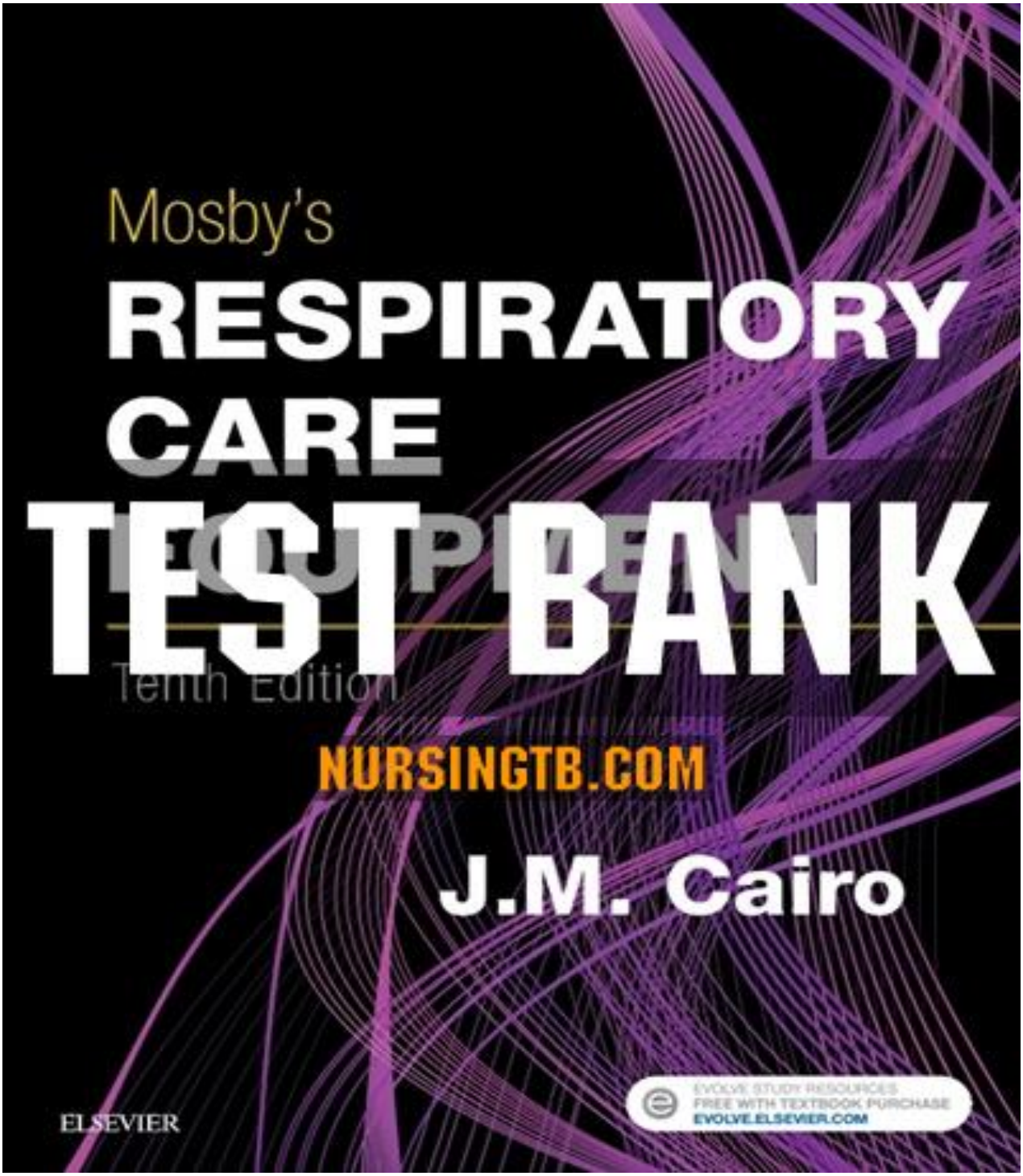
TEST BANK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TEST BANK FOR MOSBY'S RESPIRATORY CARE EQUIPMENT 10TH EDITION BY CAIRO

Description

The most clinically relevant respiratory care equipment textbook on the market, Mosby's Respiratory Care Equipment, 10th Edition employs a "how-to" approach that moves beyond technical descriptions of machinery. Learn to identify equipment, understand how it works, and apply your knowledge to clinical practice with this comprehensive overview of the equipment and techniques used by respiratory therapists to treat cardiopulmonary dysfunction. The 10th edition includes updated information on the latest devices and equipment, which are divided into clearly defined sections including: ventilators, transport, home-care, neonatal and pediatric ventilators, and alternative ventilators. In addition, there's a focus on specific ventilator characteristics such as mode, monitors and displays, alarms and indicators, graphics, special features, and troubleshooting for lesser-used ventilators.

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Chapter 01: Basic Physics for the Respiratory Therapist

MULTIPLE CHOICE

1. Power is a measure of which of the following?
   a. Mechanical energy
   b. Gravitational potential energy
   c. The rate at which work is being performed
   d. The rate at which atoms and molecules move

   ANS: C
   Power is a measure of the rate at which work is being performed. The formula P = W/J, where W = watts and 1 watt is equal to 1 J/s, expresses this. Joules are the international standard for expressing energy and work.

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2. When effort produces a change in the position of matter:
   a. work is performed.
   b. it is known as a joule.
   c. mechanical power is created.
   d. the law of the conservation of energy is being used.

   ANS: A
   Work is performed only when effort or outside forces produce a change in the position of matter.

