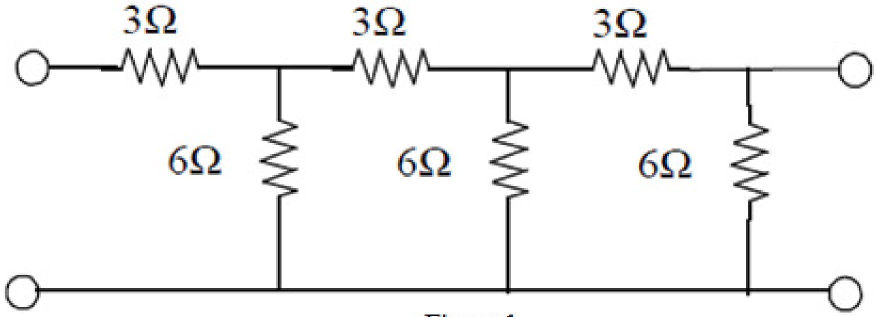

Figure 1

6. a) Determine the Foster's first form after synthesizing the RL driving point impedance function. Z(S) = [(s+1) (s+3)] / [(S +2) (S +4)] (8M)
   b) Synthesize the LC driving point impedance function (8M)

$$Z(s) = \frac{10s + 12}{4s^2 + s + 8}$$

7. a) Determine the Fourier series of the repetitive waveform shown in Figure 2 up to the 7^{th} harmonic when the repetition time T=25π ms. (8M)

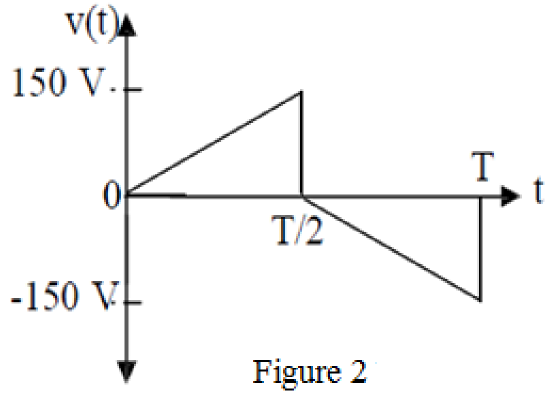

Figure 2

   b) Obtain the exponential Fourier series for the periodic function in Figure 3, and plot the amplitude and phase spectra. (8M)

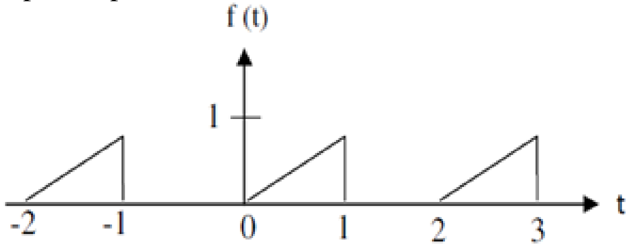

Figure 3