

II B. Tech I Semester Supplementary Examinations, September - 2021
ELECTRICAL CIRCUIT ANALYSIS - II
 (Electrical and Electronics Engineering)

Time: 3 hours

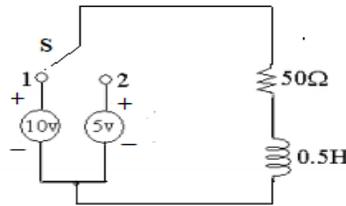
Max. Marks: 75

Answer any **FIVE** Questions each Question from each unit
 All Questions carry **Equal** Marks

- 1 Three identical coils each having a resistance of $20\ \Omega$ and a reactance of $20\ \Omega$ [15M]
 are connected in i) Star ii) Delta across 440 V, 3 phase supply. Calculate for
 each case, line current and reading in each of the wattmeters connected to
 measure power.

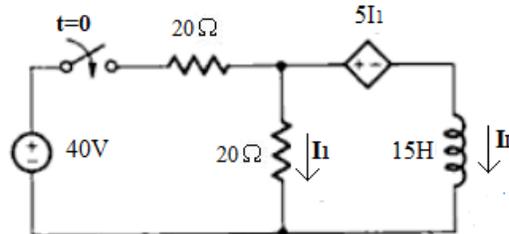
Or

- 2 a) Derive the expressions between phase and line voltages, and phase and line [8M]
 currents for balanced 3-phase delta connected loads.
 b) A symmetrical three phase 400V system supplies a balanced delta connected [7M]
 load. The current in each branch circuit is 20A and phase angle 40° (lag)
 calculate the line current and total power
 3 In the figure shown below, the switch is close at position 1 at $t = 0$ and at $t = 0.5$ [15M]
 m sec, the switch is moved to position 2. Find the expression for the current in
 both the conditions and sketch the transient?



Or

- 4 a) For the circuit shown below, find and sketch $I_L(t)$ [8M]

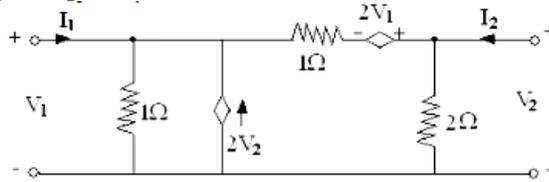


- b) A $2\ \mu\text{F}$ capacitor is charged so that it has 100 V across its terminals. The [7M]
 terminals are suddenly connected through a negligible resistance to the terminals
 of a $4\ \mu\text{F}$ capacitor having no initial charge.
 a) What are the final steady state voltages across each capacitor?
 b) What are the initial stored energies of each capacitor?
 c) What are the final steady state stored energies of each capacitor?
 5 a) Write the equations for Z and Y parameters. A two port network has the [8M]
 following parameters: $Z_{11} = 4\ \Omega$, $Z_{12} = 1\ \Omega$, $Z_{21} = 3\ \Omega$ and $Z_{22} = 3\ \Omega$. Calculate
 short circuit parameters.
 b) The Voltages at the two ports of a two-port network are represented as $V_1 = 5$ [7M]
 $I_1 + 5 I_2$, $V_2 = I_1 + 2 I_2$. If a load impedance of $3\angle 0^\circ$ ohm is connected at the
 output port, determine the input impedance.

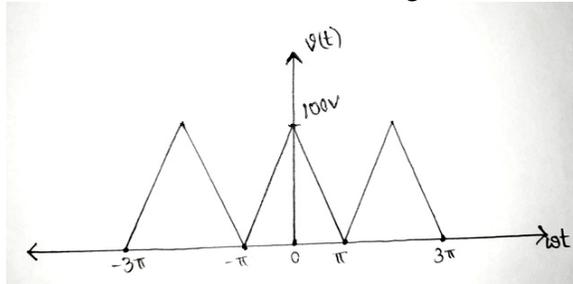
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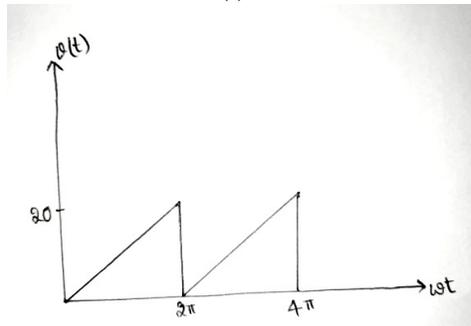
- 6 a) The Z-parameters for a two port network are given as $Z_{11}=25\Omega$, $Z_{12} = Z_{21}=20\Omega$, $Z_{22}=50\Omega$. Find the equivalent T-network. [8M]
 b) Determine the Hybrid parameters for the Two Port network shown in figure. [7M]



- 7 a) Find exponential Fourier Series for the waveform given below. [8M]

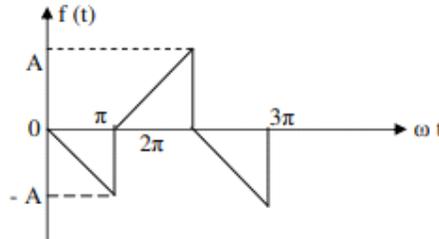


- b) Find Fourier series for the waveform v(t) [7M]

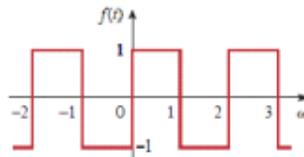


Or

- 8 a) Explain about the trigonometric form of Fourier series. [8M]
 b) Determine the trigonometric form of Fourier series for the following wave form. [7M]



- 9 a) Find the Fourier series of the square wave shown in following Fig. Plot the amplitude and phase spectra [8M]

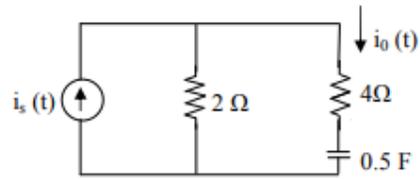


- b) Write the properties of Fourier transform and explain. [7M]

Or



- 10 a) Using the Fourier transform method in Figure, find $i_o(t)$, when $i_s(t) = 10 \sin 2t$ A. [8M]



- b) Determine the Fourier transform of the rectangular function shown in Figure [7M]

