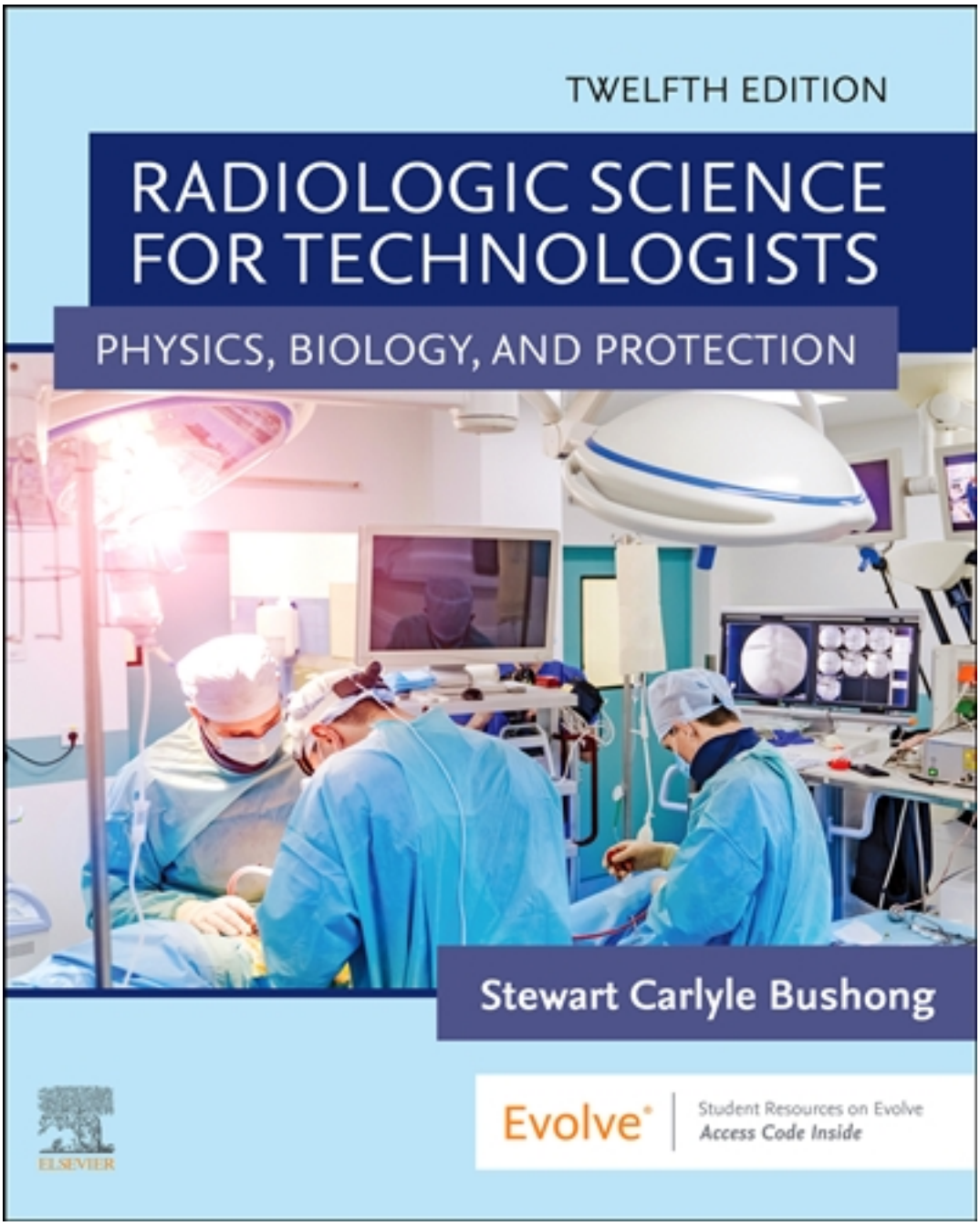
Test Bank for Radiologic Science for Technologists 12th Edition by Bushong



Test Bank

Chapter 02: Basic Physics Primer
Bushong: Radiologic Science for Technologists, 12th Edition

MULTIPLE CHOICE

1. The basic quantities measured in mechanics are _____, _____, and _____.
   a. volume; length; meters
   b. mass; length; time
   c. radioactivity; dose; exposure
   d. meters; kilos; seconds

   ANS: B
   The basic quantities measured in mechanics are mass, length, and time.

