B.Tech Sem – IV (2007 Course) (Electrical Engg.) : WINTER - 2018

SUBJECT: NETWORK ANALYSIS

Day: Thursday
Date: 15/11/2018

Time: 02.30 PM TO 05.30 PM
Max Marks. 80

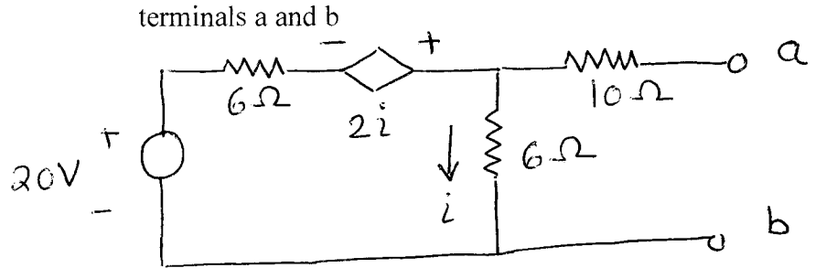
W-2018-2755

N.B.

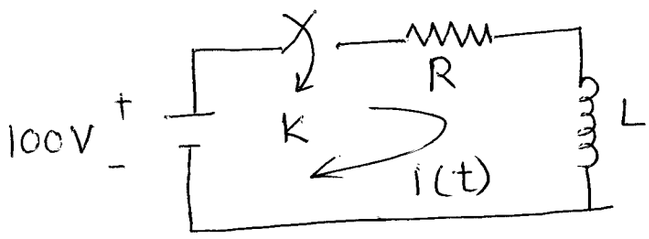
1) **Q. No. 1** & **Q. No. 5** is **COMPULSORY**. Out of remaining questions solve any **TWO** in each.
2) Figures to the right indicate **FULL** marks.
3) Both sections should be written in **SEPARATE** answer books.

SECTION – I

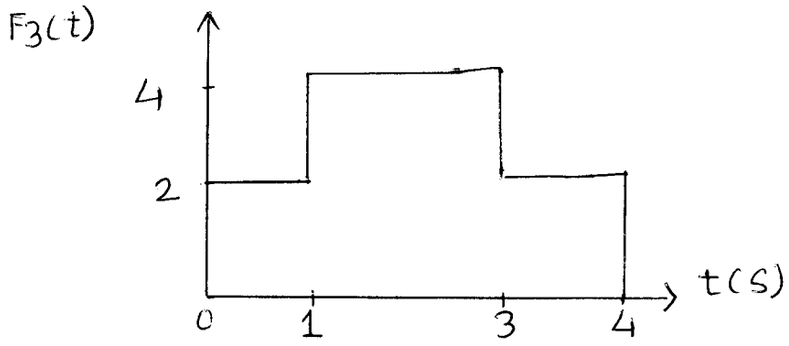
Q.1 a) Find the Thevenin's equivalent for the circuit shown as follow with respect to terminals a and b **(05)**



b) In the network for figure shown below, at t = 0, switch 'k' is closed. Find the values of I, di/dt and d^2i/dt^2 at $t = 0^+$ for element values as follows; V = 100V, R = 1000Ω and L = 1 H **(05)**

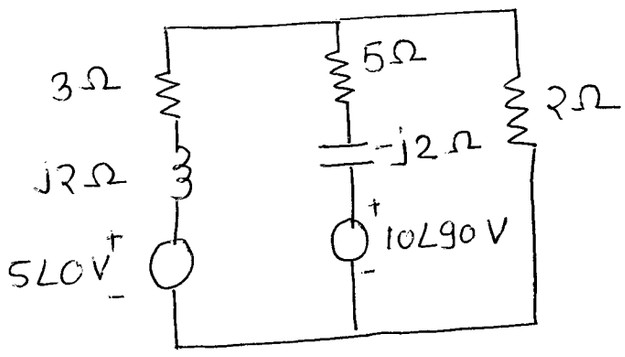


c) Find Laplace transform of following waveform **(04)**



Q.2 a) State and explain reciprocity Theorem **(06)**

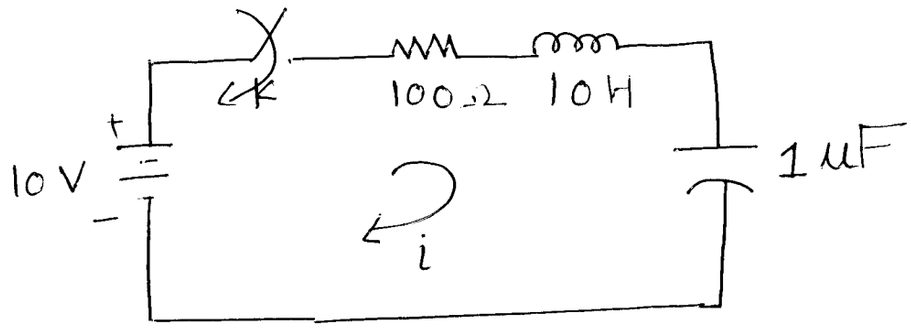
b) Calculate current through 2 Ω resistance by using Superposition theorem **(07)**



P.T.O.

