

B.TECH SEM - III (2007 COURSE) (E & TC ENGG.) : WINTER - 2017

SUBJECT: NETWORK ANALYSIS

Day : **Monday**
Date : **15/01/2018**

W-2017-2391

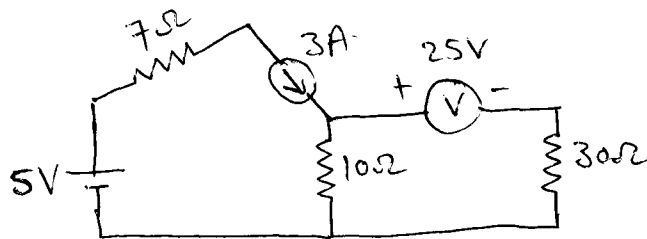
Time : **10.00 AM TO 01.00 PM**
Max. Marks: **80**

N.B.

- 1) **Q. No1 and Q. No.5 are COMPULSORY.** Out of remaining attempt **ANY TWO** questions from each section.
- 2) Figures to the right indicate **FULL** marks.
- 3) Use of non-programmable pocket calculator is allowed.
- 4) Assume suitable data if necessary.

SECTION-I

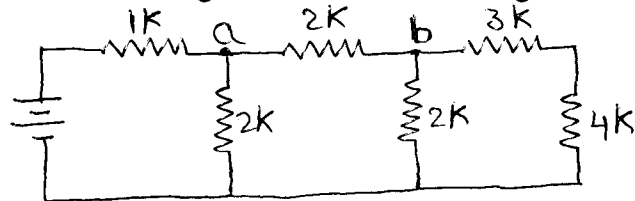
- Q.1 a)** For the network find voltage across a-b terminals. **(05)**



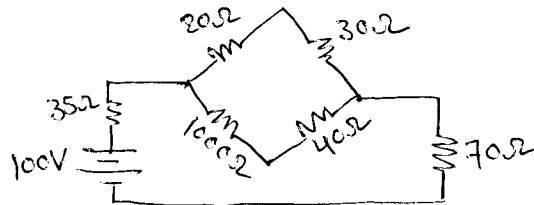
- b)** Derive impedance of practical parallel RLC circuit at resonance condition. **(05)**

- c)** What is the difference between steady state and transient response? **(04)**

- Q.2 a)** Find node voltages at a and b nodes using nodal analysis. **(07)**



- b)** Find out loop equations for the given figure. **(06)**

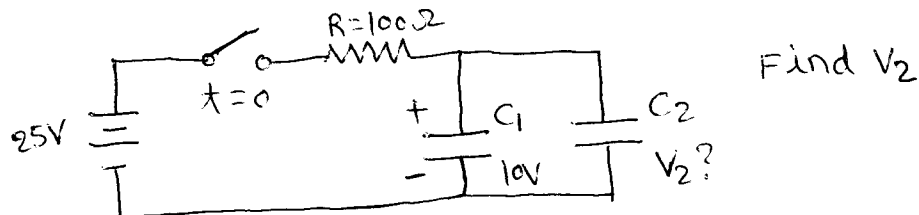


- Q.3 a)** For series RLC circuit. $R = 10\Omega$, $C = 0.1\mu\text{f}$ and $L = 75\text{mH}$. Find resonance frequency and quality factor. **(07)**

- b)** What is the relation between selectivity and bandwidth for series resonance circuit? **(06)**

- Q.4 a)** Derive unit step response of series RC circuit. **(06)**

- b)** For the given circuit, at $t = 0^+$ instant switch is closed where $R = 100\Omega$, $C_1 = 0.1\mu\text{F}$ and $C_2 = 10\text{mF}$ where C_1 is initially charged with 10V. **(07)**



P.T.O.

SECTION-II

Q.5 a) What are the following terms? **(05)**
i) Characteristic impedance
ii) Propagation constant

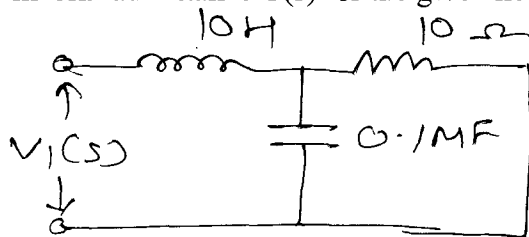
b) Define poles and zeros in general for reactive network. **(05)**

c) What are the open circuit impedance parameters? **(04)**

Q.6 a) Design a constant K low pass Π section filter to be terminated in 752Ω resistance having cut off frequency 2.3kHz . **(07)**

b) What are the image and iterative impedances for symmetrical network? **(06)**

Q.7 a) Find Transform admittance $Y(s)$ for the given network. **(07)**



b) What are necessary conditions for driving point function? **(06)**

Q.8 a) Find H parameters in terms of ABCD and Z parameters. **(07)**

b) What is parallel interconnection in two port network? **(06)**

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