Chapter 6

1. An object can become charged by:

a. electromagnetic induction

b. contact with a charged object

c. friction

d. all of these

e. none of these

2. Charge is measured in the metric system in units of:

a. newtons

b. ohms

c. volts

d. coulombs

e. amperes

3. Magnetic fields are always created around:

a. tiny domains of metal atoms

b. ferromagnetic materials

c. electrical charges at rest

d. electrical charges in motion

e. all of these

4. An electroscope has a positive charge applied, as evidenced by the leaves of foil that are

standing apart due to mutual repulsion. If electrons from the surrounding air are freed by

ionization from radiation exposure:

a. the leaves will fall closer together

b. the leaves will move further apart

c. the leaves will become magnetized

d. none of these

5. A small magnet or compass needle will always be deflected by nearby:

a. insulators

b. electrical currents

c. radiation

d. wires

6. An iron rod becomes magnetized when:

a. positive ions accumulate at one end and negative ions at the other end

b. its atoms have plus charges on one side and negative charges on the other side

c. the orbital revolutions of the electrons in the atoms all align in the same direction

d. all of the atoms within it become positively charged

e. none of these

7. The electrical force generated between charges depends on:

a. how large the charges are

b. how far apart the charges are

c. both of these

d. neither of these

8. The north pole of a compass needle points to the earth’s:

a. south magnetic pole

b. north magnetic pole

c. south geographic pole

d. equator

9. The electric force which exists between two static charges varies in *direct proportion* with:

a. the magnitude of the individual charges

b. the sign of the charges

c. the distance of separation between the charges

d. the square of the distance of separation between the charges

10. An electrically neutral bar of metal sits on an insulated tabletop. A negatively-charged object is brought near to the end of it, and at the same time a person standing on the floor

momentarily touches the opposite end of the bar. The charged object is then removed

from the area. The resulting charge on the metal bar is:

a. neutral

b. positive

c. negative

d. north

e. south

11. Materials that are easy to magnetize and to demagnetize are said to have high:

a. retentivity

b. conductivity

c. permeability

d. attractability

12. Electrical charge can be neutralized if it is conducted to:

a. the ground

b. a metal pipe

c. a magnet

d. a battery

13. Where are electric charges found in a conductor?

a. at the ends

b. on the external surfaces

c. in the center

d. throughout the entire conductor

14. What are materials called that are strongly attracted to a magnet?

a. diamagnetic

b. paramagnetic

c. ferromagnetic

d. steromagnetic

15. When the distance between two charged objects is cut in half, the electrical force between

them is:

a. doubled

b. cut to one-half

c. cut to one-quarter

d. quadrupled

e. unchanged

16. The repulsive potential difference between two electrons held five millimeters apart is 2

coulombs. If the distance were increased to fifteen millimeters, what will the potential

difference be?

a. 6 coulombs

b. 1 coulomb

c. 0.67 coulomb

d. 0.22 coulomb

e. 18 coulombs

17. Two charged particles held close together are released. As the particles move, their velocity

increases. The two particles must have:

a. the same charge sign

b. opposite charge signs

c. the same mass

d. opposite masses

18. Two magnets separated by one centimeter exert a force of one gauss on each other. If the

magnets are pulled to 3 centimeters separation distance, the force on each magnet will be:

a. 0.33 gauss

b. 0.11 gauss

c. 3 gauss

d. 9 gauss

e. 1 gauss

19. A positive charge and a negative charge held near each other are released. As they move, the

force on each particle will:

a. increase

b. decrease

c. remain the same

20. The earth’s magnetic field is most concentrated and strongest at the:

a. equator

b. poles

c. core

d. in deep space

21. When a charged particle moves in a straight line, a magnetic field is:

a. induced having the same sign as the particle

b. induced along the direction of the particle’s motion

c. induced perpendicular to the particle’s motion

d. erased

22. When iron is fabricated into a magnet, the magnetic domains:

a. cancel

b. align

c. disappear

d. individually magnify

23. When iron is brought near a permanent magnet, the lines of the magnetic field are:

a. attracted to the magnet

b. repelled by the magnet

c. attracted to the iron

d. repelled by the iron

24. Types of magnets include:

a. natural “lodestones”

b. artificial or “permanent”

c. electromagnets

d. all of these

e. none of these

25. When electrical charges move through a solid object:

a. only the outer-shell electrons of atoms move

b. only the inner-shell electrons of atoms move

c. both positive and negative charges can move

d. only positive charges move

26. Electrification is the addition to of \_\_\_\_\_\_\_\_\_\_\_\_ to an object:

a. electrons

b. protons

c. photons

d. any charge

e. magnetism

27. Which of the following would be unaffected by an electric charge?

a. an electron

b. a proton

c. a photon

d. a beta particle

e. an alpha particle

28. For a solid object, electric charge concentrates at:

a. each end

b. the greatest curvature of the surface

c. the flattest portion of the surface

d. the center-most point

29. An object which is electrically neutral contains:

a. no electric charges

b. more electrons than protons

c. more protons than electrons

d. equal numbers of protons and electrons

30. A material which is slightly repelled by a magnet is classified as:

a. diamagnetic

b. paramagnetic

c. ferromagnetic

d. non-magnetic

e. neutral

31. Magnetic retentivity is a material’s ability to:

a. become magnetized

b. become demagnetized

c. convert magnetism into electricity

d. convert electricity into magnetism

e. remain magnetized