

Roll No.

OLE-3040
B. Tech. 3rd Semester (EE)
Examination – April, 2021

ELECTRIC CIRCUIT ANALYSIS

Paper : PCC-EE-201-G

Time : Three Hours]

[Maximum Marks : 75

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 : For setting up the question paper, Question No. 1 will be set up from all the four sections, which will be *compulsory*, and of short answer type. *Two* questions will be set from each of the four sections. The students have to attempt first common question, which is compulsory, and one question from each of the four sections. Thus, students will have to attempt 5 questions out of 9 questions.

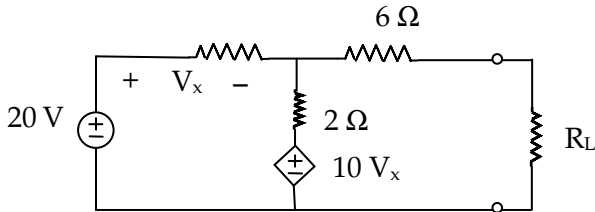
1. (i) Explain Norton's theorem with suitable example.
- (ii) Derive the expression for RC series circuit with source free response.

(iii) Derive the relation between ABCD parameter in terms of g-parameter.

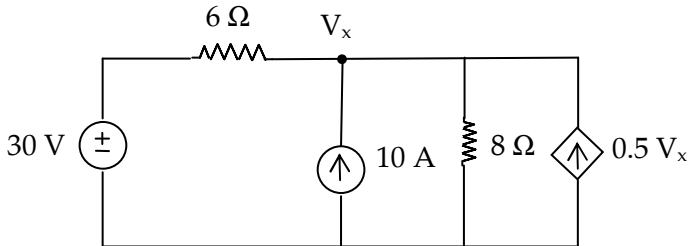
(iv) Explain the concept of duality in network ? 15

UNIT – I

2. Determine the value of R_L that will draw maximum power form the rest of circuit shown in fig. below and find the maximum power. 15



3. Use superposition theorem to find V_x for the circuit as shown below: 15



UNIT – II

4. Synthesize the LC network for the impedance as given below : 15

$$Z(s) = \frac{(S^2 + 25)}{S(S^2 + 36)}$$

(i) Foster - I

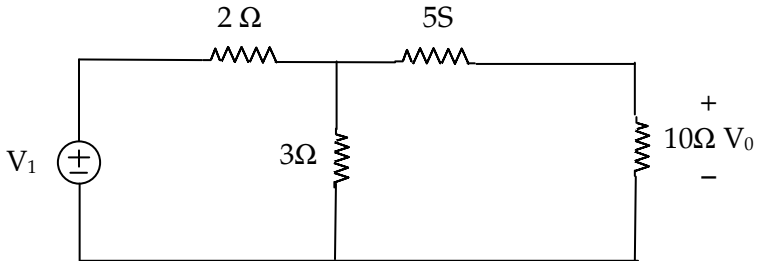
(ii) Foster - II

5. Check whether following function is p.r.f or not ? 15

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

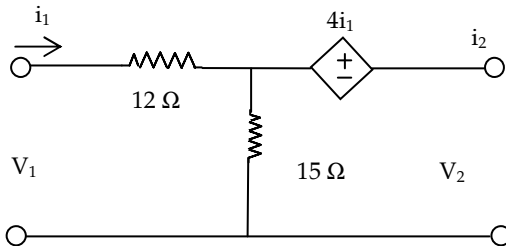
UNIT – III

6. Derive the expression for RL and RC source free response in transient. 15
7. For the s-domain circuit in fig. below determine the following terms as under :
- (a) Transfer function
- (b) Impulse response



UNIT – IV

8. Find the impedance parameter for the two-port network as shown below : 15



9. Determine the fundamental tie-set and cut-set matrix for the network given below : 15

