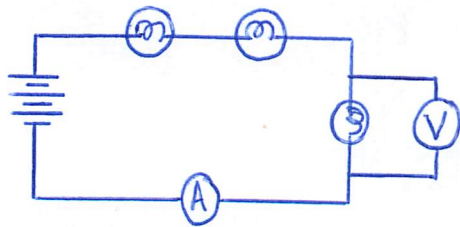
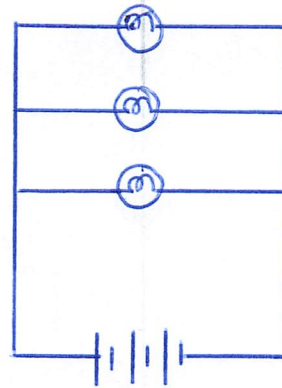


24. See figure on left below.



25. See figure on right below.



26. Hydroelectric, nuclear, thermoelectric, wind.

27. Solar power does not employ a turbine. Advantages: convenient source of energy for small appliances, renewable, clean (no emissions). Disadvantages: low efficiency, expensive, location-dependent.

28. Advantages of hydroelectricity: inexpensive, renewable, clean (no emissions). Disadvantages of hydroelectricity: environmental impact of dam construction (loss of habitat, flooding, displacement of species, etc.), changes to river flow.

30. Kilowatt-hour is the unit of electrical energy when power is measured in kilowatts and time is measured in hours. Recall $P = E/t$ or $E = Pt$. A kilowatt-hour is the use of one kilowatt in one hour.

31. GRASP Solution:

Given: $t = 12 \text{ h}$
 $I = 0.3 \text{ A}$
 $V = 120 \text{ V}$

cost = $10.6 \text{ ¢/kW}\cdot\text{h}$

Required: $E = ?$ (in $\text{kW}\cdot\text{h}$)
 then total cost

Analysis: $P = IV$
 then $E = Pt$

then total cost = cost/ $\text{kW}\cdot\text{h} \times \text{kW}\cdot\text{h}$

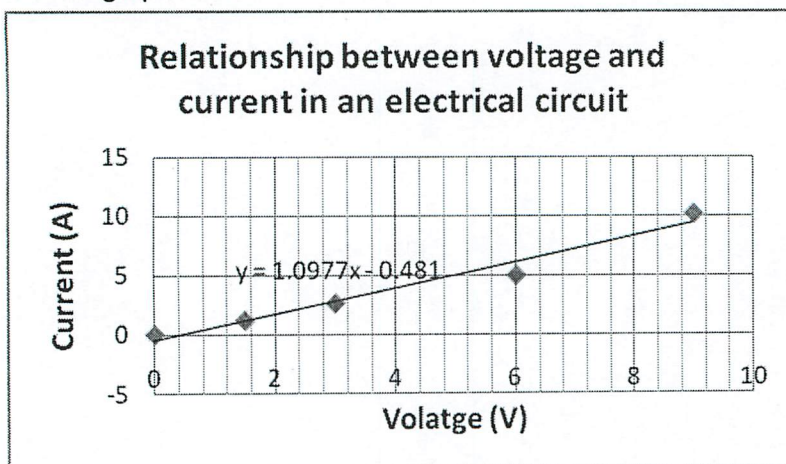
Solution: $P = (0.3 \text{ A})(120 \text{ V})$
 $= 36 \text{ W}$
 $= 0.036 \text{ kW}$

Total cost = $0.432 \text{ kW}\cdot\text{h} \times 10.6 \text{ ¢/kW}\cdot\text{h}$
 $= 4.58 \text{ ¢}$

Paraphrase:

