Week 8 - Assignment 5

Due on 2023-10-02, 23:59 IST

Question 13

Select the correct value for the internal resistance of the battery in a parallel circuit. Assume that the battery has an internal resistance of 0.5 Ω. The voltage at the terminals is 12 V. The current through the circuit is 3 A.

1. Calculate the actual voltage drop across R1 for a 12V, 10A Battery, 5A, R = 6Ω.
   - 1.5 V

2. Calculate the actual voltage drop across R2 for a 12V, 10A Battery, 5A, R = 6Ω.
   - 1.5 V

3. Calculate the actual voltage drop across R3 for a 12V, 10A Battery, 5A, R = 6Ω.
   - 1.5 V

Question 14

Calculate the load resistance (in ohms) for a 12V, 10A battery at 75% for the maximum of 500W, assuming 85% discharge.

4. Calculate load resistance (in ohms) for a 12V, 10A Battery, 75% Charge.
   - 20 ohms

5. Calculate load resistance (in ohms) for a 12V, 10A Battery, 50% Charge.
   - 20 ohms

6. Calculate load resistance (in ohms) for a 12V, 10A Battery, 75% discharge.
   - 20 ohms

Question 15

A vehicle has a 12V, 50Ah battery. The Load is 9.5 A 30% of the total (6kW). Calculate the SoC of the battery. What would be the range (in km) for a full battery?

7. If it is a charging tariff, at rate of 0.5kWh.
   - 80%

8. If it is a charging tariff, at rate of 0.5kWh.
   - 80%

Question 16

There is a 12V, 100Ah battery with output voltage that can be varied from 4V to 12V. There is a vehicle with 12V, 50Ah battery voltage at 50V.

8. What would be the charging efficiency?
   - 40%

9. What is the voltage?
   - 12V

10. What is the current?
    - 5A

11. Is the output current or the current?
    - Output current

12. What is the power?
    - 600W

13. What is the charge?
    - 100Ah

Question 17

There is a 12V, 100Ah battery with output voltage that can be varied from 4V to 12V. A small electric operates at 300W and uses only a 12V battery.

10. What would be the charging efficiency?
    - 40%

11. What is the voltage?
    - 12V

12. What is the current?
    - 5A

13. Is the output current or the current?
    - Output current

14. What is the power?
    - 600W

15. What is the charge?
    - 100Ah

Question 18

There is a 12V, 100Ah battery with output voltage that can be varied from 4V to 12V. A small electric operates at 300W and uses only a 12V battery.

10. What would be the charging efficiency?
    - 40%

11. What is the voltage?
    - 12V

12. What is the current?
    - 5A

13. Is the output current or the current?
    - Output current

14. What is the power?
    - 600W

15. What is the charge?
    - 100Ah