

BACHELOR OF TECHNOLOGY (CBCS) (2021-COURSE)
B. Tech. Sem - I Computer Science & Business Systems : SUMMER : 2025
SUBJECT: PRINCIPLES OF ELECTRICAL ENGINEERING

Day : Thursday
Date : 15/05/2025

S-24132-2025

Time : 10:00 AM-01:00 PM
Max. Marks : 60

N.B.

- 1) All questions are **COMPULSORY**.
- 2) Figures to the **RIGHT** indicate **FULL** marks.
- 3) Assume suitable data **WHEREVER** necessary.
- 4) Draw neat labeled diagrams **WHEREVER** necessary.
- 5) Use of non-programmable calculator is allowed.

- Q.1** Define and write down the unit of following terms: (10)
i) E.M.F. ii) Current iii) Resistance iv) Power v) Energy

OR

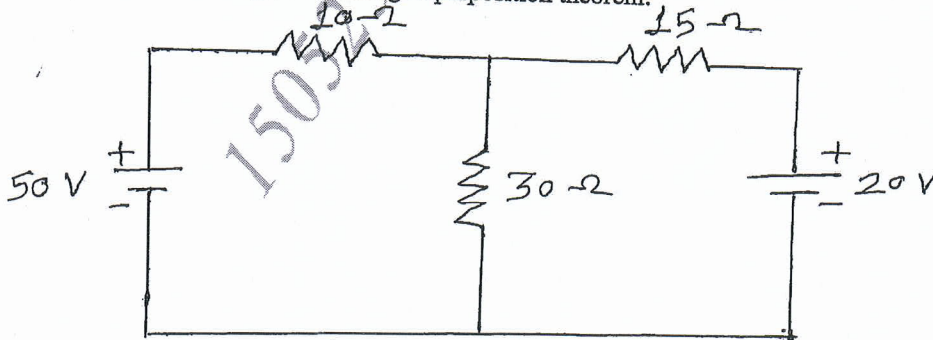
- Q.1** State and explain Kirchoff's laws. Explain concept of ideal voltage source and practical voltage source in detail. (10)

- Q.2** What is the formula for star to delta conversion of resistive circuit? Write down the statement of following theorems: (10)

- i) Thevenin's theorem ii) Norton's theorem iii) Maximum power transfer theorem

OR

- Q.2** State and explain Superposition theorem. Find the current flowing through $30\ \Omega$ resistance in following circuit using Superposition theorem: (10)



- Q.3** Sketch power triangle. Define and explain the following terms: (10)
i) Active power ii) Reactive power iii) Apparent power iv) Power factor

OR

- Q.3** Define form factor and peak factor. Explain the concept of resonance in R-L-C series circuit and derive the formula for resonant frequency. (10)

P.T.O.

Q.4 Explain the process of charging of capacitor. Derive the expression for equivalent capacitance, when two capacitors are connected in series. (10)

OR

Q.4 List-out different types of electric battery. Discuss construction, working and applications of Lead-acid cell. (10)

Q.5 Derive E.M.F. equation of single-phase transformer and discuss different types of losses in single-phase transformer. (10)

OR

Q.5 Compare magnetic circuit and electric circuit. Explain B-H curve of magnetic material. (10)

Q.6 List-out different types of lamps and explain Sodium vapour lamp in detail. (10)

OR

Q.6 List-out different types of wiring system and different types of earthing system. Discuss necessity of earthing system in detail. (10)

150525-m-coe-mumbai