R22

ANURAG Engineering College
(An Autonomous Institution)
II B.Tech. I Semester Regular Examinations, Jan/Feb–2024
NETWORK ANALYSIS AND SYNTHESIS
(ELECTRONICS AND COMMUNICATION ENGINEERING)

Time: 3 Hours   Max. Marks: 60

Section – A (Short Answer type questions)   (10 Marks)
Answer All Questions

		Course Outcome	B.T Level	Marks
1.	What is dot convention?	CO1	L1	1M
2.	What is a cut set?	CO1	L1	1M
3.	Define Steady state.	CO2	L1	1M
4.	Define Quality factor. and bandwidth	CO2	L1	1M
5.	List different types of attenuators	CO3	L1	1M
6.	What is the Condition for symmetric and reciprocity of h-parameters?	CO3	L1	1M
7.	What Is a Filter?	CO4	L1	1M
8.	What is a constant K low pass filter?	CO4	L1	1M
9.	What are poles and zeros?	CO5	L1	1M
10.	What are the disadvantages of transfer function?	CO5	L1	1M

Section B (Essay Questions)
Answer all questions, each question carries equal marks.   (5 X 10M = 50M)

11. A)	Derive an expression for coefficient of coupling between two mutually coupled coils.	CO1	L2	10M

OR

B)	Explain the following: i) sub graph ii) connected graph iii) Planar graph.	CO1	L2	10M

12. A)	Explain the DC response for a series RL circuit.	CO2	L2	10M

OR

B)	Show that the resonant frequency is the geometric mean of two half power frequencies	CO2	L2	10M

13. A)	For the two-port network shown in figure 1, find the short-circuit admittance parameter.	CO3	L3	10M

Figure 1

OR

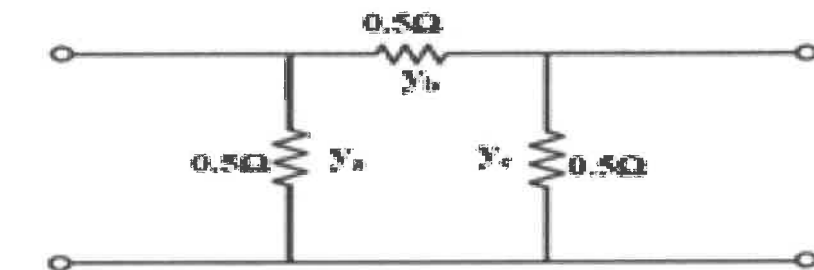|				
B)	Explain the concept of poles, zeros, their significance and necessary conditions for driving point functions and transfer functions?	CO3	L2	10M

14. A)	Design a constant K high pass filter and explain its design procedure in detail.	CO4	L3	10M

OR

B)	Design the m-derived high pass filter.	CO4	L3	10M

15. A) Obtain the first form of the Foster Network for the driving point impedance of LC network given as:

$$Z(s) = 10(s^2+4)(s^2+16) / s(s^2+9)$$

CO5   L3   10M

OR

B) **Find the R-L representation by Foster 1st of the impedance function:-**

$$Z(s) = \frac{2(S+1)(S+3)}{(S+2)(S+6)}$$

CO5   L3   10M