2. An example of a derived quantity in mechanical physics is a _____.
   a. meter
   b. second
   c. dose
   d. volume

   ANS: D
   Volume is a derived unit.

3. Exposure is measured in units of _____.
   a. becquerel
   b. sieverts
   c. meters
   d. grays

   ANS: D
   Exposure is measured in units of grays.

4. What is the decimal equivalent of the proper fraction 4/1000?
   a. 0004
   b. 004
   c. 04
   d. 4

   ANS: B
   The decimal equivalent of the proper fraction 4/1000 is .004.

5. What is the decimal equivalent of the improper fraction 289/74?
   a. 390
   b. 3.90
   c. 39.0
   d. 390.0

   ANS: B
   The decimal equivalent of the improper fraction 289/74 is 3.90.

6. The first step to expressing a number in scientific notation is to _____.

a. round up to the nearest 1000
b. round down to the nearest 1000
c. write the number in decimal form
d. write the number as a fraction

ANS: C
The first step to expressing a number in scientific notation is to write the number in decimal form.

7. What is 6080 in exponential form?
a. 6080.0×10^4
b. 608.0×10^4
c. 6.080×10^3
d. 6080×10^3

ANS: C
The number 6080 in exponential form is 6.080×10^3

8. Graphs are typically based on two axes; a _____ and a _____.
a. y-axis; z-axis
b. oblique; horizontal
c. x-axis; y-axis
d. vertical; oblique

ANS: C
Most graphs are based on two axes: a horizontal or x-axis and a vertical or y-axis.

9. In radiologic science, all of the following are special quantities, except:
a. exposure.
b. distance.
c. dose.
d. effective dose.

ANS: B
In radiologic science, special quantities are those of exposure, dose, effective dose, and radioactivity.

10. Mass density should be reported in which units?
a. Coulomb/kilogram
b. Newtons per square meter
c. Kilograms per cubic meter
d. Kilograms per square meter

ANS: C
Mass density should be reported with units of kilograms per cubic meter (kg/m^3).

11. The SI unit of velocity is _____.
a. meters per second
b. miles per hour
c. meters per millisecond
d. kilometers per second

ANS: C
Units of velocity in SI are meters per second (m/s).

12. An object at rest will _____ if no outside forces are applied.
    a. stay at rest
    b. decrease mass
    c. increase velocity
    d. decrease velocity

    ANS: A
    An object at rest will stay at rest if no outside forces are applied.

13. Which of the following explains the difference between speed and velocity?
    a. One has motion, and the other does not.
    b. One involves acceleration, and the other does not.
    c. One involves time, and the other does not.
    d. One has direction, and the other does not.

    ANS: B
    Velocity includes acceleration and speed does not. Speed is the rate at which an object covers distance.

14. For every action, there is an equal and opposite reaction, this describes which Newton's law?
    a. Newton's first law of motion
    b. Newton's second law of motion
    c. Newton's third law of motion
    d. Newton's law of inertia

    ANS: C
    Newton's third law of motion states that for every action, there is an equal and opposite reaction.

15. Work is the product of _____ and distance.
    a. force
    b. gravity
    c. acceleration
    d. motion

    ANS: A
    Work is the product of force and distance.

16. The transfer of heat by the emission of infrared radiation is _____.
    a. electric radiation
    b. magnetic energy
    c. mechanical energy
    d. thermal radiation

    ANS: D
    Thermal radiation is the transfer of heat by the emission of infrared radiation.

17. What heat transfer takes place when you burn your finger by touching a hot iron?
    a. Conduction

b. Convection
c. Radiation
d. Electromagnetic

ANS: A
Conduction is the transfer of heat through a material or by touching.

18. What heat transfer takes place when water is boiled?
a. Conduction
b. Convection
c. Radiation
d. Electromagnetic

ANS: B
Convection is the mechanical transfer of "hot" molecules in a gas or liquid from one place to another.

19. What are the two cryogens used in Magnetic resonance imaging with a superconducting magnet?
a. Gaseous helium and gaseous nitrogen
b. Liquid helium and gaseous nitrogen
c. Gaseous helium and liquid helium
d. Liquid helium and liquid nitrogen

ANS: D
Liquid nitrogen and liquid helium are the two cryogens that are used in magnetic resonance imaging with a superconducting magnet.

20. When you stretch a rubber band, you are storing _____ energy.
a. kinetic
b. potential
c. thermal
d. radiant

ANS: B
Potential energy is the stored energy of position or configuration.