

4E4172

Roll No.

Total No of Pages: **4****4E4172****B. Tech. IV Sem. (Back) Exam., May - 2019****Electrical Engineering
4EE2A Circuit Analysis - II****Time: 3 Hours****Maximum Marks: 80****Min. Passing Marks: 26***Instructions to Candidates:*

Attempt any five questions, selecting one question from each unit. All questions carry equal marks. Schematic diagrams must be shown wherever necessary. Any data you feel missing suitably be assumed and stated clearly.

Units of quantities used/calculated must be stated clearly.

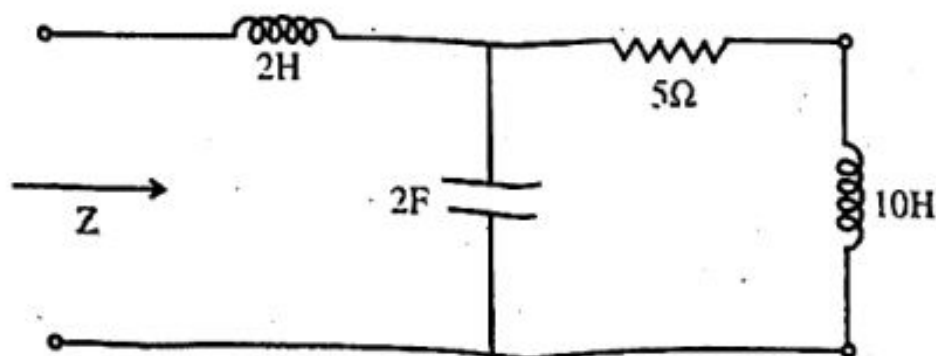
*Use of following supporting material is permitted during examination.
(Mentioned in form No. 205)*

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UNIT- I

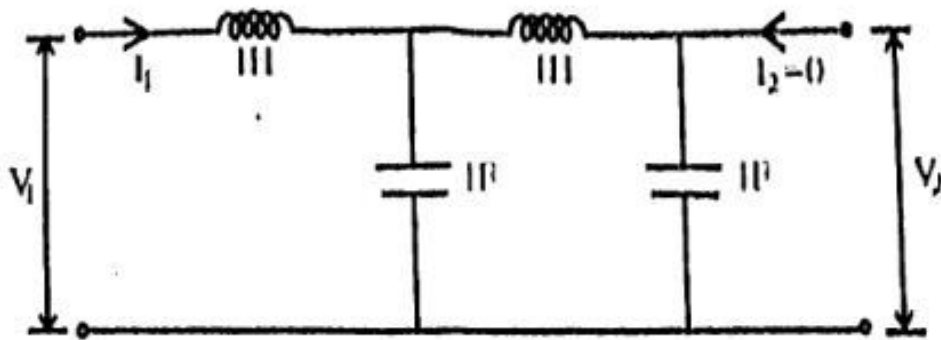
Q.1 (a) Explain the concept of complex frequency. [8]

(b) What is the impedance and admittance functions in the circuit of given figure in complex frequency domain? [8]



OR

- Q.1 (a) What is the driving point and transfer impedance of the network shown in figure? [8]



- (b) Explain the driving point impedance and transfer impedance with suitable circuit diagram. [8]

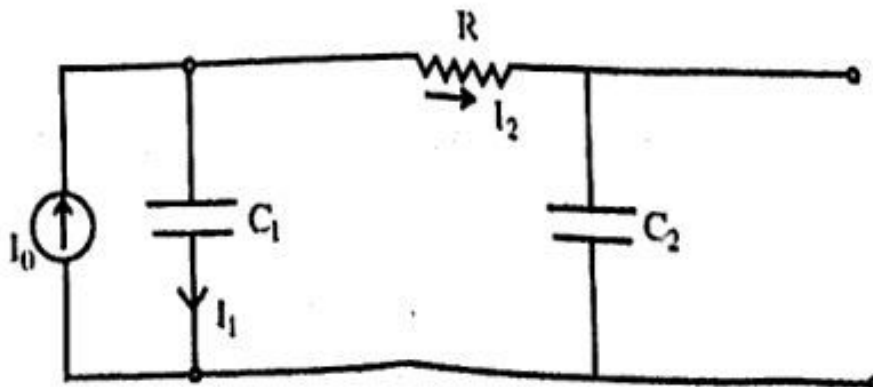
UNIT-II

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- Q.2 (a) Explain the necessary conditions for transfer functions. [8]
- (b) A current transfer function is given by $I(S) = \frac{5S}{(S+2)(S^2+2S+2)}$. Obtain its time domain response. [8]

OR

- Q.2 (a) Explain the restriction on location of poles and zeros in driving point functions. [8]
- (b) Obtain the current transfer ratio of the network shown in figure. [8]



UNIT- III

Q.3 (a) A function is given by -

[8]

$$z(s) = \frac{s^3 + 5s^2 + 9s + 3}{s^3 + 4s^2 + 7s + 9}$$

Find the positive realness of the functions.

(b) Find the first form of Cauer of RC network -

[8]

$$z(s) = \frac{(s+3)(s+6)}{(s+1)(s+5)}$$

OR

Q.3 (a) The driving point impedance of a one port reactive is given by

[8]

$$z(s) = 4 \frac{s(s^2+4)}{(s^2+1)(s^2+16)}$$

Obtain the foster forms of LC network realisation.

(b) Find the range of values of m in P(s). So that P(s) is Hurwitz.

[8]

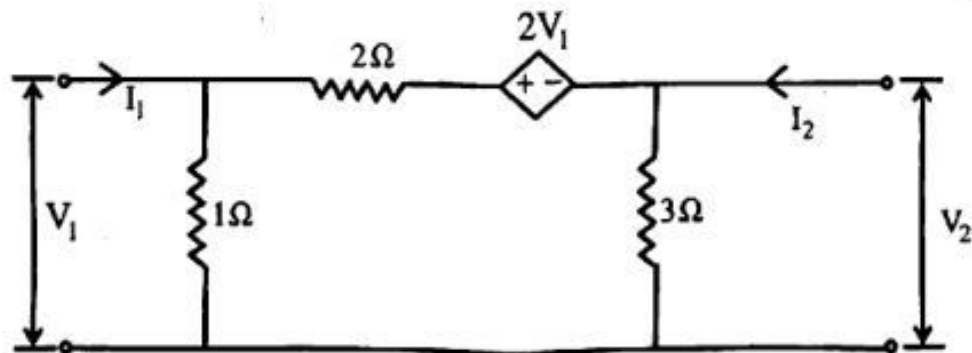
UNIT- IV

Q.4 (a) Derive the condition of reciprocity and symmetry in ABCD parameters.

[8]

(b) Find the z-parameters of circuit shown in given figure :-

[8]



OR

Q.4 (a) Explain the Cascade connection of two port network.

[8]

(b) Derive the expression of input and output impedances in terms of z-parameters.

[8]

UNIT- V

- Q.5 (a) Derive the value of characteristics impedance for π - type k - type High Pass filter. [8]
- (b) Design a m - derived T - section low pass filter having cut - off frequency $(f_c) = 7\text{kHz}$, design impedance $R_o = 600\Omega$ and frequency of infinite attenuations $f_a = 10.5\text{ kHz}$. [8]

OR

- Q.5 (a) Derive the impedance characteristics of m-derived low pass filter. [8]
- (b) Design a T and π section constant k type high pass filter having cut off frequency of 12 kHz and nominal impedance $R_o = 500\Omega$; Also find :- [8]
- (i) Its characteristics impedance and phase constant at 24 kHz and
- (ii) Attenuation at 4 kHz.
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