

5/6/15

Elect - III CBus

QP Code : 4796

Y<sub>3</sub>

EN

(3 Hours)

[Total Marks : 80]

a2zSubjects.com

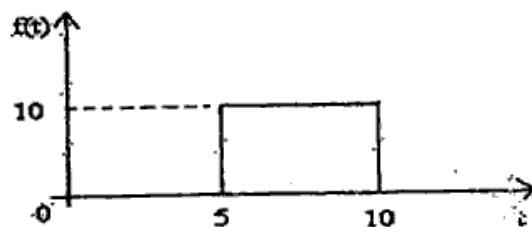
N.B.

- 1) Question No.1 is compulsory.
- 2) Solve any Three questions from question No. 2 To 6.
- 3) Assume suitable data if necessary.

Q1) Solve any Five questions.

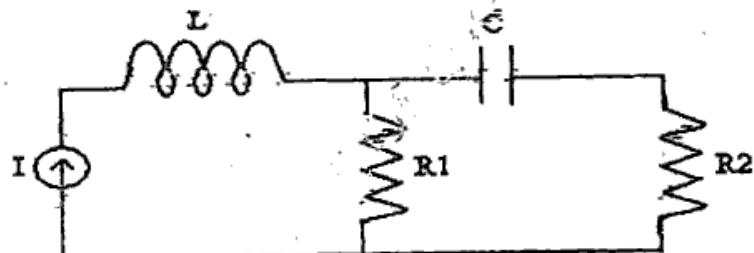
A) Define pole & zero of transfer function & draw P-Z plot for  $V(s) = \frac{3(s+3)}{s^2(s+5)}$ .

B) Find the laplace transform of the waveform shown below,



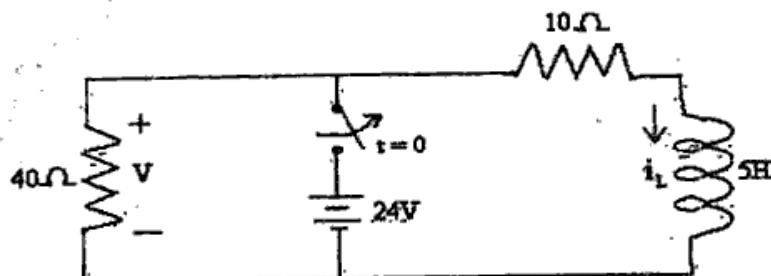
C) State &amp; explain Millman's theorem.

D) Find the dual of the given network,



E) Test whether the following function is Hurwitz polynomial.

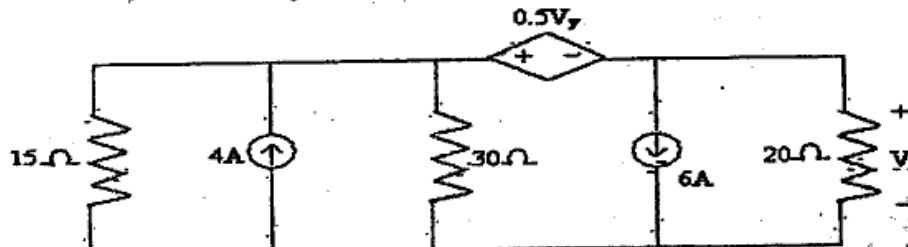
$$F(s) = s^4 + 16s^3 + 86s^2 + 176s + 105.$$

F) Find  $i_t(0^+)$  &  $V(0^+)$  in the circuit shown below, if switch is opened at  $t = 0$ .

Q2)

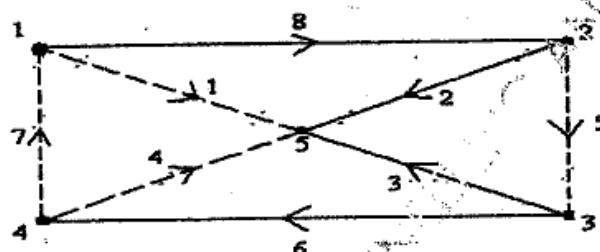
- A) Use Nodal analysis to find  $V_y$  in the circuit shown below,

[10]



- B) Write a incidence matrix, fundamental tieset matrix & fundamental cutset matrix for the graph shown below,