The cost would be 4.58 ¢

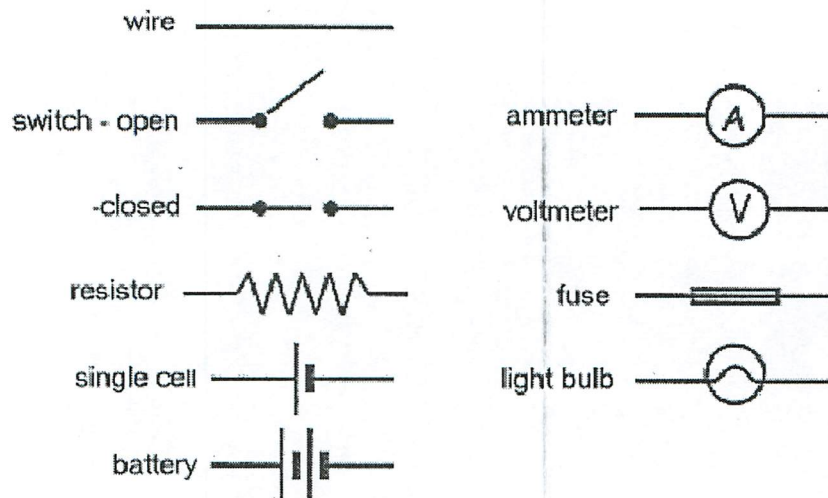
32. See graph below:



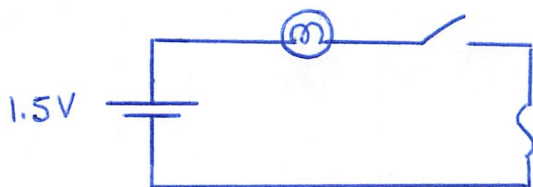
$E = (0.036)(12)$
 $= 0.432 \text{ kW}\cdot\text{h}$

15. Static charge is a charge build-up that stays (on the surface of an object) for a period of time.
Current electricity is the flow of charge (electrons) through a closed path/loop (a circuit).
16. In direct current, the current flows in one direction only, i.e. a cell or battery. In alternating current, the current flows back and forth, i.e. current out of a wall socket from a generator.
17. (Compare/discuss with a friend)
18. Resistance is the ratio of voltage to current (V/I) for a particular material at a particular temperature. Ohm's Law describes this relationship.
19. Type of material, width, length, temperature. Know how each affects resistance (increase or decrease).

20. See below:



21. See below:



22. If a second lamp was added in series, the brightness of the first lamp would decrease as the voltage of the cell would now have to be shared between the two loads.
23. If a second lamp was added in parallel, the brightness of the first lamp would not change as the voltage across parallel branches is the same.

SNC 1D Electricity Exam Review Answers

1. Definitions: see text glossary
2. Like charges repel and opposite charges attract. A charged object attracts a neutral object.
3. Cotton has a stronger affinity for electrons so your hair would end up with an overall positive charge after charging by friction with a cotton shirt.
4. The balloon would pick up some excess electrons from the negative ebonite rod and end up with an overall negative charge as well. This is charging by contact. A rubber balloon is an insulator so the static charge would stay on the balloon for a period of time.
5. The metal rod would also pick up some excess electrons from the negative ebonite rod but since metal is a conductor, the charge would flow i.e. if connected to ground it would be dissipated.
6. This is now charging by induction. Electrons in the metal would be repelled by the surplus of electrons in the ebonite rod. Therefore a temporary positive charge would be induced on the side closest to the ebonite rod and a temporary negative charge would be induced on the opposite side (to where the electrons moved). Overall the metal object is still neutral (unless connected to ground).
7. (No question)
8. Lightning is a very large electrical discharge. Three ways to protect yourself from lightning would be:
 - 1) Do not stand near/under a tall object (i.e. a tree)
 - 2) Seek shelter in a building with a lightning rod
 - 3) Avoid water bodies (i.e. swimming pools, lakes, etc.)
9. In electrostatic spray painting the paint coming out of the nozzle is given a negative charge through friction. The surface of the car to be painted is given the opposite charge (positive). Opposite charges attract and so the paint is attracted to the surface of the car, reducing waste, avoiding a mess, and providing a smoother, more uniform paint job.
10. Factory emissions (gas containing tiny pollutant particles) are given a charge (i.e. negative) and then passed through plates given the opposite charge (i.e. positive). The plates attract the oppositely charged pollutant particles and remove them from the stream of gas before it is emitted into the atmosphere.
11. In a dry cell, the electrolyte is a paste whereas in a wet cell the electrolyte is a solution.
12. Batteries/cells contain hazardous materials that can be harmful to human health as well as the environment. They must be properly disposed of...
13. "Electrical potential difference" is the difference in potential energy (energy to do work) per unit charge between two points in a circuit.
14. One ampere means one coulomb of charge is passing a point in the circuit each second.