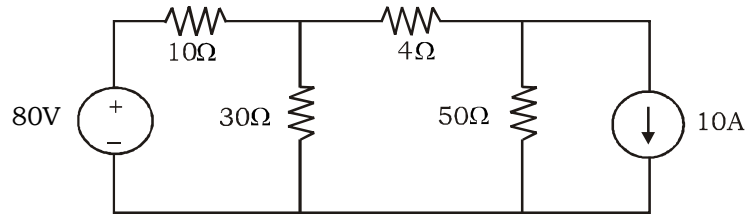


- (b) Give construction of depletion type MOSFET. Also draw its drain characteristics and explain the curves in brief. 2+2+2
- (c) Find the current through 4Ω register using Superposition theorem.



B.Sc. 1st Semester (Programme) Examination-2022-23

ELECTRONICS

Course ID : 11718 Course Code : SP/ELC/101/C-1AT

**Course Title : Network Analysis and
Analog Electronics (New)**

Time : 1 Hour 15 Minutes

Full Marks : 25

The figures in the right hand margin indicate full marks.

Candidates are required to give their answers in their own words as far as practicable.

1. Answer any **three** of the following questions : 1×3=3

- (a) What do you mean by dependent source?
- (b) When does a transistor act as a switch?
- (c) What is biasing?
- (d) What is meant by ripple factor?

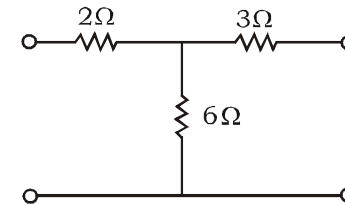
- (e) State 'Barkhausen criterion' for Sustained Oscillations.
- (f) What is 'node' and 'junction' of an electrical network?

2. Answer **any three** of the following questions : $2 \times 3 = 6$

- (a) What is the source transformation? What are its advantages?
- (b) Write the condition of symmetry and reciprocity for Z parameters.
- (c) State Superposition theorem.
- (d) State Kirchhoff's Voltage Law (KVL) and hence show that it satisfies law of conservation of energy.
- (e) What are the two advantages of full-wave rectifier?
- (f) What is two-port network? Draw the circuit model of open circuit impedance parameter.

3. Answer **any two** of the following questions : 2×5

- (a) What are the various methods of biasing of a transistor? Describe the potential divider biasing circuit in detail.
- (b) Give the relationship between α , β and γ of a transistor.
- (c) Draw and explain drain and transfer characteristics of p-channel JFET. 1+4
- (d) Find the Y and Z-parameters of the given network.



4. Answer **any one** of the following questions : $6 \times 1 = 6$

- (a) Derive an expression for rectification efficiency of a full-wave rectifier.