CBSE Sample Papers For Class 9 SA2 Science-Solved 2016 (Set 3)

Answers

SECTION - A

Q.1. Who gave the laws of chemical combination ?

Ans. Antoine L. Lavoisier and Joseph L. Proust.

Q.2. Who discovered the neutron ?

Ans. James Chadwick (1932).

Q.3. Homo sapiens is the scientific name of human beings. What do these two terms imply ?

Ans. Homo is the generic name, sapiens is the name of the species.

Q.4. Define:
(a)Fluid
(b)Buoyant force

Ans. (a) Any substance which can flow'is called a fluid.

(b)The upward force exerted by a liquid on an object which is immersed in the liquid is called upthrust or buoyant force.

Q.5. An object of mass 40 kg is pulled upto a height of 0.5 m. Calculate the work done.
(Given g = 9.8 ms⁻²)

Ans. Work done = mgh

W = 40 x 9.8 x 0.5 = 196 Joules

Q.6. Verify by calculating that:
(a)5 moles of Co_2 has higher mass than 5 moles of H_2O
(b)120 g of calcium and 120 g magnesium elements have a mole ratio of 3 : 5.

Ans.

(a) Gram molecular m ss of CO_2 is 44 and water i 18

    5 × 44 > 5 × 18

(b) 120 g Calcium = $\frac{120}{40}$ 3 moles wher as 12 g magnesium = $\frac{120}{40}$ = 5 moles

    Mol ratio = 120/40 × 24/120 = 3 : 5.

Q.7. List applications of any three isotopes in various fields.

Ans. Applications of any three isotopes are :

(a)An isotope of Uranium [U - 235] is used as a fuel in nuclear reactors.

(b)An isotope of Cobalt [Co - 60] is used in the treatment of cancer.

(c)An isotope of Iodine [I - 131] is used in the treatment of goitre.

Q.8. State three rules for writing the chemical formulae.

Ans. (i)The valencies or charges on the ion must balance.

(ii)When a compound consists of a metal and non-metal, the name or symbol of the metal is written first.

(iii) In compounds formed with polyatomic ions, the ion is enclosed in a bracket before writing the number to indicate the ratio. In case the number of polyatomic ion is one, the bracket is not required.

Q.9. Mention the problem which is associated with using local names of organisms. How was this resolved ? Name the scientist who had introduced the above solution.

Ans. (a) It is difficult for people speaking or writing in different language to know when they are talking about the same organism.

(b)By agreeing upon a scientific name for organisms (Binomial nomenclature).

(c)Carolus Linnaeus.

Q.10. Label in the following picture (a) to (f) to show the common mode of disease transmission.
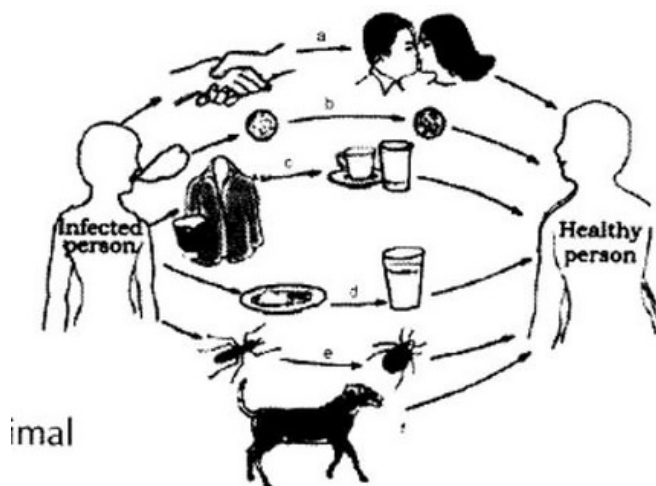
Ans. (a) Direct contact (b) by air

(c)Indirect contact (d) by food

(e) Mosquito/insect (f)Rabid

animal

Q.11. Given below are few situations:
(i) Geeta of Class IX was having common cold. She sits with Sarika who also develops the diseases.
(ii) Animesh of Class IX shifted to a new residence, with his family, where water purification system has not been installed yet. He develops cholera and dysentery.
(iii) Associate these situations with their mode of transmission and assign appropriate category to them
Ans. (i) Transmission by air. (ii) Transmission by water (iii) Communicable diseases.

