

## SCIENCE (IX)

1. Calculate the number of neutrons in the two isotopes of Cl  $Cl^{35}$   $Cl^{37}$
2. Name any two disease transmitted through air.
3. Define one joule of work.
4. (a) Name the wave property which determines (i) loudness (ii) pitch  
(b) Draw a sound waves for a (i) high pitched sound (ii) low pitched sound.
5. What is meant by buoyant force? Write two factors on which the buoyant force acting on a body depends when it is immersed in liquid .
6. According to the given equation :-  
(a)  $C + O_2 \rightarrow CO_2$  Applying the law of constant proportion to calculate the mass of oxygen that will be used up for complete combustion of 5gm of carbon.  
(b) Write the drawback of the given postulate of the Daltons Atomic theory 'Atoms of given element are identical in mass and chemical properties .  
(c) Define atomic mass unit.
7. The average atomic mass of sample of an element X is 16.24.  
(a) what are the percentage of isotopes and in the sample.  
(b) An element x has 7 electrons in the M shell. It has completely filled K and L shell. Draw its electronic configuration diagram.
8. (a) write any two observations of Rutherford's scattering experiment with their conclusion.  
(b) out of K , L , M and N energy shell, which shell has lowest energy and which is far from nucleus.
9. (a) list any two human activities which would lead to an increase in the carbon dioxide content of air  
(b) name two biologically important compounds that contain carbon and nitrogen.
10. Answer in a tabular form one difference each in the following.  
(a) How do gymnosperms and angiosperms differ from each other.  
(b) How do animals in phylum annelid differ from arthropoda.  
(c) How does bony fish differ from cartilaginous fish?

11. Derive an expression for kinetic energy of a body having mass 'M' and moving uniformly with velocity 'V'.
12. (a) why do school bags have broad straps rather than thin straps?  
(b) A man is asked to run with a bag containing 20 kg steel block. Will it be easier for him to run with 20 kg cotton replacing the steel block? Explain with reason?
13. (a) Write two practical applications of ultrasound.  
(b) Calculate the minimum distance required to hear an echo?
14. (a) Lactometers are used to determine the purity of a sample of milk. Name and state the principle which this instrument is based on.  
(b) A ball weighing 4 kg having density  $4000 \text{ kg/m}^3$  find (i) volume of the substance and (ii) mass of the water displaced by the ball.
15. State whether the work done is positive, negative or zero in the following situations. Support your answer with.  
(a) work done by a man in lifting a bucket out of a well by means of a rope tied to the bucket.  
(b) work done by friction on a body sliding down on an inclined plane.  
(c) work done by the force of gravity on a satellite moving around the earth.
16. In the early December 2012 Delhi was in news for smog due to increased air pollution. Smog resulted in reduced visibility and consequent road accidents, traffic jams and also caused harmful effects to the biotic component in the capital (a) what is smog (b) justify by giving two reasons why it is harmful to human beings.
17. Write down the symbol of ions present in iron (a) chloride and aluminum oxide (b) an element X has valency 2. Write the formula of its hydroxide and sulphate. (c) calculate the following  
(i) number of moles in 4.9 gm of sulphuric acid  
(ii) number of atoms in 8 gm of oxygen gas  
(iii) mass of 1 atom of carbon.  $H=1, S=32, O=16, C=12$ .
18. (a) How is soil formed?  
(b) What is soil erosion? Discuss two ways to check soil erosion.  
(c) Explain the role of living organisms in soil formation.

- 19.(a) Write in tabular form one difference between longitudinal wave and transverse wave.
- (b) What is reverberation? Write two ways of reducing reverberation?
- (c) A stone is dropped into a well 44m deep and the sound of splash is heard after 3.12 sec. find the speed of sound in air.
- 20.(a) Write the relationship between commercial unit and SI unit of electrical energy?
- (b) In which position does an oscillating pendulum have (i) maximum kinetic energy and (ii) maximum potential energy?
- (c) A body of mass 50 kg climbs up a vertical height of 100 m. calculate the amount of potential energy it gains.
- (d) calculate the electricity bill for a month of 30 days ,if the following devices are used as specified (i) 3 bulbs of 40 watt for 6 hrs (ii) 6 tube lights of 50w for 8 hrs. given the rate of electricity is rs.2.50 per unit.
- 21.(a) Why do the females of many species of mosquitoes feed on blood of many warm blooded animals?
- (b) Draw a diagram of funaria and label the following parts (i) capsule (ii) phizoids (iii) female branch
- (c) Name any four disease against which children are protected through vaccination.
22. The informal sector is the backbone of waste management?
23. Explain E waste. What are the most important steps taken by central government to manage E waste under environment protection act.
24. What are the objectives of solid waste management . suggest any one strategy for effective waste management.
25. 8.4 g of sodium carbonate was added to solution of 20g of ethanoic acid . calculate the amount of residue formed if  $\text{CO}_2$  released weighed 4.4 gm.
26. Write two characteristic features of
27. Why earthworm is called farmers friend?
28. Arrange the following stages in life cycle of a mosquito in proper order ;  
papa, adult mosquito, larva, eggs.
29. What is the mode of nutrition in agaricus?

30. A student performed an experiment on the reflection of sound as shown in the figure . find the value of
31. A student is doing an experiment to find the pressure exerted by an iron cuboid of mass 10kg having dimensions 5cm X 10cm X 20cm on sand. The cuboid is placed on sand in three different manners such that its sides of dimensions (i) 5cm X 10cm (ii) 5cm X 20cm (iii) 10cm X 20cm lie on the sand . which case would the student observe maximum and minimum depression.
32. In a spring balance, the spacing between 0 and 20 g mark divided into 10 equal parts. What is the least amount of the spring balance.
33. A student fixes two ends of rope to two rigid support A and B placed at a distance of 15m. he then gives a transversal horizontal jerk to create a pulse in the rope which moves from A to B.. B to A repeatedly. The pulse dies after completing three to and fro journeys from A to B and back. The pulse takes 2min 30 sec to complete its entire journey. Calculate the speed of the pulse moving on the rope.
34. What do you understand by relative density of a material . write SI unit.
35. For the verification of law of conservation of mass in a student laboratory four students ABCD performed the following reaction (a) reaction between Zn metal and diluted hydrochloric acid. (b) added aq solution of barium chloride to aq solution of sodium sulphate (c) burning of magnesium ribbon. (d) added aq solution of potassium iodide to aq solution of lead acetate. The student who is/are likely to get best results and why?
36. Draw a labeled diagram of a monocot leaf and a dicot leaf showing their venation.

