

BACHELOR OF TECHNOLOGY (CBCS) (2021-COURSE)
Computer Science & Business Systems
B. Tech. Sem - I :SUMMER : 2023
SUBJECT : PRINCIPLES OF ELECTRICAL ENGINEERING

Day : Friday

Time : 10:00 AM-01:00 PM

Date : 12-05-2023

S-24132-2023

Max. Marks : 60

N.B.

- 1) All questions are **COMPULSORY**.
- 2) Figures to the right indicate **FULL** marks.
- 3) Draw neat and labelled diagram **WHEREVER** necessary.
- 4) Assume suitable data if necessary.
- 5) Use of non – programmable **CALCULATOR** is allowed.

Q.1 a) Discuss the concept of ideal voltage source and practical voltage source. (05)

b) State and explain Kirchoff's laws. (05)

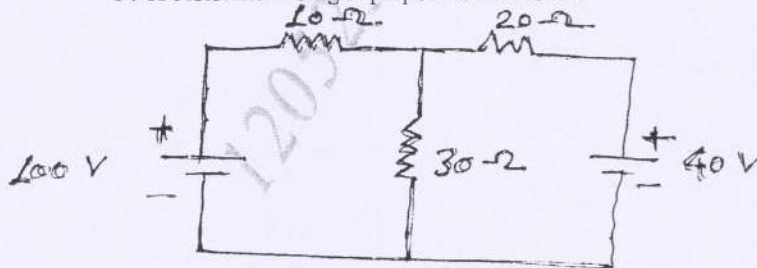
OR

Q.1 a) Discuss the concept of ideal current source and practical current source. (05)

b) Define the following terms: (05)

- i) Resistance ii) Work iii) Power iv) Energy v) Current

Q.2 State and explain superposition theorem. Find the current flowing through $30\ \Omega$ resistance using superposition theorem. (10)



OR

Q.2 Derive the formulae for conversion of star to delta and delta to star connection for resistive circuit. (10)

P.T.O.

Q.3 Explain the concept of resonance in series R-L-C circuit. Derive the formula (10)
for resonant frequency.

OR

Q.3 a) Sketch and explain power triangle. (05)

b) Define the following terms related to AC circuit: (05)

- i) Impedance
- ii) Admittance
- iii) Form factor
- iv) Peak factor
- v) Power factor

Q.4 a) Derive the expression for equivalent capacitance when capacitors are (05)
connected in series and parallel.

b) Discuss the concept of electrostatic field, electric field strength and permittivity (05)
in dielectrics.

OR

Q.4 Define battery, write down its types and explain concept of lead acid battery (10)
in detail.

Q.5 Explain the concept of transformer along with its construction and working (10)
principle. Derive the EMF equation of single phase transformer.

OR

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

Q.6 Discuss importance of earthing system in short. What are the factors affecting (10)
earth resistivity? Explain rod earthing in detail.

OR

Q.6 List out different types of lamps and explain following types of lamp in short: (10)

- i) Incandescent lamp
- ii) Light emitting diode

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