Q.12. A rocket of mass m is moving with a velocity v. If its velocity becomes three times, calculate the change in its kinetic energy.
Ans.

$$K.E. = \frac{-}{2}mv^2$$

$$K.E._1 - \frac{-}{2}mv^2$$

$$K.E._2 = \frac{1}{2}m(3v)^2$$

$$\text{Change in K.E.} \quad \frac{1}{2}m(3v)^2 - \frac{1}{2}mv^2 = \frac{1}{2}m(9v^2 - v^2) = 4\ mv^2$$

**Q.13. The pressure exerted by a cube of side 0.03 m on a surface is 10 Pa. Calculate the thrust exerted by the cube.**
Ans. Thrust = P x A
= 10 x (0.03)³ = 0.00027 or 2.7 x 10⁻⁴ Pa.

Q.14. Explain with the help of a bell jar experiment that sound cannot travel in vacuum.
Ans. Take an electric bell and an airtight glass bell jar. The electric bell is suspended inside the airtight bell jar. The bell jar is connected to a vacuum pump, as shown in fig. If you press the switch you will be able to hear the bell. Now, start the vacuum pump. When the air in the jar is pumped out gradually, the sound becomes fainter, although the same current is passing through the bell. After sometime when less air is left inside the bell jar you will hear a very feeble sound. Now, if the air is removed

completely, then no sound will be heard.
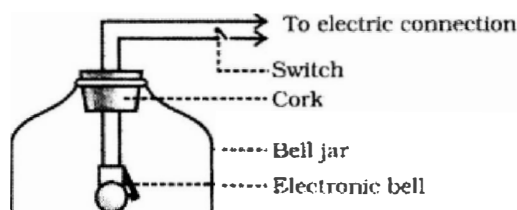
Bell jar experiment showing sound cannot travel in vacuum.

Q.15. Define echo. Can we hear echo in a small room ? State reason. Differentiate between echo and reverberation.

Ans.(i) Echo is repetition of reflection of sound.

(ii) We can't hear echo in small room because in small room time between two sounds will be less than 0.1 sec and we can't hear two sounds distinctly.

(iii) Difference between echo and reverberation :

Echo	Reverberation
The sound heard after reflection from a rigid obtacle is called an echo.	Reverberation is the "repeated reflection of sound waves" that results in persistence of sound for sometimes.

Q.16. The milkman in our society started carrying lactometer. His move was well appreciated by the society members.
(a)What is the use of lactometer ? On what principle it works ?
(b)What values of milkman is shown by the move ?

Ans. (a) Tests milk purity; Archimedes'principle.

(b) Aware; honest.

Q.17. (a) Write the rules followed for filling the electrons in various energy shells of any atom, as proposed by Bohr and Bury.
(b) Write the electronic configuration of an atom of sulphur. Also draw a schematic diagram of its atom showing the distribution of electrons in its shells.

Ans. (a) The rules followed for filling the various electrons in various energy shells of any atom, as proposed by Bohr and Bury are :

(i) The maximum number of electrons present in a shell is given by the formula $2n^2$, where 'ri is the orbit number or energy level index.

(ii) The maximum number of electrons that can be accommodated in the outermost orbit is 8.