Q.3 **a)** In circuit Resistance R and inductance L is connected in series. With supply voltage V. Obtain expression for resulting Current i (t) when switch is closed at t = 0. **(06)**

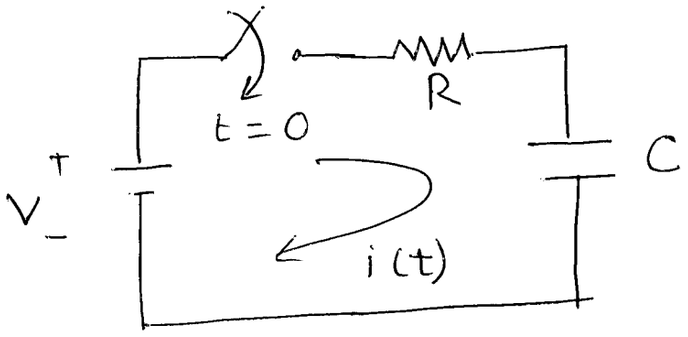
b) In the circuit shown below, find $di(0^+) / dt$ of switch is closed at time t = 0 **(07)**



Q.4 **a)** State and explain Laplace Transform of following function **(06)**

i) Unit step function
ii) Unit Ramp function
iii) Unit impulse function

b) For RC circuit shown in fig. Obtain expression for Current i(t) at t = 0 **(07)**



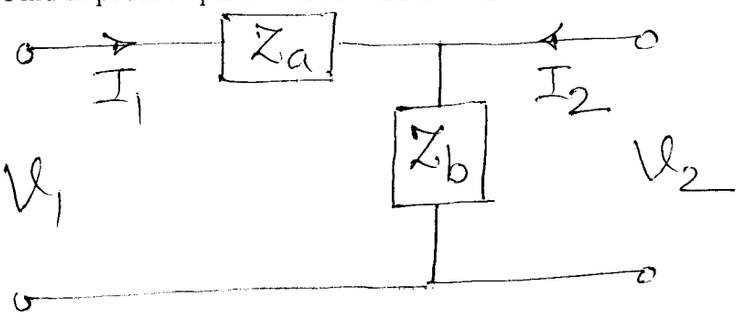
SECTION – II

Q.5 **a)** Express transmission parameters in terms of hybrid parameters. **(05)**

b) What is the significance of poles and Zeros in concern with stability? **(04)**

c) Define Even and odd symmetries of functions in Fourier analysis. **(05)**

Q.6 **a)** Find impedance parameters for the network shown. **(07)**

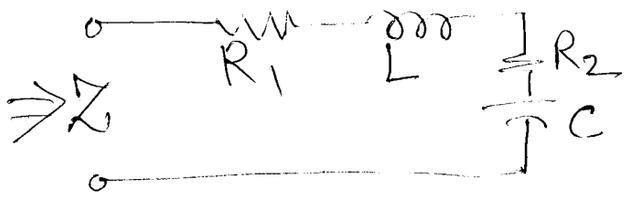


b) Derive the condition of symmetry and Reciprocity in Transmission parameters. **(06)**

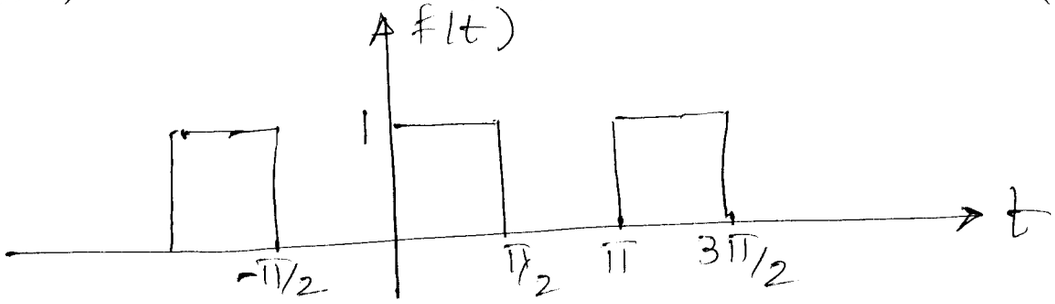
Q.7 **a)** Define the following **(06)**

i) Voltage ratio transfer function
ii) Current ratio transfer function
iii) Transfer Impedance
iv) Transfer admittance

b) Find Driving point impedance of the network shown **(07)**



Q.8 **a)** Determine Fourier series for the waveform shown **(07)**



b) State & explain the trigonometric form of Fourier series. **(06)**

* * *