

Chapter 1: The Basics

Quiz No. 1



Objective:

The Assignment has been designed to develop the understanding related to the followings,

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Question 1: Calculate the amount of charge represented by 12 million protons.

Question 2 Find Current , at $t=0.5$ sec when $q=10-5e^{-2t}$ mC

Question 3: The current through an element is

$$i = \begin{cases} 5A, & 0 < t < 1 \\ 5t^2 A & t > 1 \end{cases}$$

Calculate the charge entering the element from $t=0$, to $t=2$

Question 4 : Find power at $t = 10$ s, if the current entering a circuit is

$$i = 10 \cos 60\pi t \text{ Ampere and } v = 3 \frac{di}{dt} \text{ V}$$

Q5: Find energy of a 60 W bulb consumed in 24 hours

Q6. A current of 24 Ampere flows through a conductor , calculate how much charge passes through it in 10 sec

Q7 Determine the total charge transferred over time interval of $0 < t < 5$, when $i(t) = \frac{t^2}{2}$

Q8. The charge entering a terminal is

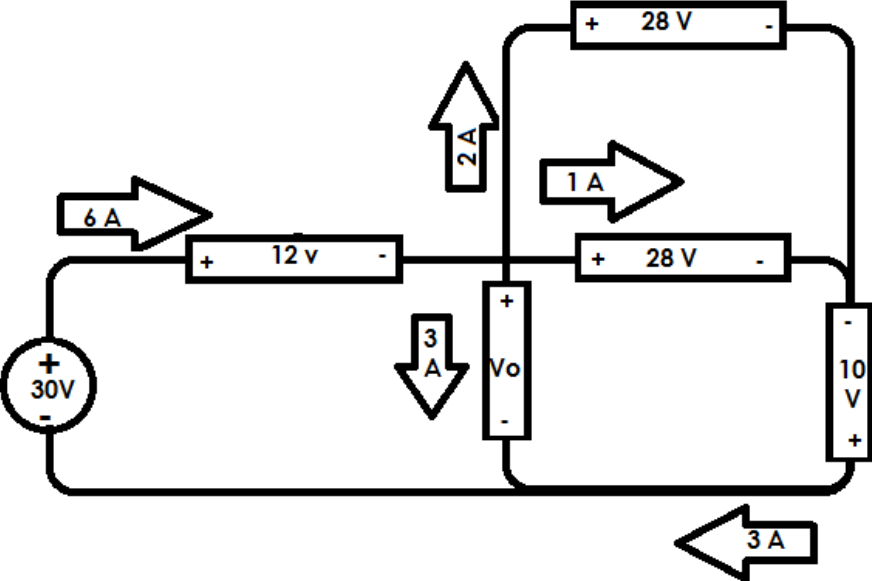
$$q = 10\sin 120\pi t \text{ mC and Voltage is } 10\cos 2\pi t$$

Find power at 0.5 Sec

Calculate energy between 0.2 to 0.4 sec

Q9. Find Power Dissipated by each element

Find V_0



Q10. A sensor wire has a current of $20\mu\text{A}$ following through it. How long does it take for a charge of 55 C to pass through the wire?

Q11. A lightning bolt of 9KA strikes a building for 10ms. Find how much charge is accumulated by lightning bolt on building

Q12. A lead-acid battery is rated at 180 Ah.

- (a) What is the maximum current it can supply for 35?**
- (b) What will the life of battery in days if it produces 1 mA Current ?**

Q13. A 60W lamp is operated on 120v. How many coulombs flow through the bulb in one day?

Q16. What is current in a conductor if 1.441×10^{15} electrons pass through it in 0.25s?

Q17. Find the number of electrons that pass through a conductor in 1 when current is $100 \mu\text{A}$?

Q18.. How much current can a battery with the rating of 80 A-h supply continuously for 150 min?