(iii) Electrons are not accommodated in a given shell, unless the inner shells are filled. That is, the shells are filled in a stepwise manner.
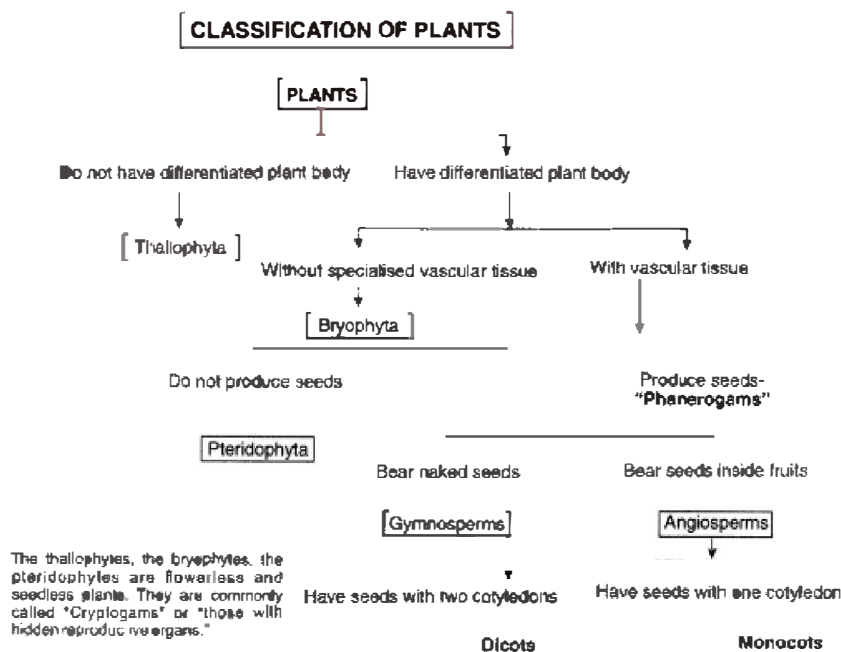
(b) S = 16 = 2,8,6
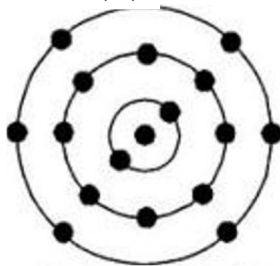
Shemat c diagram of sulphur atom.

Q.18. Give the outline of the classification of plants on the basis of various features.

Ans.

Q.19. "Educating parents would help a lot in reducing the incidences of diseases in children". Justify the statement with five reasons.

Ans. (i) Educated parents understand the importance of healthy and balanced diet

for their children which will prevent nutritional deficiency disorders and also help in proper functioning of immune system.

(ii) They know about modes of spread of diseases so, will maintain hygienic conditions.

(iii) Parents will provide only safe uncontaminated water to avoid water-borne diseases.

(iv) Educated parents can provide symptomatic treatment first and, then go for further doctor's consultation to kill the cause of the disease.

(v) Educated parents can inculcate a sense of social and moral responsibility in their children to maintain clean environment to prevent spread of infections.

Q.20. (a) Draw a longitudinal wave in a slinky. Show it on a graph between density variation and time. Mark on it region of maximum and minimum variation in density.
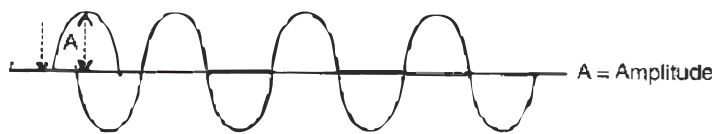**(b) Define the amplitude of a wave. Show it graphically. Identify the characteristic of wave which is affected by the amplitude of a wave ? Ans.**

(a)

R   R

C = Compression
(Maximum density variation)
R = Rarefaction
(Minimum density variation)

Compression

Rarefaction
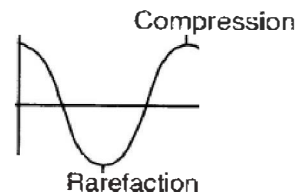
(b) **Amplitude :** It is a maximum displacement of the particle from its mean position.

A = Amplitude

It describes the loudness.

Q.21. (a) Name two forms of energy involved while a pendulum oscillates..
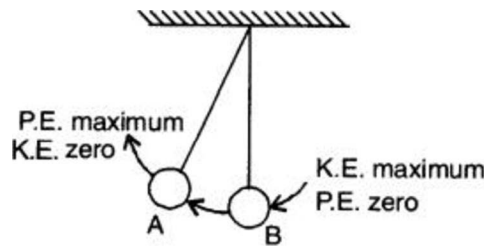**(b) Show with the help of a diagram that when does each type of energy attain its maximum value.**
(c)How do these energies vary while the pendulum oscillates. (d) Name and state the law involved.
Ans.

(a) K.E. and P.E.

(b)

(c)From B to A, P.E. increases, K.E. decreases.

From A to B, P.E. decreases, K.E. increases.

Law of conservation of energy states "The energy in a system can neither be created nor destroyed, it can simply change from one form into another."

SECTION - B

Q.22-Q.24. OTBA Questions of 10 marks.

