Code No: R1621021 **R16** SET - 1

II B. Tech I Semester Supplementary Examinations, May - 2019
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 **FOUR** Questions from **Part-B**

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PART –A

1. a) State the two ways in which phases of a three phase supply can be interconnected to reduce the number of conductors used compared with three single-phase systems (2M)
   b) Write the differences between balanced and unbalanced 3-phase systems (3M)
   c) Write the behavior of inductor and capacitor when they are suddenly connected across DC supply. (2M)
   d) Write the condition for symmetry and reciprocity with reference to y and h-parameters? (2M)
   e) What is a positive real function? (2M)
   f) List any three properties of Fourier Transform? (3M)

PART –B

2. a) Explain the advantages of polyphase system over single phase system (7M)
   b) Each phase of a balanced star-connected load consists of R = 10 ohm and C = 10 μF. Calculate the line currents and total real and reactive powers when a symmetrical 415 V, 50 Hz, three-phase supply is applied to it. (7M)
3. a) A three-phase, three-wire, ABC system, with line voltage $V_{BC} = 311.1\angle 0^0$ V has line currents $I_A = 61.5 \angle 116.6^0$ A, $I_B = 61.2 \angle -48^0$ A and $I_C = 16.1\angle 218^0$ Amp. Find the readings of watt meters in lines i) A and B, ii) B and C, and iii) A and C (7M)
   b) A balanced 3- phase, 3-wire 50 Hz, 100 V supply is given to a load consisting of three impedances (1+j1), (1+j2), (3+j4) ohms connected in star. Compute the line and phase voltages and also currents. (7M)

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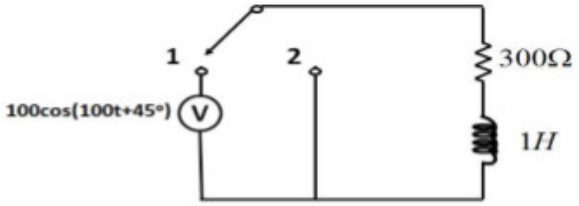
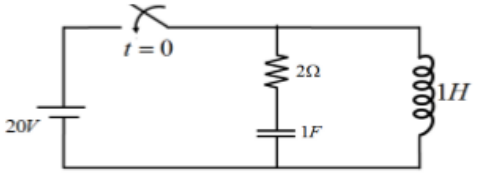
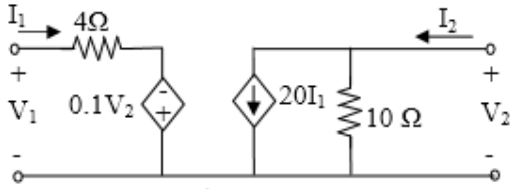
4. a) For RL circuit shown in Fig. is operating in the sinusoidal steady state with the switch in position 1. The switch is moved to position 2. When the voltage source is v=100cos(100t+45°). Obtain the expression for current. (7M)



b) For the circuit shown in Fig, determine the current delivered by the source when the switch is closed at t=0, using Laplace transformation. Assume there is no initial charge on the capacitor and no initial current though the inductor (7M)



5. a) Find the y-parameters of the network shown in below Figure (9M)

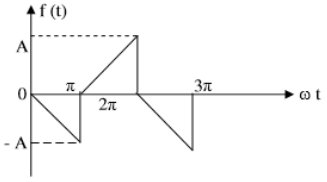


b) Determine h-parameters of a two-port network whose z parameters are Z_{11}= Z_{22}=6 ohms and Z_{12}=Z_{21}=4 ohms. (5M)

6. a) Obtain the Cauer form I realization of F(S)=2(S+1)(S+3)/S(S+2) (7M)

b) List the properties of positive real function and test whether the following function is Positive real or not? (7M)
F(S)=S(S^2+6)/(S^2+3)^2

7. a) Determine the trigonometric form of Fourier series for the following wave form. (7M)



b) Derive the expression for average power of complex wave which is expressed in terms of Fourier series. (7M)

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