Code No: R22029 **R10** SET - 1

II B. Tech II Semester Supplementary Examinations, November-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) Obtain the relation between line and phase voltages and currents in star connection as well as delta connection.
   b) In a 3ϕ balanced delta connected load of (4+j8) Ω is connected across the 415V supply. Determine phase currents, line currents, real and reactive power absorbed by the load.

2. a) Determine the line currents for the unbalanced delta connected load when supply voltage is of the given Figure 1. Assume the phase sequence RYB.

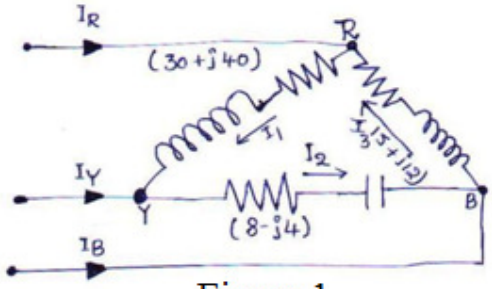

Figure 1

   b) Describe the effect of load power factor on watt meter readings in two watt meter method.

3. a) Find the time constant for the network shown in Figure 2. Also find the expression for the currents i_1 and i_2 as the function of time *t*.

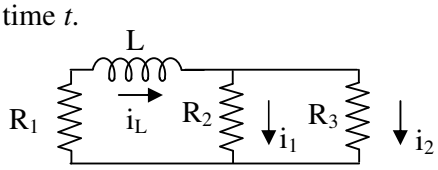

Figure 2

   b) In below Figure 3, the switch *K* is thrown from position a to *b* at time $t = 0$. Just before the switch is thrown, the initial conditions are $i_L(0^-) = 2$ A. and $v_c(0^-) = 2$ V. Find the current i (*t*) after the switching action.

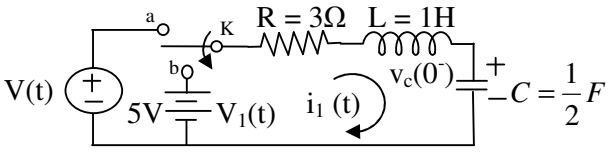

Figure 3
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4. For R-C series circuit shown in below Figure 4, the capacitor has a initial charge of 5μC. The switch is closed at t = 0. Determine the transient current and also find the time taken by the voltage across the resistor to increase from 2 to 5V.

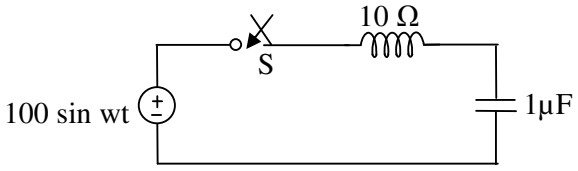

Figure 4

5. Obtain the z – parameters for the circuit Show in Fig. Draw the z – parameter equivalent model and find whether the network is (*a*) reciprocal (b) symmetrical.

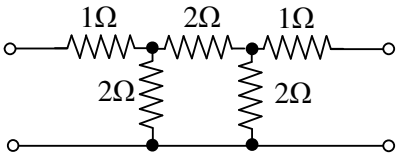

Figure 5

6. a) State and explain the positive real function

   b) Synthesize the L –C immittance function Z (s) = $\frac{2(s^2+1)\,(s^2+9)}{s\,(s^2+4)}$ in cause forms

7. a) Find the trigonometric Fourier series for the waveform shown in Figure 6.

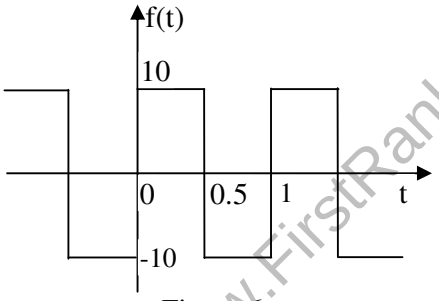

Figure 6

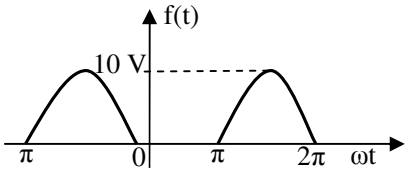

Figure 7

b) Find the trigonometric Fourier series for the half –wave rectified sine wave shown in below Figure 7. Hence find the exponential Fourier series and plot magnitude and phase line spectra. Take V =10.

8. Find the Fourier transform of the sine pulse shown in Figure 8. And sketch the amplitude and phase spectra. This voltage is applied to a series RL circuit with R= 1 Ω an L= 1.0 H. determine the amplitude and phase spectra for the resulting current i(t).

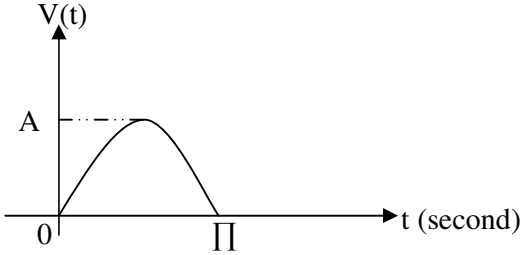

Figure 8