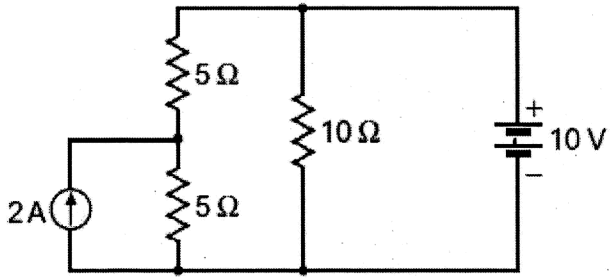
(b) Using superposition theorem, determine currents in all resistances of the network shown in figure below :



5. (a) Explain Thevenin theorem in detail.

(b) Discuss the principle of duality with the help of a suitable example.

Unit III

6. (a) Define Z-parameters. Derive the reciprocity and symmetry condition for Z-parameters.

(b) Find out the Z-parameters for the lattice network shown in figure ahead :

Roll No. ..... **Exam Code : J-21**

Subject Code—52505

B. Sc. EXAMINATION

(Main/Reappear) (Batch 2018 Onwards)

(First Semester)

ELECTRONICS

CEL-104

Network Analysis and Electronic Devices

Time : 3 *Hours* *Maximum Marks :* 80

Note : Attempt *Five* questions in all. Q. No. **1** is compulsory. All questions carry equal marks.

1. (a) What are current and voltage sources ? How an ideal current/voltage source differs from a practical current/voltage source ?

(b) How Thevenin's equivalent circuit can be converted into Norton's equivalent circuit ?

(c) Define hybrid parameters of a two-port network. Also write the condition of reciprocity and symmetry.

(d) Discuss the advantages of FET over BJT.

Unit I

2. (a) Explain node analysis method with the help of suitable example.

(b) Compare the following terms with suitable examples :

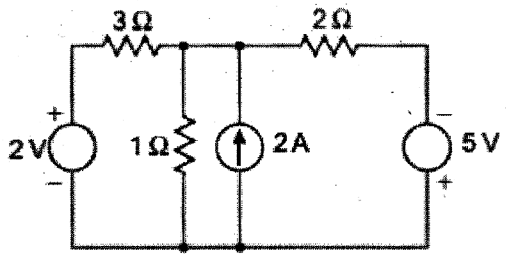
(i) Junction and node

(ii) Linear and non-linear circuits

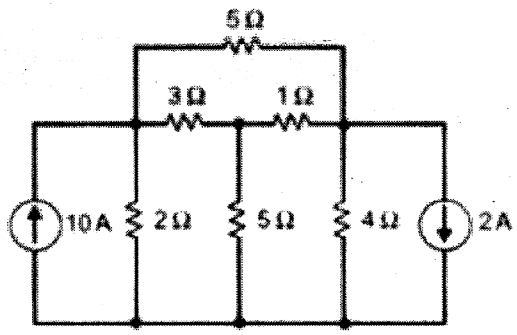
(iii) Lumped and distributed circuit elements

(iv) Unilateral and bilateral circuit elements.

3. (a) Using mesh current method, determine current through 1-ohm resistance in the circuit shown ahead :

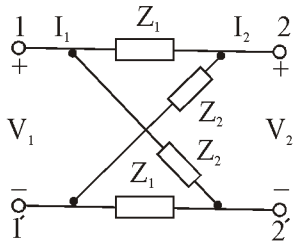


(b) Use nodal analysis to find the current in various resistors of the circuit shown in the figure below :



Unit II

4. (a) Derive expressions for delta to star transformation.



7. (a) State and explain maximum power transfer theorem. Also derive the condition for maximum power in a circuit.

(b) Establish the relationship between the hybrid parameters and open circuit impedance parameters for a two-port network.

Unit IV

8. What are JFET's ? How are these different from BJTs ? Explain JFET working. Discuss the characteristics of CS and CD amplifer.

9. What is UJT ? Explain its construction geometry and characteristics. Explain working of UJT as relaxation oscillator.