

## Chapter 2: Electricity Production and Use

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### TRUE/FALSE

1. More often than not, the conversion process from one type of energy to another is a complex one that requires many intermediate steps.

ANS: T                      PTS: 1                      REF: 13

2. Frictional heat causes surface atoms to give up their valence electrons, giving rise to accumulated, nonmoving charges known as static electricity.

ANS: T                      PTS: 1                      REF: 13

3. The word cell refers to a basic arrangement of a chemical substance, the electrolyte, interacting with two similar electrodes.

ANS: F                      PTS: 1                      REF: 14

4. Most of the life-sustaining energy encountered on our planet is derived from the sun in the form of heat and light energy.

ANS: T                      PTS: 1                      REF: 15

5. Thermoelectric effects utilizing temperature differentials to generate an electrical voltage have been known only since the 1950s.

ANS: F                      PTS: 1                      REF: 16

6. Thermopile is the name given to devices that produce a small emf when the junction of two dissimilar metals is being heated.

ANS: F                      PTS: 1                      REF: 17

7. Some materials develop opposite electrical charges on opposite sides when they are compressed (or twisted, bent, or stretched).

ANS: T                      PTS: 1                      REF: 18

8. Electrolysis uses an electrical current to produce desirable chemical changes or variations in the properties of certain substances.

ANS: T                      PTS: 1                      REF: 19

9. Magnetic crystals are used in small earphones, where the crystal magnetizes a diaphragm, causing audible sound waves.

ANS: F                      PTS: 1                      REF: 20

10. Electricity and magnetism are two distinctly different and unrelated phenomena.

ANS: F                      PTS: 1                      REF: 20

## MULTIPLE CHOICE

1. The principle of inducing a current flow in a wire when it is moved within a magnetic field is known as \_\_\_\_ induction.
- a. electromagnetic
  - b. magnetic
  - c. dynamic
  - d. static

ANS: A                      PTS: 1                      REF: 13

2. Some cells are classified as \_\_\_\_ cells because their chemical materials are used up as electrical energy is being produced.
- a. tertiary
  - b. secondary
  - c. primary
  - d. alternative

ANS: C                      PTS: 1                      REF: 14

3. Cells and batteries have a fixed polarity, which gives rise to a \_\_\_\_ current flow.
- a. direct
  - b. neutral
  - c. multi-directional
  - d. unidirectional

ANS: D                      PTS: 1                      REF: 14

4. Light energy, according to one theory of physics, is transmitted by small particles known as \_\_\_\_.
- a. atoms
  - b. photons
  - c. electrons
  - d. photoelectrons

ANS: B                      PTS: 1                      REF: 15

5. The open-circuit voltage of a solar cell is about \_\_\_\_ volt.
- a. 0.25
  - b. 0.5
  - c. 0.75
  - d. 0.9

ANS: B                      PTS: 1                      REF: 15

6. The direct production of an \_\_\_\_ from heat is sometimes referred to as the Seebeck effect.
- a. electromagnetic force
  - b. electromotive force
  - c. electroconductive force
  - d. electronic force

ANS: B                      PTS: 1                      REF: 16

7. Increased voltage output can be achieved when several thermocouples are placed in a series called a \_\_\_\_.
- a. battery
  - b. thermos
  - c. heated junction
  - d. thermopile

ANS: D                      PTS: 1                      REF: 17

8. Some ceramic materials show a \_\_\_\_ property and can be used in record player pickups.
- a. piezoelectric
  - b. crystal
  - c. vibrating
  - d. mezzoelectric

ANS: A                      PTS: 1                      REF: 18

9. An obvious application for \_\_\_\_ is found in the generation of voltages from chemical batteries.
- a. thermocoupling
  - c. electrolysis

b. piezoelectricity

d. electromagnetism

ANS: C

PTS: 1

REF: 19

10. Whenever an electrical current flows, \_\_\_\_\_ forces are being created.

a. alternating

c. energy

b. piezoelectric

d. magnetic

ANS: D

PTS: 1

REF: 20