Printed Pages: 03 **Sub Code: EC304MTU**

Paper ID: | 3 | 0 | 0 | 6 | **Roll No.** | | | | | | | | | | |

B TECH
(SEM III) THEORY EXAMINATION 2017-18
NETWORK ANALYSIS AND SYNTHESIS

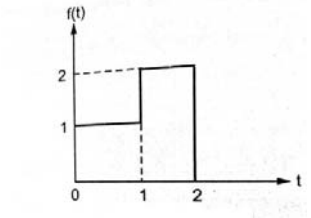
Time: 3Hours ***Max. Marks: 100***

Note: Attempt all Sections.

SECTION A

1. Attempt *all* questions in brief. **2 x 10 = 20**

a) Determine the function for the given waveform-



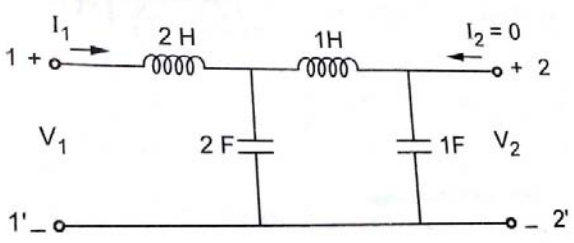
b) Write the properties of LC driving point function?
c) What are the different types of network function?
d) What is the condition for Symmetry of y-parameter and t-parameter?
e) What are the properties of Hurwitz polynomial?
f) Draw the waveform represented by the following function-
$f_1(t)$= (t-1)u(t-1) (ii) $f_2(t)$=tu(t+T)
g) Write down the statement for Maximum power transfer theorem with example?
h) Write the Y-parameter in terms of h-parameter?
i) What do you mean by incidence matrix and reduced incidence matrix?
j) Define network analysis and network synthesis.

SECTION B

2. Attempt any *three* of the following: **10 x 3 = 30**

a) Draw pole-zero plot of the given network function $V(s) = \frac{10s}{(s+3)(s+2)}$ and obtain v(t) with the help of pole-zero plot?

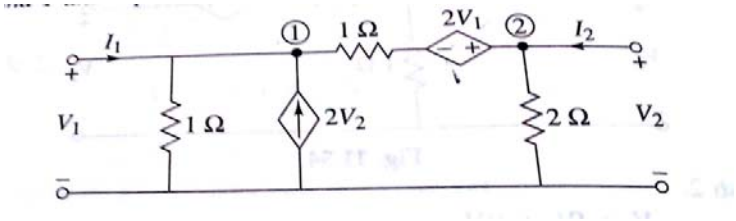
b) Obtain $\frac{V_2}{I_1}$ *and* $\frac{V_2}{V_1}$ for the given network-



c) Obtain the Foster forms for the given network-

$$Z(s)=\frac{(s+1)(s+3)}{(s+2)(s+4)}$$

d) Find the Y-parameter for the network-



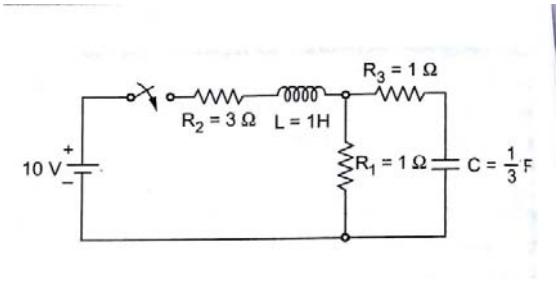
e) Test given function F(s) for positive realness?

$$F(s)=\frac{2s^3+2s^2+3s+2}{s^2+1}$$

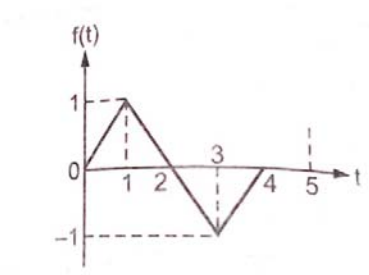
SECTION C

3. Attempt any *one* part of the following: 10 x 1 = 10

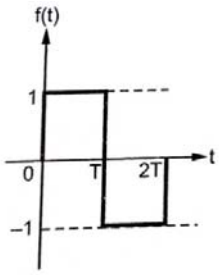
a) Calculate the current flowing through the branch containing resistance R1 in given network using Thevenin theorem



b) Write the expression for the waveform shown in the figure-



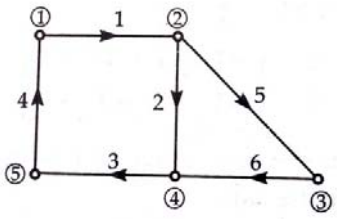
(i)



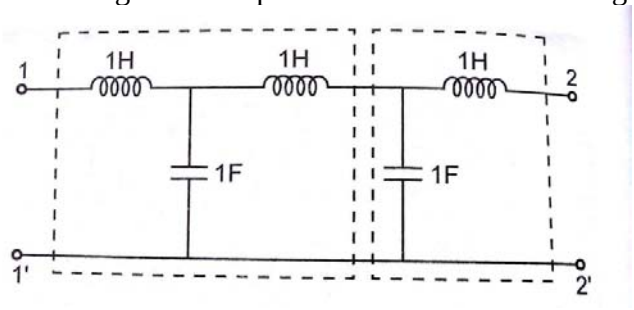
(ii)

4. Attempt any *one* part of the following: 10 x 1 = 10

a) Show the cut-set for the graph for the given network and develop the fundament cut-set matrix-



b) Find the T-parameter using the concept of interconnection of two given network-



5. Attempt any *one* part of the following: 10 x 1 = 10

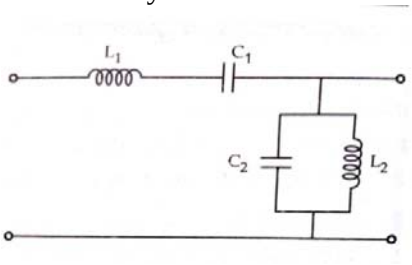
a) What are the properties of Positive real function? Test whether the polynomial is Hurwitz or not? $F(s) = s^3 + 4s^2 + 5s + 20$

b) Realize the Cauer forms of the following impedance function-

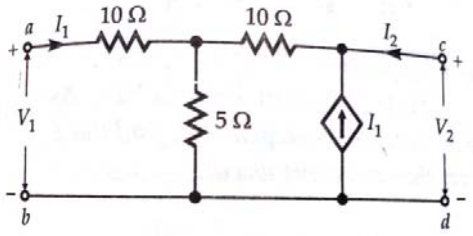
$$Z(s) = \frac{4(s^2+1)(s^2+9)}{s(s^2+4)}$$

6. Attempt any *one* part of the following: 10 x 1 = 10

a) Define the zeros of transmission? Identify the zeros of transmission of the given network-

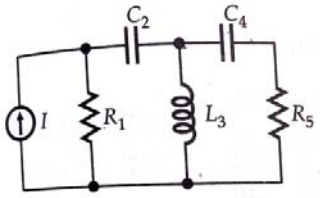


b) Determine the Z-parameter for the given network?

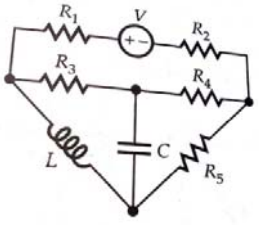


7. Attempt any *one* part of the following: 10 x 1 = 10

a) Draw the dual of the network shown in the figure-



(i)



(ii)

b) Discuss the Non-inverting VCCS and CCVS circuit?