

Total No. of Questions : 8]

PB3608

SEAT No. :

[Total No. of Pages : 3

[6261]-13

S.E. (Electrical Engineering)

NETWORK ANALYSIS

(2019 Pattern) (Semester - IV) (203147)

Time : 2½ Hours]

[Max. Marks : 70

Instructions to the candidates:

- 1) Answer Q1 or Q2, Q3 or Q4, Q5 or Q6, Q7 or Q8.
- 2) Neat diagrams must be drawn wherever necessary.
- 3) Figures to the right indicates full marks.
- 4) Use of Calculator is allowed.
- 5) Assume Suitable data, if necessary.

Q1) a) What is the significance of Initial Conditions? Write a note on initial conditions in basic circuits. [8]

b) Find current equation when switch is open at $t = 0$. Refer fig. no. 1. [9]

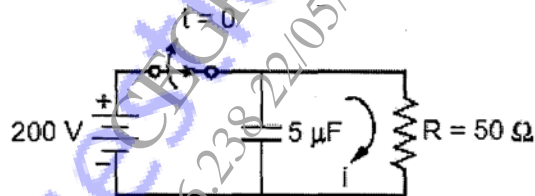


Fig. No. 1

OR

Q2) a) What is time constant? Explain time constant in case of series R-L and series R-C circuit. [8]

b) The switch is moved from position 1 to 2 at $t = 0$. Find the voltage $v_R(t)$ and $v_C(t)$ for $t \geq 0$. Refer fig. no. 2. [9]

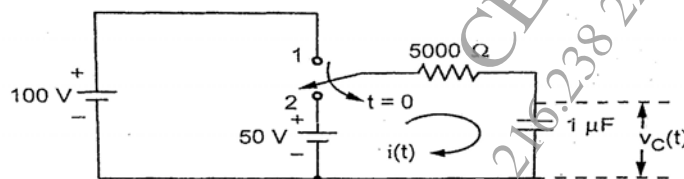


Fig. No. 2

P.T.O.

- Q3)** a) Explain the properties of Laplace Transform. [6]
 b) Derive the relationship between unit step function and unit ramp function. [6]
 c) Find the Laplace transform of $\cos \omega t$. [6]

OR

- Q4)** a) State ant six properties of Laplace Transform. [6]
 b) Find the Laplace transform of the waveform shown in the fig. 3. [6]

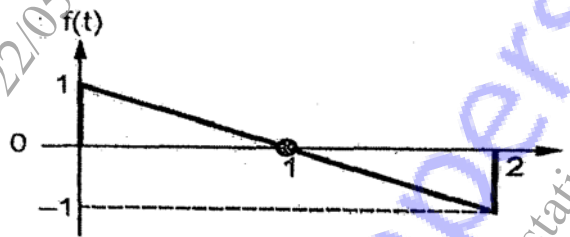


Fig. No. 3

- c) Find the Laplace inverse of $\frac{1}{s(s+4)}$ using convolution integral. [6]

- Q5)** a) Express y-parameters in terms of z-parameters. [8]
 b) Find Y parameters of the network shown in figure no. 4. [9]

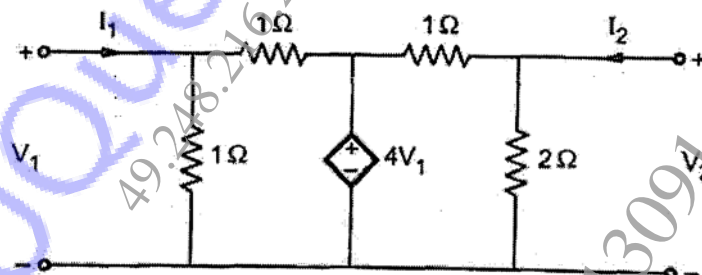


Fig. No. 4

OR

- Q6)** a) What is high pass filter? Derive the expression for the cut-off frequency of prototype low pass filter in terms of L and C. [9]
 b) Design a prototype low pass filter sections, if design impedance $R_0 = 600$ ohm and cut-off frequency $f_c = 2.5$ kHz. [8]

- Q7) a) State and explain all possible network functions of one port network. [9]
- b) Find the network functions $Z_{11}(s)$ and $Z_{21}(s)$ for the network shown in fig. No. 5. [9]

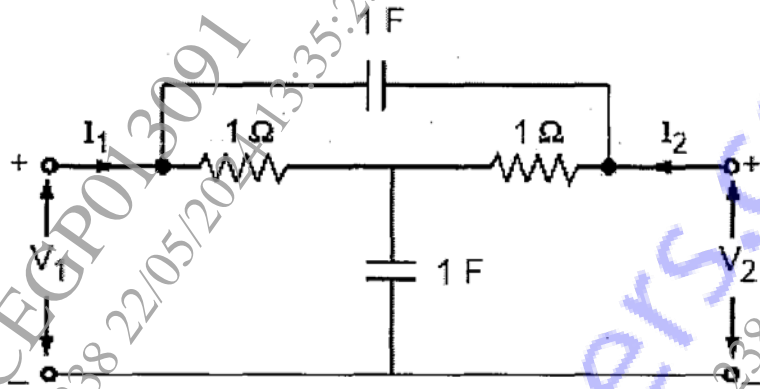


Fig. No. 5

OR

- Q8) a) Explain the significance of poles and zeros. [9]
- b) Define various network functions of a one-port network. [9]

x x x