DR. BABASAHEB AMBEDKAR TECHNOLOGICAL UNIVERSITY, LONERE – RAIGAD -402 103

Winter Semester Examination – December - 2019

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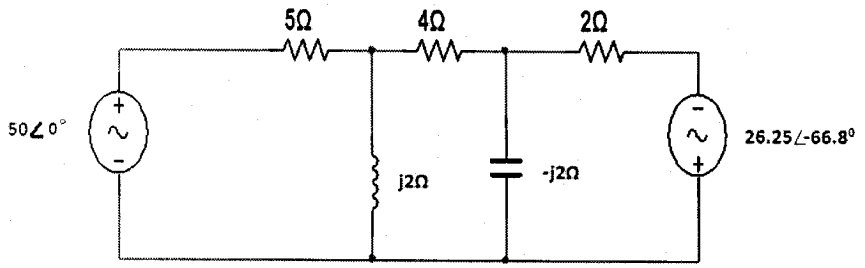
Branch: Electronics & Telecommunication Engineering **Sem.:- III**
Subject with Subject Code:- Network Analysis (BTEXC304) **Marks: 60**
Date:- 17/12/2019 **Time:- 3 Hr.**

Instructions to the Students

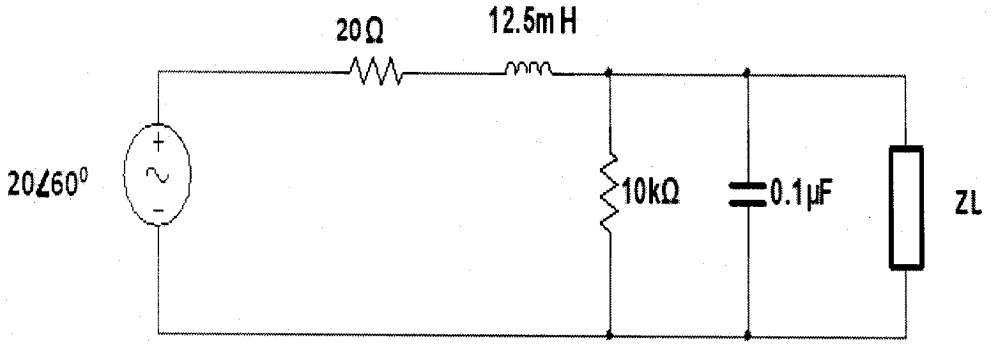
1. Each question carries 12 marks.
2. Attempt **any five** questions of the following.
3. Illustrate your answers with neat sketches, diagram etc., wherever necessary.
4. If some part or parameter is noticed to be missing, you may appropriately assume it and should mention it clearly

(Marks)

Q.1. a) State Kirchoff's laws for electric circuit. Also Find the current flowing through 4 Ω resistor using source transformation and shifting in following circuit. (06)

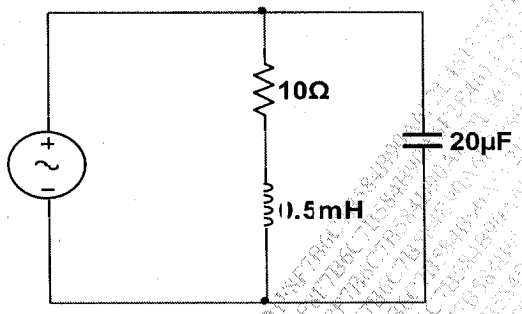


b) Find the value of load impedance 'Z_L' for which power transfer is maximum in following circuit for w =400 rad/s & also value of max power transferred to the load. (06)



Q.2. a) Define and derive an expression for bandwidth of series resonant circuit. (06)

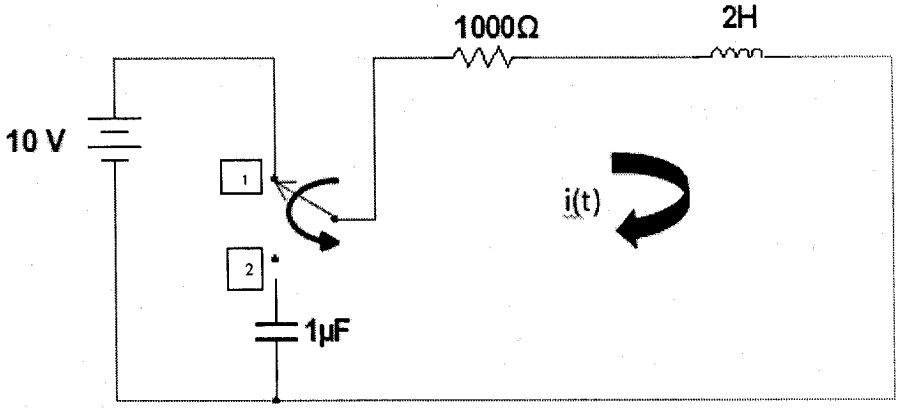
b) For the network shown below, (06)
where R_L=10 Ω, L= 0.5H, C= 20uF, determine its resonant frequency, minimum admittance, quality factor, bandwidth, upper and lower half power frequencies.



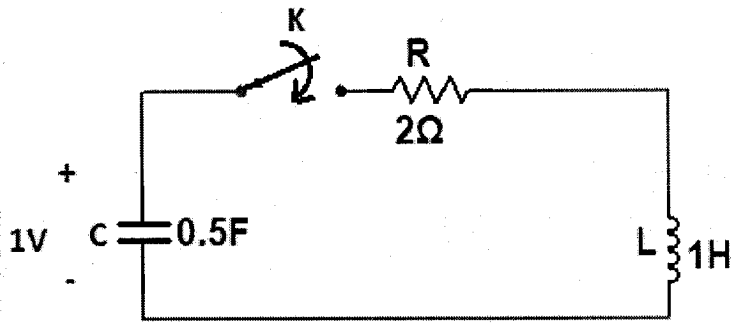
Q.3. a) For symmetrical T network, derive an expressions series and shunt arm impedances in terms of characteristic impedance and propagation constant. (06)

b) Design a constant –k LPF to be terminated in 600 Ω, having cut off frequency 2KHz. Find characteristic impedance & Phase constant at 1.5KHz. (06)

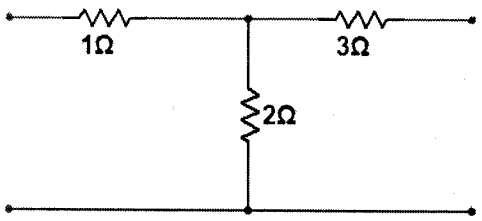
Q.4. a) In the circuit shown in figure below, the switch is changed from 1 to 2 at t=0, Determine initial condition of i, di/dt, d^2i/dt^2 at t = 0+ (06)



b) For series RLC circuit (as shown in figure below), the capacitor is initially charged to 1volt, find the current i(t), when switch k is closed at t= 0 Using Laplace transform. (06)



Q.5. a) For network given below, determine its h parameters and verify condition for reciprocity. (06)



b) Find Z parameters in terms of Y and h parameter for two port network. (06)

Q.6. a) Derive an expression for Zo for a transmission line terminated in Zo. (06)

b) A 50Ω lossless transmission line of length 1.37 λ which is terminating into load of (200 + j80) Ω. Using Smith Chart find the input impedance of line, reflection coefficient in amplitude and phase and standing wave ratio. (06)

Paper End