SECTION - C

Q.25. The sound waves always need a material medium for their propagation. The physical quantity which is transported through the medium is :
(a)velocity (b) mass
(c)energy (d) force
Ans. (c)

Q.26. Rama takes an iron cuboid of dimensions 30 cm x 20 cm x 10 cm and mass 5 kg. She places it on the loose sand filled in a rectangular tray. On the basis of her observations she would conclude that the depression obtained on the loose sand would be:
(a)maximum when it lies on its face of dimensions 20 cm x 10 cm.
(b)maximum when it lies on its face of dimensions 30 cm x 10 cm.
(c)maximum when it lies on its face of dimensions 30 cm x 20 cm.
(d)same when it lies on any of the three faces.
Ans. (a)

Q.27. For producing a transverse wave along a slinky:
(a)free end is jerked at right angle to its length.
(b)the free end is compressed.
(c)the free end is pulled along its length.

(d)the free end is compressed and pulled.
Ans. (a)

Q.28. Spirogyra, mosses and ferns belong to the sub-kingdom :
(a) Cryptogamae (b) Phanerogamae
(c) Angiospermae (d) Gymnospermae
Ans. (a)

Q.29. Sodium chloride reacts with silver nitrate to form silver chloride and sodium nitrate, then :
(a)mass of sodium chloride is equal to mass of sodium nitrate.
(b)mass of silver nitrate is equal to mass of silver chloride.
(c)total mass of sodium chloride and sodium nitrate is equal to the total mass of silver nitrate and silver chloride.
(d)total mass of sodium chloride and silver nitrate is equal to the total mass of silver chloride and sodium nitrate.
Ans. (d)

Q.30. Which of the following combinations of chemicals can a student select to prove the law of conservation of mass ?
(a) $Na_2SO_4(s)$ and $BaCL_2(s)$ (6) $BaCL_2(aq)$ and $Na_2SO_4(s)$
(c) $Na_2SO_4(aq)$ and $BaCL_2(aq)$ (d) $BaCL_2(s)$ and $Na_2SO_4(aq)$
**Ans.** (c)

Q.31. What do the following figures A, B, C and D indicate:

(a)A - Reticulate venation B - Parallel venation C - Pentamerous flower D - Trimerous flower
(b)A - Parallel venation B - Reticulate venation C - Pentamerous flower D - Trimerous flower
(c)A - Reticulate venation B - Parallel venation C - Trimerous flower D - Pentamerous flower
(d)A - Parallel venation B - Reticulate venation C - Trimerous flower D - Pentamerous flower
Ans. (d)

Q.32. The correct identification of dicotyledonous plant from the following figures is:
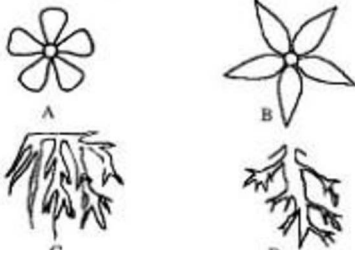
(a) both A and C   (b) A, B and D

(c)both B and C   (d) both C and D

Ans. (b)

Q.33. Identify the incorrect statement of the stages in the life cycle of a mosquito.

(a) eggs are deposited on or near water.

(b) larva does not feed.

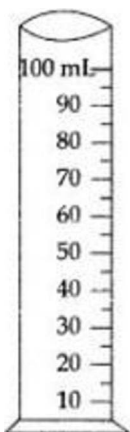(c)from pupa an adult mosquito emerges.

(d)pupa undergoes metamorphose.

Ans. (b)

Q.34. Look at the figure of a graduated cylinder given below and answer the question that follows:

(a)What is the range of the device ?
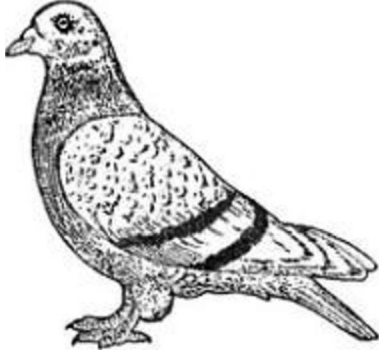
(b)Calculate the least count of the device.

Ans. (a) Range = 10 - 100 mL

(b) L.C = 20/2 = 10 mL

Q.35. In which of the two, glycerine or kerosene, the loss in weight of a solid when fully immersed in them will be more and why ?

Ans. Glycerine, because its density is more than that of kerosene.

Q.36. (a) Identify the organism given below:

(b) Write any two adaptive features of the organism.

Ans.(a)Bird

(b)Body is covered with feathers.

The upper and lower jaw modified into beak (or any other relevant feature).