Department of Electrical Engineering
Final Assignment
Date: 22/06/2020

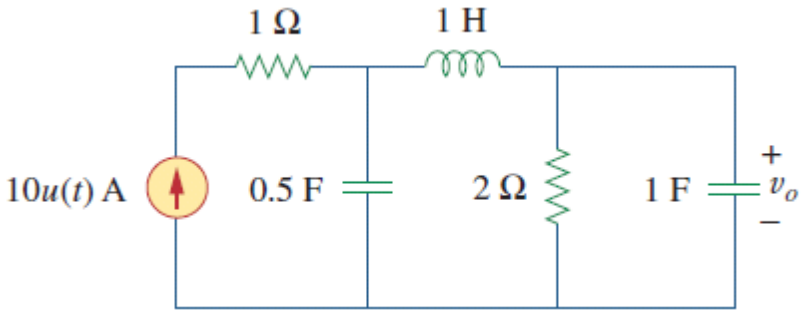
Course Details

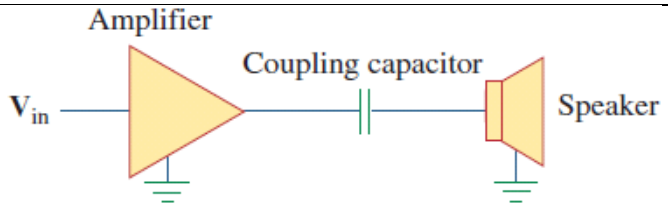
Course Title: Electrical Network Analysis **Module:** 4th
Instructor: _____ **Total Marks:** 50

Student Details

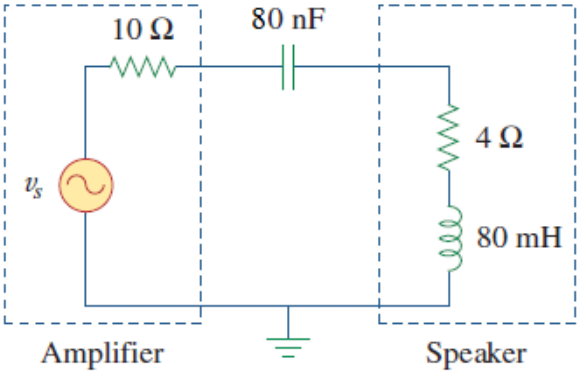
Name: _____ **Student ID:** _____

Student Signature: _____

Q1.		Assume that a 2000-kW turbine-generator of 0.85 power factor operates at the rated load. An additional load of 300 kW at 0.8 power factor is added. What kVAR of capacitors is required to operate the turbine generator but keep it from being overloaded?	Marks 10 CLO 03
Q2.		A balanced *abc* sequence, one line voltage of a balanced Y-connected source is $V_{AB} = 180\angle -20^o$ V. If the source is connected to a Δ-connected load of $20\angle 40^o$ Ω, find the phase and line currents.	Marks 10 CLO 02
Q3.		Consider a load with value of, $V_{rms} = 110\angle 85^o$ V , $I_{rms} = 0.4\angle 15^o$ A. Calculate the following: a) The complex and apparent powers b) The real and reactive powers, and c) The power factor and the load impedance.	Marks 10 CLO 01
Q4.		Apply Laplace transform and calculate the output voltage $v_o(t)$ in the circuit of figure below:  **Figure**	Marks 10 CLO 01
Q5.		For the circuit given in figure below, the speaker works as load while the amplifier and the capacitor act as the source. To block dc current from an amplifier, a coupling capacitor of 80 nF is used (see figures below). Calculate the following: a) At what frequency is maximum power transfer to the speaker? b) If Vs = 5 V_{rms}, how much power is delivered to the speaker at that	Marks 10 CLO 03


Amplifier
Coupling capacitor
V_{in}
Speaker

(a)


10 Ω
80 nF
4 Ω
v_s
80 mH
Amplifier
Speaker

Figure