Solution: Class9 Science Sample Question Paper(07) 2017-18

SECTION-A

1. Water is a liquid at room temperature because of the following characteristics

(a) It has a fixed volume, (b) It takes the shape of the container. (c) It is a fluid. (Any one)

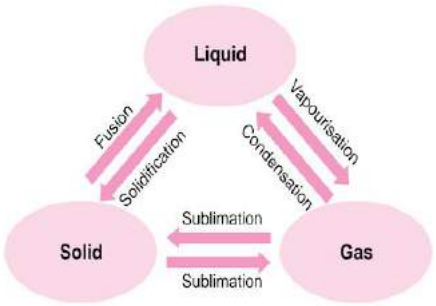
2. Honey and bees wax. 3. (a) $Al(OH)_3$ (b) H_2S

4. **Archimedes' Principle:** When a body is immersed partially or completely in a liquid, it experiences an upward force, which is equal to the weight of the liquid displaced by it.

The density of cork is less than that of water. It means its weight is lesser than the buoyant force experience by it under water. So when it is released, it comes to the surface of water.

5. We know that, Power = $\frac{\text{Work done}}{\text{Time taken}}$; The boy A takes less time to do some work as compared to the boy B. So, power of the boy A is more than that of boy B.

6.



OR `X' is gas at room temperature.

`y' is solid at room temperature.

"Z' is liquid at room temperature.

7. Aerosol: When dispersed phase is liquid and dispersion medium is gas. Emulsion: When both dispersed phase and dispersion medium are liquids. Gel: When dispersed phase is liquid and dispersion medium is solid.

8. Cell is the fundamental unit of life. Cells was discovered by Robert Hooke. They can be observed under a microscope. Some are big enough to be seen with naked eye like egg.

9. (a) Virus (b) Female mosquito/Aedes aegypti (c) Cholera

(e) Sexual contact/sharing of needles/blood transfusion/mother to foetus or infant (d) AIDS

(e) Airborne droplets/direct contact with infected nasal secretions, etc.

10. Here, total distance travelled =200 m and Time taken, t = 1 minute 40 seconds = 60 + 40 = 100 seconds

So, **Average speed** = 200/100 = 2 m/s

Swimming from one end to the other and back along the same straight path displacement = 0

Average velocity = Displacement /Time = zero.

11. (a) G is constant throughout universe. Its unit is $Nm^2\ kg^{-2}$.

g varies with height above the surface of the earth. Its unit is m/s.

(b) No, both will have same force of gravity due to same mass.

12. Frequency = 150 Hz ; Wavelength = 25 cm = 0.25 m ;

Amplitude, A = 6 cm = 0.06 m Velocity = $\eta\lambda$ = 150 x 0.25 = 37.5 m/s

13. (a) Conservation of energy, financial savings, conservation of natural resources.

(b) Environmental care, savings, promotion of use of alternative sources of energy.

(c) Creating awareness about advantages of use of renewable sources of energy, motivating the neighbours for use of technology for better quality of living.

14. During the day, the land heats up faster than the sea. The hot air above the land rises and cold air from the sea takes its place. This produces a breeze from the sea to the land which is called a sea breeze.

At night, the reverse happens. The land cools faster than sea. The warm air above the sea rises. This warm air is replaced by colder air from the land producing a land breeze.

OR,

CFCs contain both chlorine and fluorine. CFCs are very stable and not degraded by any natural process. In the ozone layer present in the outer region of the atmosphere (25 – 40) km above sea level), CFCs are dissociated by ultraviolet light to release free chlorine atoms. Free chlorine atoms catalyse the breakdown of ozone molecules (O_3) into oxygen. This results in degradation of the ozone layer. Thinning of the ozone layer would allow penetration of ultraviolet light into Earth's atmosphere causing blindness, skin cancers and mutations.

15. (a) Fishing nets; fishing boats. (b) By locating large schools of fish in the open sea using satellites and echo-sounders.

16. (a) One atomic mass unit is a mass unit equal to exactly one twelfth ($\frac{1}{12}th$) the mass of one atom of carbon-

12. Atom of most elements are not able to exist independently. Atoms form molecules and ions to exist independently.

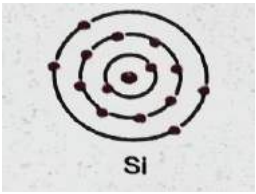
(b) Number of calcium atoms in 40.0 u of calcium = 6.022×10^{22}

Number of calcium atoms in 0.4 u of calcium = $\left(\frac{6.022 \times 10^{22}}{40} \times 0.4\right) = 6.022 \times 10^{21}$ atoms.

17. If an atom has 4 electrons in the M shell, it implies that the inner K and L shells are completely filled. K = 2 and L = 8 electrons.

So, the atomic number of this atom = 2 + 8 + 4 = 14. This element is Silicon.

Valency of this atom is 4



18. Nervous tissue Brain, spinal cord and nerves are composed of nervous tissues. The cells of nervous tissue are called neurons. Muscular tissue and nervous tissue enable animals to move rapidly in response to stimuli.

19. The plylum of anirnalia which has

(a) A pseudocoelom—nematoda
(b) A water-driven tube system echinodermata
(c) Jointed legs—arthropoda
(d) Pores in the body leading to a canal system porifera
(e) Notochord at some stages of their life protochordata

20. (a) Accelerating unbalanced force

(b) Retarding unbalanced force

(c) No force

(d) No force (e) Retarding force

OR,

The initial velocity of the ball is 20 cm/s

Due to the friction force exerted by the table, the velocity of the ball decreases down to zero in 10 s. Thus u = 20 cms-1; v = 0 cms-1 and t = 10 s.

Since the velocity-time graph is a straight line, it is clear that the ball moves with a constant acceleration. The acceleration a is $a = \frac{v-u}{t} = \frac{0-20}{10} = -2\ \text{cm/s}^2 = -0.02\ \text{m/s}^2$

The force exerted on the ball F is F = ma = $\frac{20}{1000}$ kg x $-0.02\ \text{m/s}^2$) = — 0.0004 N

The negative sign implies that the frictional force exerted by the table is opposite to the direction of motion of the ball.

21. (a) The two forms of mechanical energy are kinetic energy and potential energy.

The SI unit of energy is joules

Joule is the amount of work done on an object when a force of 1 N displaces it by 1 m along the line of action of the force.

(b) m = 50 kg,g = 10 m/s^2 ,h = 0.5m So, $PE = mgh = 50\ x\ 10\ x\ 0.5 = 250\ J$

(c) m = 20 kg v = 0.01m/s KE = $\frac{1}{2}mv^2 = \frac{1}{2}\ x\ 20\ x\ 0.1\ x\ 0.1 = 0.1\ J$

SECTION-B

22. Note the temperature by keeping the bulb in ice. • Note the temperature by keeping eyes in line with the level of mercury.

23. Students A and D will be able to form the colloidal solution. Properties:

(a) A colloid is a heterogeneous mixture.

(b) Colloidal solution shows Tyndall effect, i.e., it scatters the beam of light.

24. Parenchyma cells are living cells. They are thin-walled cells and have large intercellular space between them.

25. The two ways by which earthworm's body is adapted to live in soil:

(a) Chitinous setae present in segment that help it to move.

(b) Lubricating slime secreted that allows for easier movement through soil.

26. Angle between incident sound wave and reflected sound wave is twice the angle of incidence or angle of reflection. Therefore, angle of incidence = $\frac{130}{2}$ = 65°

27. No, the density of iron ball is more than the aluminium, hence it will experience more up thrust.