

CH.1

MULTIPLE CHOICE QUESTIONS

1. In the S.I. system, the unit of temperature is
B) Kelvin

2. In the S.I. system the unit of energy is
C) joule

3. The dimensions of the ratio of angular momentum to linear momentum is
A) $[M^0L^0T^0]$

4. If Force = (x/density) + Cis dimensionally correct, the dimension of x is
D) $M^2L^{-2}T^{-2}$

5. The dimensional formula for angular momentum is
B) ML^2T^{-1}

6. The velocity of a moving particle depends upon time t as $v = [at] + [b/t + c]$. Then dimensional formula for b is:
C) $[M^0L^1T^0]$

7. The pairs having same dimensional formula
B) Torque, work

8. Which of the following physical quantities do not have the same dimensions
B) Electromotive force, voltage, potential

9. Suppose $A = BC$, where A has the dimension L/M and C has the dimension L/T . Then B has the dimension:

A) T/M

10. Suppose $A = B^n C^m$, where A has dimensions LT , B has dimensions L^2T^{-1} , and C has dimensions LT^2 . Then the exponents n and m have the values:

D) $n = 1/5$, $m = 3/5$

CH.2

MULTIPLE CHOICE QUESTIONS

1. All fluids are:
C) gases or liquids

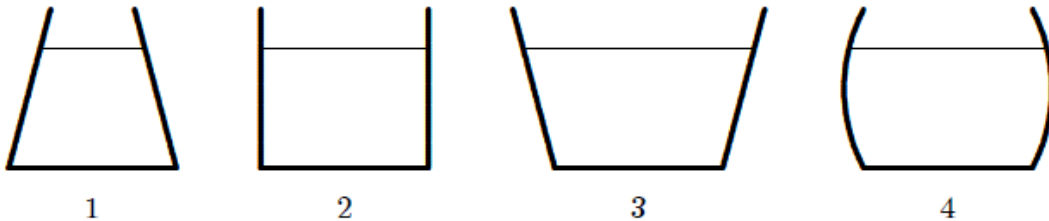
2. 1 Pa is
D) $1 \text{ kg/m} \cdot \text{s}^2$

3. Mercury is a convenient liquid to use in a barometer because
D) it has a high density

4. Barometers and open-tube manometers are two instruments that are used to measure pressure.
D) Barometers measure absolute pressure and manometers measure gauge pressure

5. The pressure exerted on the ground by a man is greatest when:
C) he stands on the toes of one foot

6. The vessels shown below all contain water to the same height. Rank them according to the pressure exerted by the water on the vessel bottoms, least to greatest.



E) All pressures are the same

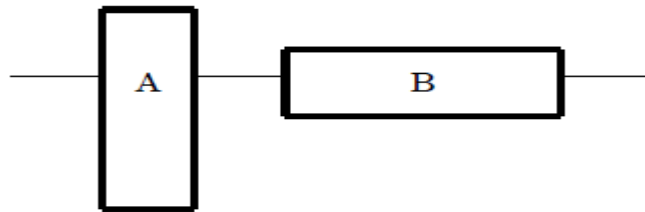
7. In a stationary homogeneous liquid:

D) pressure is the same at all points at the same level

8. Several cans of different sizes and shapes are all filled with the same liquid to the same depth Then:

E) the pressure on the bottom of each can is the same

9. Two identical blocks of ice float in water as shown. Then:



C) the two blocks displace equal volumes of water since they have the same weight

10. A steel ax and an aluminum piston have the same apparent weight in water. When they are weighed in air:

D) both weigh less than they did in water

CH.4

MULTIPLE CHOICE QUESTIONS

- 1) In the formula $F = Gm_1m_2/r^2$, the quantity G:
D) Is a universal constant of nature

- 2) The magnitude of the acceleration of a planet in orbit around the Sun is proportional to:
B) The mass of the Sun

- 3) Suitable units for the gravitational constant G are:
E) $m^3/(kg \cdot s^2)$

- 4) The gravitational constant G has the derived units:
D) $N \cdot m^2/kg^2$

- 5) Earth exerts a gravitational force on the Moon, keeping it in its orbit. The reaction to this force, in the sense of Newton's third law, is:
C) The gravitational force on Earth by the Moon

- 6) Let F_1 be the magnitude of the gravitational force exerted on the Sun by Earth and F_2 be the magnitude of the force exerted on Earth by the Sun. Then:
C) F_1 is equal to F_2

- 7) Let M denote the mass of Earth and let R denote its radius. The ratio g/G at Earth's surface is:
B) M/R^2

8) The mass of an object:

B) Is a vector

9) Consider the statement: “Earth moves in a stable orbit around the Sun and is therefore in equilibrium”. The statement is:

D) False, because Earth has a considerable acceleration

10) An object is raised from the surface of Earth to a height of two Earth radii above Earth. Then:

C) Its mass remains constant and its weight decreases

CH.5

MULTIPLE CHOICE QUESTIONS

- 1) In simple harmonic motion, the restoring force must be proportional to the:
D) displacement

- 2) An oscillatory motion must be simple harmonic if:
D) the acceleration varies sinusoidally with time

- 3) In simple harmonic motion, the magnitude of the acceleration is:
B) proportional to the displacement

- 4) A particle oscillating in simple harmonic motion is:
D) in equilibrium at the center of its path because the acceleration is zero there

- 5) An object is undergoing simple harmonic motion. Throughout a complete cycle it:
D) has varying acceleration

- 6) When a body executes simple harmonic motion, its acceleration at the ends of its path must be:
None of these

- 7) An object attached to one end of a spring makes 20 complete oscillations in 10 s. Its period is:
E) 0.50 s

- 8) An object attached to one end of a spring makes 20 vibrations in 10 s. Its angular frequency is:
E) 12.6 rad/s

9) In simple harmonic motion, the magnitude of the acceleration is greatest when:

B) the displacement is maximum

10) The amplitude and phase constant of an oscillator are determined by:

E) both the initial displacement and velocity