Roll No. .....

OLE-24025

B. Tech. 3rd Sem. (EEE) Examination – April, 2021

NETWORK THEORY

Paper : EE-203-F

Time : Three Hours] ***[Maximum Marks : 100***

Before answering the questions, candidates should ensure that they have been supplied the correct and complete question paper. No complaint in this regard, will be entertained after examination.

Note : Attempt ***five*** questions in all, selecting ***one*** question from each Section. Question No. **1** is ***compulsory***. All questions carry equal marks.

1. (i) What are the difference between loop and nodal analysis ? $5 \times 4 = 20$

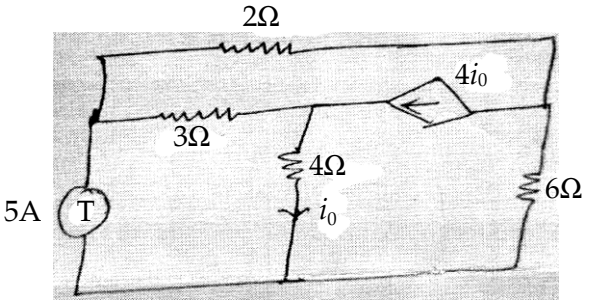
(ii) Drive the expression for series interconnection of two port network.

(iii) What are the properties of Hurtwitz polynomial ?

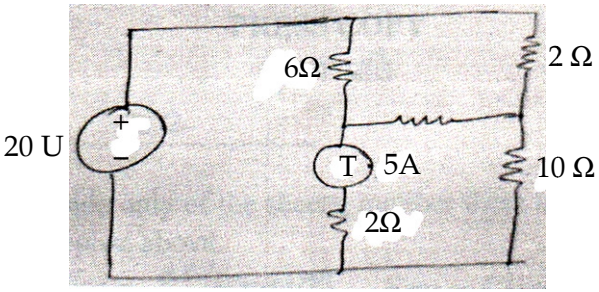
(iv) Explain the concept of duality in network.

SECTION – A

2. Find voltage at the three non-reference node for the circuit as shown below : 20



3. Determine I_1, I_2 and I_3 using mesh analysis for the circuit as shown below : 20



SECTION – B

4. Explain Thevenin's theorem with suitable example. 20

5. Explain the various interconnection of two port network. 20

SECTION – C

6. (i) Check whether the following polynomial are Hurtwitz or not ? 20

$P(S) = 6S^5 + 5S^4 + S^3 + 2S^2 + 3S + 18$

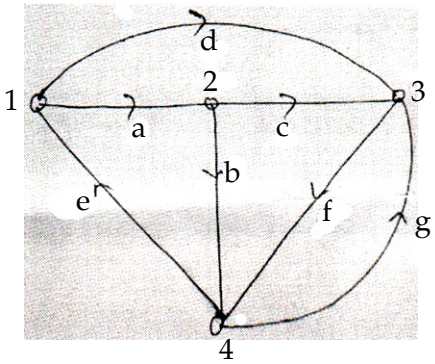
(ii) Write down the properties of LC function.

7. Check whether following function is p.r.f or not ? 20

$F(s) = (5S^2 + 9S + 3)/(S^3 + 4S^2 + 7S + 9)$

SECTION – D

8. Develop tie set and cut set matrix for the graph shown below : 20



9. Drive the expression for synthesis of Y_{21} with 1 ohm termination and also synthesize the network with suitable example. 20