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Total No. of Questions : 09

B.Tech.(ECE/EE/EEE/EIE) (Sem.–3rd)

NETWORK ANALYSIS AND SYNTHESIS

Subject Code : EE-201

Paper ID : [A0305]

Time : 3 Hrs. Max. Marks : 60

INSTRUCTION TO CANDIDATES :

1. SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.
2. SECTION-B contains FIVE questions carrying FIVE marks each and students has to attempt any FOUR questions.
3. SECTION-C contains THREE questions carrying TEN marks each and students has to attempt any TWO questions.

SECTION-A

1. Answer briefly :

a) State and prove superposition property of Laplace transform.

b) How does the concept of poles and zeros arise in describing a network function?

c) Differentiate between a natural response and a forced response.

d) Using the basic definition of Laplace transform, obtain the Laplace transform of cosine function.

e) Establish the conditions for equivalence of Thevenin's theorem and Norton's theorem.

f) What is m derived filter?

g) What is ladder network?

h) What is attenuation?

i) Compare band pass and band stop filters.

j) State the properties of a Hurwitz Polynomial.

SECTION-B

2. Carry out the complete analysis of series R-L ci pulse of width a and magnitude E. Draw neat diagram and graphs. Also, derive all the relevant

3. What are circuit elements? Discuss in detail, the elements giving example of each type.

4. Design the T and Π sections of m derived $R_0 = 600$ ohms, a cut-off frequency of 3kHz an attenuation $f_\infty = 2700$Hz.

5. An electric network consists of a parallel comb with a series connected resistance R and indu zeros of the driving point impedance of the netw

Zero at z = –2, poles at s = –1 + j4 and –1 – j4

If Z(0) = 1, find the values of R, L and C.

6. Show that the image impedances of the series half sections of a filter are respectively equal to iterative impedances of the corresponding full se

SECTION-C

7. Find the first and second Foster forms and th forms of the function $Z(s) = \frac{s\left(s^2+4\right)}{\left(s^2+1\right)\left(s^2+9\right)}$

8. State and Prove Thevenin's theorem as applied the various methods to calculate the Thevenin's the applicability of each method.

9. a) Show that the image impedances of the derived half sections of a filter are respec and mid shunt iterative impedances of the c

b) State and prove 'Initial value Theorem' as ap