	InSem Examination-IWinter 2023		
	Exam Seat No.:		
	Academic Year:2023-2024	Semester:I	
	Name of Programme:B.Tech	Pattern:2023	
	Name of Course:Fundamentals of Electrical Engineering	Course Code:2300105A	
	Max. Marks:30	Duration:1	

1. This question paper contains 02 page(s).
2. Answer to each new question is to be started on a new page.

1. Assume suitable data wherever required, but justify it.
2. Draw the neat labelled diagrams, wherever necessary.
3. The last columns indicates the Course Outcome and level of Blooms Taxonomy of the Question/sub-question

Question No. 1 Attempt following Question

a) Define depth of discharge and mention precautions to be taken for maintenance of battery. (5) CO1

OR

b) Compare UPS & SMPS (5) CO1

c) Determine the expression for a single core - cable in terms of insulation resistance (5) CO1

OR

d) Discuss the relation of Resistance Temperature coefficient in terms of constant of proportionality when R_0 is initial temperature and R_1 is final temperature resistance (5) CO1

e) A single core copper cable has a conductor diameter of 3cm with an insulation of thickness 2.8 cm. The resistivity of copper is 1.73×10^{-8} ohm meter and that of insulation is 8×10^{12} ohm meter. Determine (i) resistance of conductor and (ii) insulation resistance if cable length is 100 m (5) CO1

f)

In a house, various electrical appliances are put on to the supply as per the following schedule during a day:

(i) 2kW electric geyser for 1 hr.

(ii) 2 fluorescent tubes each of 20W, for 4 hours,   (5)   CO1

(iii) 650W electric iron for 30 minutes

(iv) Other miscellaneous electrical load of 500 W for 3.5 hours. Calculate energy consumed per day. Estimate the bill for consumption of electrical energy in this house, for a month of 30 days, at a rate of Rs. 2.50 per unit.

Question No. 2 Attempt following Question

a) State and explain Kircoff's Voltage Law with an example   (5)   CO4

<div align="center">OR</div>

b) State and explain Source Transformation for Conversion of Voltage Source into Current Source   (5)   CO4

c) State and Explain Superposition theorem   (5)   CO4
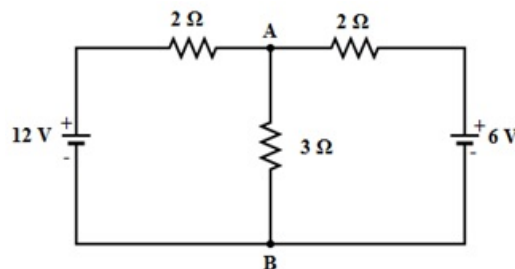
<div align="center">OR</div>

d) State and formulate to convert delta connected network into its equivalent star connected network   (5)   CO4

e)

Using Thevenin's theorem determine the current flowing through 3 ohm resistance in the network shown in following network

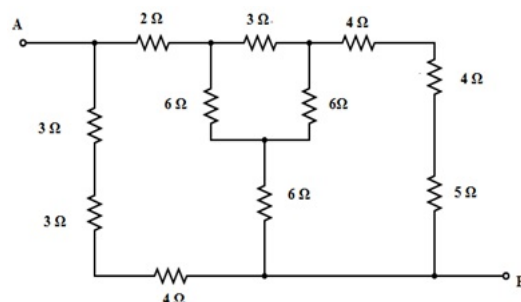(5)   CO4

<div align="center">OR</div>

f)

Calculate the effective resistance between points A and B

(5)   CO4