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Roll No .....

EC-305 (GS)

B.E. III Semester Examination, June 2020

Grading System (GS)

Network Analysis

Time : Three Hours

Maximum Marks : 70

Note: i) Attempt any five questions.
ii) All questions carry equal marks.

1. Explain in detail the following :
   i) Double tuned circuit
   ii) Single tuned air core transformer.

2. A voltage source V_1 whose internal resistance is R_1 delivers power to a load R_2+jX_2 in which X_2 is fixed but R_2 is variable. Find the value of R_2 at which the power delivered to the load is a maximum.

3. Two coupled coils have self inductances L_1=10mH and L_2=20 mH. The coefficient of coupling is 0.75 in air. Find voltage induced in the second coil and flux of the first coil provided second coil has 500 turns and circuit current is given by i_1=2sin 314t amps.

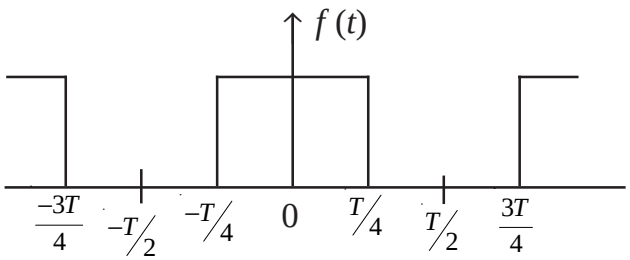
4. In a RLC series circuit, determine the expression for the resonant frequency and expressions for half power frequencies and bandwidth.

5. With the help of an example explain the following for a network graph:
   a) Complete incidence matrix and reduced incidence matrix
   b) Tie-set and Tie-set schedule
   c) Cut-set and Cut-set schedule

6. Explain the following:
   i) Phasor.
   ii) Resonance.
   iii) Vector.

   OR

   Obtain the Fourier series representation of the period waveform shown in figure



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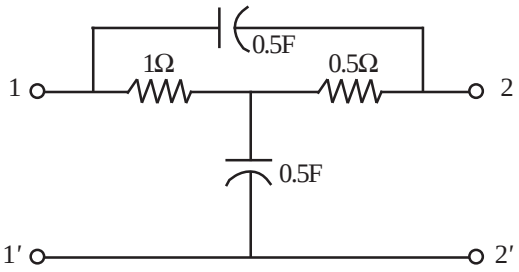
7. Derive equation for decay of current in R-L circuits. Discuss the role of time constant.

OR

a) Explain Z-parameters. How will you convert Z-parameters in to Y-parameters.
b) Determine the ABCD (transmission) parameters for the network shown in figure.



8. a) Obtain the relationship between 'h' and 'y' parameters of a two-port network.
b) Determine the two-port network that is represented by the following Z-parameters:

$$[Z] = \begin{bmatrix} 6+j3 & 5-j2 \\ 5-j2 & 8-j \end{bmatrix} \Omega$$

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