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3. The unit used to express the force of 1 newton (N) acting on a 1-kilogram (kg) object to move it 1 meter (m) is which of the following?
   a. Watt
   b. Joule
   c. Kilowatt
   d. Kinetic energy

   ANS: B
   One joule is equal to the force of 1 N acting on 1 kg. A watt is equivalent to 1 J/s. A kilowatt is simply 1000 W. Kinetic energy is energy an object possesses when it is in motion.

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4. Power is expressed in which of the following units?
   a. Newtons
   b. Joules
   c. Ohms
   d. Watts

   ANS: D
   Power is a measure of the rate at which work is being performed. Energy and work are measured in joules. One joule is the force of 1 N acting on a 1-kg object to move it 1 m. Ohms is the resistance an electrical circuit possesses.

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5. Four horsepower (hp) is equal to how many kilowatts (kW)?
   a. 5.36
   b. 2.98
   c. 2984
   d. 186.5

   ANS: B
   1 hp = 0.746 kW.
   1 hp/0.746 = 4 hp/X.
   X = 4 × 0.476 = 2.98 kW.

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6. The energy that an object possesses when it is in motion is called:
   a. sound.
   b. kinetic.
   c. thermal.
   d. potential.

   ANS: B
   Kinetic energy is the energy an object possesses when it stays in motion. Potential energy is stored energy, and it exists in many forms such as thermal energy or sound waves.

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7. If the velocity of an object is reduced by half, its kinetic energy will be which of the following?
   a. Reduced to one eighth
   b. Increased twofold
   c. Reduced twofold
   d. Not changed

   ANS: A
   Kinetic energy = $\frac{1}{2}$(mass of object × square of velocity it is traveling, or mv^2) or KE = $\frac{1}{2}$(V × V). If the velocity is reduced by half, then KE = $\frac{1}{2}(\frac{1}{2}V \times \frac{1}{2}V)$, or $\frac{1}{2}(\frac{1}{4}) = \frac{1}{8}$ reduction.

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8. Energy that is stored in an object is called which of the following?
   a. Kinetic
   b. Potential
   c. Chemical
   d. Mechanical

   ANS: B
   Energy that is stored or possessed by an object because of its position is called potential energy. Mechanical energy can be divided into either kinetic energy or potential energy. Chemical potential energy often refers to the bonds in petroleum oils that, if broken, can be converted to kinetic energy.

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9. The potential energy of a compressed spring is known as which of the following?
   a. Gravitational
   b. Chemical
   c. Inelastic
   d. Elastic

   ANS: D

The potential energy stored in a compressed spring is called elastic potential energy. This energy is released when the spring is allowed to uncoil. Gravitational potential energy is the energy an object possesses if it is held above any surface, energy that the object's weight gains as it falls. Chemical potential energy resides in the chemical bonds of the atoms that make up the object. Inelastic potential energy would not apply once the spring is compressed.

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10. The energy stored in heating oil is known as which of the following?
    a. Elastic
    b. Atomic
    c. Chemical
    d. Gravitational

ANS: C
Petroleum reserves of coal, oil, and gas represent chemical potential energy by virtue of the chemical bond that must be broken to release energy. Heating oil potential energy has chemical-to-chemical bonds. Atomic energy involves two processes—fission (splitting atoms) and fusion (joining two atoms).

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11. The kinetic theory holds that:
    a. all matter is composed of tiny particles.
    b. elements combine in fixed proportions to form molecules.
    c. the energy that an object gains as it falls is a result of gravity.
    d. atoms and molecules that make up matter are in constant motion.

ANS: D
Kinetic energy is the energy an object possesses while in motion.

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12. Which is the correct order for increasing size?
    a. Atoms, molecules, mixtures, compounds, elements
    b. Atoms, elements, molecules, compounds, mixtures
    c. Elements, atoms, molecules, compounds, mixtures
    d. Atoms, elements, mixtures, molecules, compounds

ANS: B
All matter, whether in gas, liquid, or solid form, is made up of atoms that can combine to form elements; the elements can then combine to form molecules. Molecules can combine to form compounds. Combining compounds makes a mixture.

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13. Atoms and molecules arranged in an orderly fashion are called:
    a. Solids
    b. Mixtures
    c. Crystalline
    d. Amorphous

ANS: C
Crystalline solids are highly organized structures whose atoms and molecules are arranged in a lattice configuration. Amorphous solids have atoms and molecules that are less rigidly arranged.

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14. The most potential energy is contained by which state of matter?
a. Gases
b. Solids
c. Liquids
d. Mixtures

ANS: B
Of all states of matter, solids contain the most potential energy; solids are followed by liquids and then gases.

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15. Which of the following are amorphous solids?
1. Iron
2. Glass
3. Plastic
4. Margarine
a. 1
b. 1 and 3
c. 2 and 4
d. 2, 3, and 4

ANS: D
Glass and margarine are always considered amorphous solids. Plastic usually shows flexibility, which implies that it has amorphous features, so it should be considered amorphous. Iron, however, has well-organized atoms in a crystalline arrangement.

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16. Supercooled liquids are also known as which of the following?
a. Elements
b. Compounds
c. Crystalline solids
d. Amorphous solids

ANS: D
Amorphous solids are sometimes called supercooled liquids. Elements and compounds alone can combine to form either crystalline or amorphous solids.

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17. The least amount of kinetic energy is possessed by which one of the following?
a. Air
b. Iron
c. Water
d. Plastic

ANS: B
Of the three states of matter, solids possess the least amount of kinetic energy. The bonds holding their atoms together limit the mobility of the particles that make up the solid.

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18. Incompressible substances that are able to maintain their volume and shape are called:
a. gases.
b. solids.
c. liquids.
d. compounds.

ANS: B