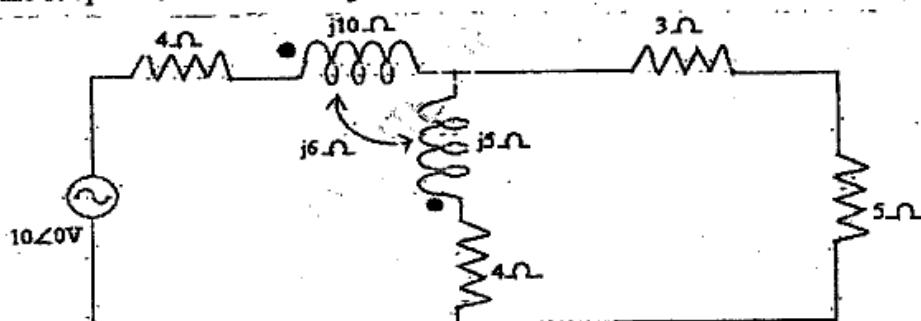
[10]



Q3)

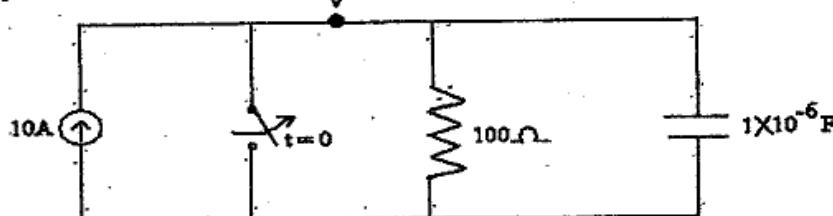
- A) Find the loop currents in the coupled network shown below by mesh analysis.

[10]



- B) In the given circuit switch is opened at  $t = 0$ . Find the value of  $v$ ,  $\frac{dv}{dt}$  &  $\frac{d^2v}{dt^2}$  at  $t = 0^+$ .

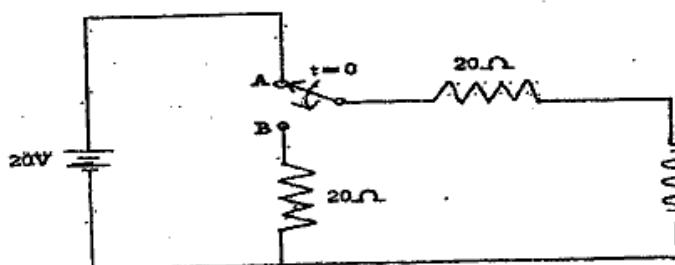
[10]



a2zSubjects.com

Q4)

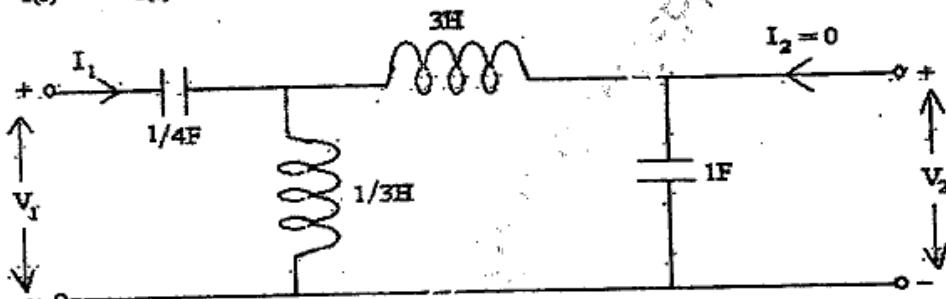
- A) The switch changes its position from "A" to "B" at  $t = 0$ . Determine current  $i(t)$  for  $t > 0$  using Laplace transform. [10]



- B) Explain Z-parameters & prove the condition for symmetry & reciprocity. [10]

Q5)

- A) Find  $\frac{V_1(s)}{I_1(s)}$  &  $\frac{V_2(s)}{V_1(s)}$  for the circuit shown below. [10]

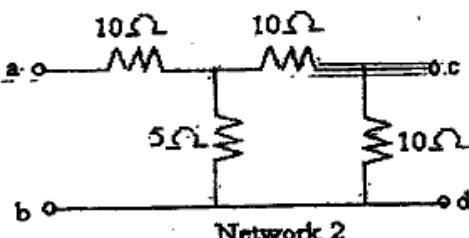
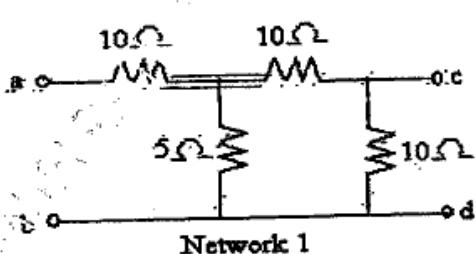


- B) Find the Foster I & Foster II forms of the given impedance function. [10]

$$Z(s) = \frac{3(s+2)(s+4)}{s(s+3)}$$

Q6)

- A) Two networks are shown below; obtain the transmission parameters of the resulting circuit when both circuits are connected in cascade. [12]



- Explain the properties of positive real function. [08]