Zoom In Physical Sciences Grade 11

Worksheet 3

1 When lightning strikes, negative charges move from the bottom of a cloud through the air to the ground. In one lightning flash, 75 A of electric current moves from the cloud to the ground in 1,5 s.

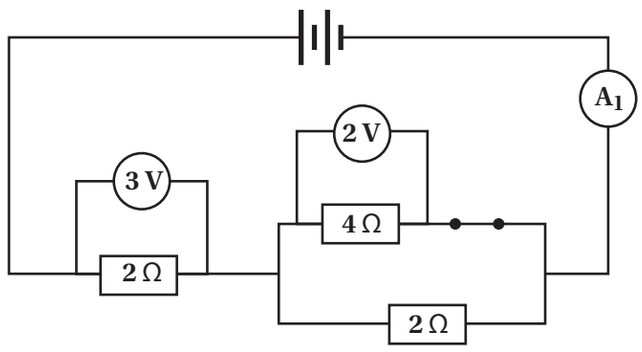
1.1 Give ONE word for the underlined term in the paragraph above. (1)

1.2 Calculate the amount of charge that moves through the lightning flash from the cloud to the ground. (3)

1.3 The potential difference between the bottom of the cloud and the ground is 2×10^6 V. Use your answer in Question 1.2 and calculate the amount of heat energy that is transferred during the lightning flash. (4)

[8]

2 Study the circuit diagram below and then answer the questions that follow.



2.1 Calculate the reading on A_1. (3)

2.2 Calculate the resistance of the parallel connection. (3)

2.3 Calculate the total resistance. (2)

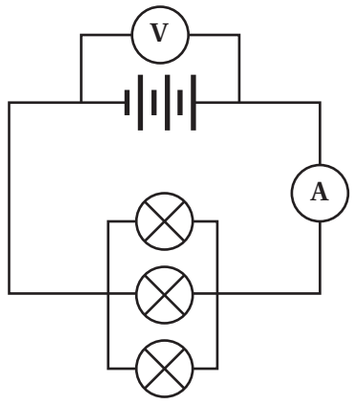
2.4 Calculate the potential difference of the cell. (2)

2.5 What will happen to the reading on A_1 if the switch is opened? Only write the words: INCREASES, DECREASES or REMAIN THE SAME. (1)

2.6 Provide a reason for your answer in Question 2.5 above. (2)

[13]

3 Study the circuit diagram below. The light bulbs are identical. The resistance of the battery, ammeter and connecting wires can be ignored.



3.1 What is the potential difference of each cell if the reading on V is 6 V? (2)

3.2 Calculate the total parallel resistance if each light bulb has a resistance of 2 Ω. (3)

3.3 Calculate the ammeter reading. (3)