

**B.TECH SEM - III (2007 COURSE) (E & TC ENGG.) : SUMMER -
2018**

SUBJECT: NETWORK ANALYSIS

Day: **Tuesday**
Date: **22/05/2018**

S-2018-2596

Time: **02.30 PM TO 05.30 PM**
Max Marks.80

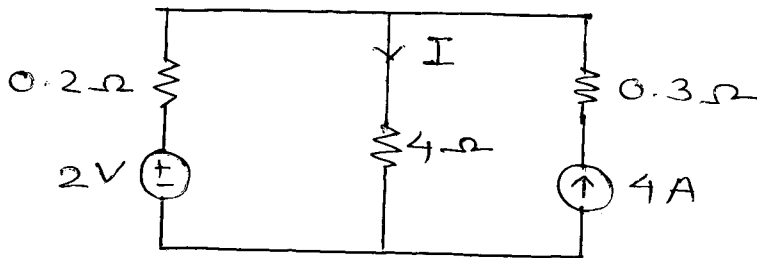
N.B.:

- 1) **Q.No.1 and Q.No.5 are COMPULSORY.** Out of the remaining questions attempt **ANY TWO** questions from each section.
- 2) Answers to both the sections should be written in the **SEPARATE** answer books.
- 3) Figures to the right indicate **FULL** marks.
- 4) Use of non-programmable **CALCULATOR** is allowed.
- 5) Assume suitable data if necessary.

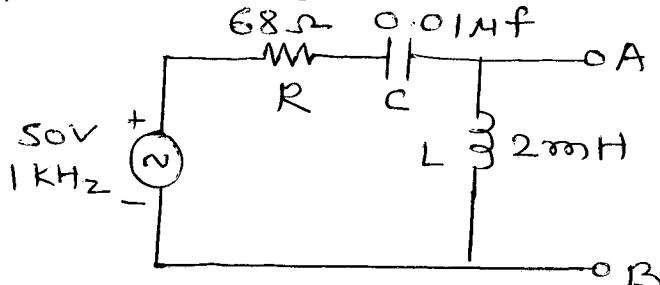
SECTION-I

- Q.1** a) State and prove superposition theorem. **(05)**
 b) Draw and justify reactance and impedance curves for series RLC circuit. **(05)**
 c) Compare transient response and steady state response. **(04)**

- Q.2** a) Find current through 4Ω using superposition for following network. **(06)**



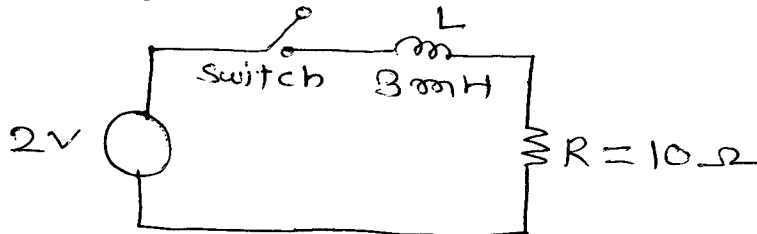
- b) Find Thevenin's equivalent across A-B terminals. **(07)**



- Q.3** a) For series RLC circuit find ω_0 , Q_0 , ω_1 , ω_2 and $\Delta\omega$ when $R=100\Omega$, $L=100\text{mH}$, $C=10\text{nF}$ with applied voltage = 100Vrms . **(07)**

- b) Prove that $x_L = x_C * [1 - \frac{1}{Q^2}]$ for anti resonant circuit. **(06)**

- Q.4** a) For the given network switch will be closed at $t=0^+$ instant find $\frac{di}{dt}$ and $\frac{d^2i}{dt^2}$. **(07)**



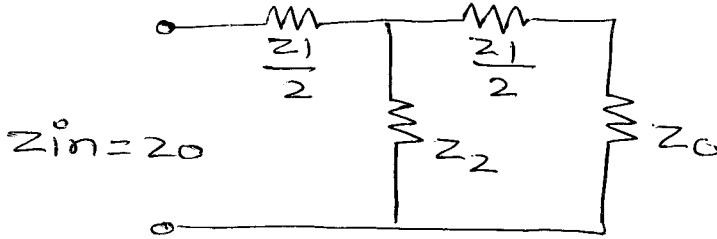
- b) Find step input response of series RLC circuit. **(06)**

P.T.O.

SECTION-II

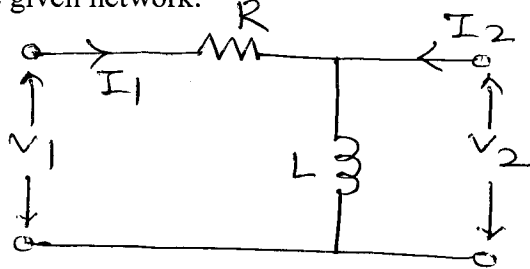
- Q.5** a) Which are the design formulas of low pass filter? (05)
 b) What is pole and zeroes in network function? (04)
 c) Explain transmission parameters in detail. (05)

- Q.6** a) When $z_1=jx_1$ and $z_2=jx_2$ find z_0 for the following network. (06)

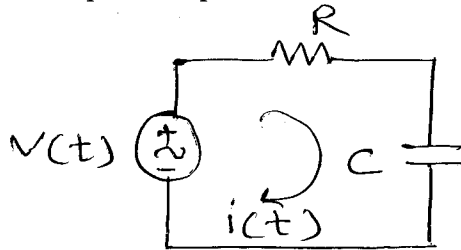


- b) Prove that when z_0 is real, $\alpha = 0\text{dB}$. (07)

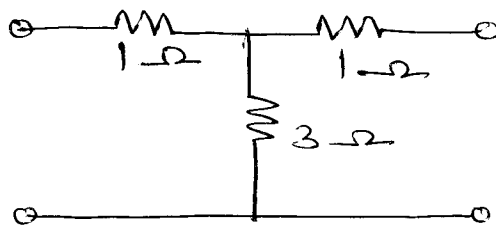
- Q.7** a) Find driving point impedance function and voltage ratio transfer function for the given network. (06)



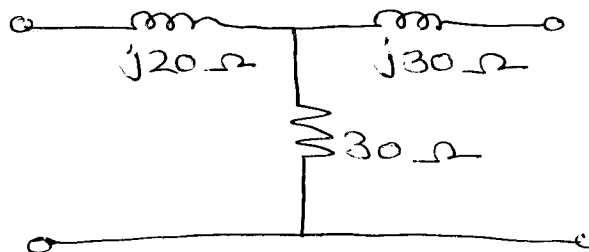
- b) Find impulse response of the shown network. (07)



- Q.8** a) When two identical sections of the following network are connected in series obtain Z parameters of the combination. (06)



- b) Determine Z and Y parameters of the following parameters. (07)



* * * * *