The City School

North Nazimabad Boys Campus

Work sheet # 2

**Date: 22-10-2015**

**Class: 11TH**

**Subject: Physics**

**Teacher: Sir Faisal**

Submission Date: 30-Oct-2015

**Duration : 40mnts Maximum Marks: 20**

**MCQs**

1.What will be the magnitude and direction of the current in the wire XY?



|  |  |  |
| --- | --- | --- |
|  | magnitude | direction |
| a. b. | 1A1A | X to Y Y to X |
| c. d.e. | 5A5A8A | X to Y Y to XX to Y |

2. The diagram shows a circuit.

2What is the reading on voltmeter V2?

a. 3V

b. 6V c. 9V d. 15V e. 18V

3. Which quantity can be measured in units of joule/coulomb?

a. charge b. current

c. potential difference d. power

e. resistance

4. A three-pin is connected to the lead for a 1 kW electric iron to be used on a 250V supply. Which of the following statements is not correct?

a. the fuse should be fitted in the live lead b. the live wire is coloured brown

c. A 13A fuse is the most suitable rating to use

d. the yellow and green wire should be connected to the earth pin

5. A torch bulb takes a current of 0.4A from a 3V supply for 2 minutes. How much electrical energy is used?

a. 2.4J c.57.6 J

b. 45J d.144 J

6. A current flows in two resistors connected in series as shown. A1 and A2 are the readings on the ammeter,V1 and V2 are the readings on the voltmeters.

Which of the following correctly describes the ammeter and voltmeter readings?

7. The diagram shows a resistor connected to a cell of e.m.f. 2V.

How much heat energy is produced in the resistor in six seconds?

a. 0.4J b. 2.5J c. 4.8J d. 10J e. 60J

8. V represents a potential different, I a current, R a resistance, and t a time. Which of the following has units of energy?

a. IRt b. I2R

c. V/I

d. V2/R

e. VIT

9. An electric lamp is marked '240 volts 150 watts'. It is used on a ring main socket marked '30 amps maximum'. Which fuse is best to use in series with the lamp?

a. 40 amp b. 30 amp c. 13 amp d. 3 amp

e. 1/2 amp

10. A 40 W fluorescent lamp turns half the electrical energy it uses into light energy. How much light does it give out in 10 s?

a. 8J b. 20J c. 200J d. 400J e. 800J

**Structured Questions**

**1. A village is 5.00km from the nearest electricity substation. Two conductors are used to connect**

**the village to the substation. Each metre length of each conductor has a resistance of 0.00120Ω.**

**a. Calculate**

**i. the combined resistance of the 2 conductors from the substation to the village ii. the power loss in the conductors when the current through them is 40.0A**

**b. The voltage between the 2 conductors is 6000 V and the voltage to each house in the village is**

**240 V.**

**i. Name the device that is used to change the 6000 V supply to a 240 V supply ii Explain why such a high voltage is used for transmitting the electricity**

**2. An isolated farmhouse has its own electrical generator which supplies an output voltage of**

**250V to each of the following circuits.**

**Circuit A: a lighting circuit containing 8 lamps each rated at 250V, 150W Circuit B: a circuit for an electric cooker rated at 250V, 6.0kW**

**For each circuit,**

**a. determine the maximum current b. suggest a suitable fuse rating**

**3. A battery has an e.m.f. of 4.0V and negligible resistance.**

**a. What does this tell you about the work done by the battery in driving 1 coulomb of charge around a closed circuit?**

**b. When a resistor is connected across the terminals of the battery, a current of 0.20A is passed. i. what is the time taken for 1.0C of charge to pass a given point in the circuit?**

**ii. calculate the rate at which heat is produced in the resistor**

**4. An electric lamp is marked "250V, 100W" and an immersion heater is marked "250V, 2kW" a. calculate the current in each device when operating normally.**

**bi. explain why the filament of the lamp is made to have a larger resistance than the heating element of the immersion heater**

**bii. suggest a reason why the filament is made of a metal with a much higher melting point than that of the element**

**ci. the heat capacity of the filament of the lamp is very small. State one reason why this is an advantage**

**cii. explain why the wire connecting the immersion heater to the supply remains cool even when the heater has been in use for some time**

**Structured Questions**

**1. A village is 5.00km from the nearest electricity substation. Two conductors are used to connect**

**the village to the substation. Each metre length of each conductor has a resistance of 0.00120Ω.**

**a. Calculate**

**i. the combined resistance of the 2 conductors from the substation to the village ii. the power loss in the conductors when the current through them is 40.0A**

**b. The voltage between the 2 conductors is 6000 V and the voltage to each house in the village is**

**240 V.**

**i. Name the device that is used to change the 6000 V supply to a 240 V supply ii Explain why such a high voltage is used for transmitting the electricity**

**2. An isolated farmhouse has its own electrical generator which supplies an output voltage of**

**250V to each of the following circuits.**

**Circuit A: a lighting circuit containing 8 lamps each rated at 250V, 150W Circuit B: a circuit for an electric cooker rated at 250V, 6.0kW**

**For each circuit,**

**a. determine the maximum current b. suggest a suitable fuse rating**

**3. A battery has an e.m.f. of 4.0V and negligible resistance.**

**a. What does this tell you about the work done by the battery in driving 1 coulomb of charge around a closed circuit?**

**b. When a resistor is connected across the terminals of the battery, a current of 0.20A is passed. i. what is the time taken for 1.0C of charge to pass a given point in the circuit?**

**ii. calculate the rate at which heat is produced in the resistor**

**4. An electric lamp is marked "250V, 100W" and an immersion heater is marked "250V, 2kW" a. calculate the current in each device when operating normally.**

**bi. explain why the filament of the lamp is made to have a larger resistance than the heating element of the immersion heater**

**bii. suggest a reason why the filament is made of a metal with a much higher melting point than that of the element**

**ci. the heat capacity of the filament of the lamp is very small. State one reason why this is an advantage**

**cii. explain why the wire connecting the immersion heater to the supply remains cool even when the heater has been in use for some time**