QB365
# Model Question Paper 1
9th Standard CBSE

**Science**

Reg.No. : ☐☐☐☐☐☐

Time : 02:00:00 Hrs

Total Marks : 100

## Section-A

1) Gases do not have                                                                                    1

   (a) high compressibility    (b) high fluidity    (c) high density    (d) large volume.

2) Gases can be easily compressed because these have least intermolecular interactions.          1

   (a) assertion is correct and reason is correct    (b) assertion is correct and reason is wrong

   (c) assertion is wrong and reason is correct    (d) assertion is wrong and reason is wrong.

3) When a ray of light passes through a solution and it is not visible, then the solution has      1

   (a) particles smaller than $10^{-9}$ meter in diameter    (b) particles are colloidal

   (c) particles are a suspension    (d) particles os the order of $10^{-7}$ meter in diameter

4) Which of the following decreases the rate of evaporation?                                       1

   (a) Surface area    (b) Humidity    (c) Temperature    (d) Wind.

5) An atom containing 16 electrons and 16 neutrons is represented as                               1

   (a) $^{16}_{16}A$    (b) $^{32}_{16}A$    (c) $^{0}_{16}A$    (d) $^{16}_{0}A$

6) Which of the following does not change when a chemical reaction take place?                     1

   (a) Volume    (b) Mass    (c) Physical properties    (d) Chemical properties

7) Cloud is an example of                                                                          1

   (a) solid dispersed in a gas    (b) liquid dispersed in a gas    (c) liquid dispersed in a solid

   (d) solid dispersed in a gas

8) Which one of the following compound is not made up of charged ions?                             1

   (a) HCl    (b) NaCl    (c) $MgCl_2$    (d) CaO

9) In $SO_2$, the mass of sulphur in combination with 3.0 oxygen is                                1

   (a) 3.0 g    (b) 4.0 g    (c) 32.0 g    (d) 16.0 g

10) There is no between valency and electrons except in case of                                    1

   (a) elements of group 2    (b) elements of group 3    (c) elements of group 4    (d) elements of group 5

11) The atomic number of neon (Ne), magnesium ($Mg^{2+}$), aluminium ($Al^{3+}$) and phosphorus ($P^{3-}$) are 10, 12, 13    1
   and 15 respectively.Select the odd species in terms of electronic configuration.

   (a) Ne    (b) $Mg^{2+}$    (c) $Al^{3+}$    (d) $P^{3-}$

12) Iodine solution is used to  **1**

   (a) stain onion peel cells   (b) stain human cheek cells   (c) mount onion peel cells

   (d) mount human cheek cells

13) The charge to mass ratio on cathode rays in the discharge tube is constant because electrons are common   **1**

   constituents of all matter.

   (a) assertion is correct and reason is correct   (b) assertion is correct but reason is wrong

   (c) assertion is wrong but reason is correct   (d) assertion is wrong and reason is wrong

14) The nucleus of an atom is approximately   **1**

   (a) $10^{-5}$m   (b) $10^{-8}$m   (c) $10^{-10}$m   (d) $10^{-15}$m

15) Which of the following maintains the basic structure (shape) of the plant cell after shrinkage of the cell   **1**

   content during plasmolysis?

   (a) Plasma membrane   (b) Vacuole   (c) Plastids   (d) Cell wall

16) The largest cell in human body is   **1**

   (a) muscle cell   (b) nerve cell   (c) Kidney cell   (d) liver cell

17) Plant cells have large vacuoles each surrounded by a membrane known as   **1**

   (a) plasma membrane   (b) cell wall   (c) leucoplast   (d) tonoplast

18) ATP stands for   **1**

   (a) adenosine triphosphate   (b) amino triphosphate   (c) amino tri glycerophosphate

   (d) adenine tri glycerophosphate

19) Mitochondria and plastids are able to synthesise some of their own proteins because they have   **1**

   (a) DNA and nucleolus   (b) RNA and lysosomes   (c) DNA and ribosomes   (d) RNA and ribosomes

20) Stroma is present in   **1**

   (a) mitochondria   (b) leucoplast   (c) endoplasmic reticulum   (d) lysosomes

## Section-B

21) One mole of carbon atom weighs 12 g.Find the mass in grams of one atom of carbon (Given C = 12u,   **2**

   No=6.022 x $10^{23}$ per mole)

22) (a) What temperature in Kelvin scale is equal to $50\,°C$?   **2**

   (b) Describe an activity to show that rate of evaporation increases with surface area.

   (c) State two differences between evaporation and boiling.

23) What is matter?   **2**

24) convert into mole 20 g of water (Atomic mass of hydrogen and oxygen are 1 and 16 respectively)   **2**

25) Describe the role played by the lysosomes in the cell. Why are these termed as suicidal bags? How do they   **2**

   perform their function?

26) Sodium salt and sugar have similar appearance.Why are these classified as different substances?   **2**

27) In what ways all substances around us are alike?   **2**

28) Express the following temperatures in Kelvin scale:   **2**

   (i) $25\,°C$ and $373\,°C$

29) In what ways air can be considered as matter?   **2**

30) Give reasons:    **2**

(a) Naphthalene balls disappear with time without leaving any solid.

(b) A gas exerts pressure on the walls of the container.

31) What do you mean by diffusion?Explain giving an example.    **2**

32) What happens when a crystal of potassium permanganate is dropped in a glass tumbler containing water?    **2**
What conclusion can you draw?

33) Why is the rate of diffusion faster in gases.    **2**

34) you are given two liquids A and B.One is a compound or a pure substance and the other is a mixture    **2**
(solution). How will you select the compound?

35) (a) 7g of iron fillings and 4 g of sulphur powder is treated with dilute $H_2SO_4$ at room temperature. Name the    **2**
gas produced.

(b) The same mixture is heated strongly and then treated with dilute sulphuric acid. Which gas would be
produced?

(c)What is the cause of this difference in result of chemical reaction in different conditions?

36) Select the substances which follow the process of sublimation:    **2**
Ice, ammonium chloride, salt, naphthalene, ghee, coconut oil, camphor.

37) Identify the heterogeneous mixture from the following:    **2**
Air, Soda water, soap solution, brass.

38) 50 g 0f 10% lead nitrate is mixed with 50g of 10% sodium chloride in a closed vessel.After reaction has taken    **2**
place, it was found that 6.83 g of lead chloride was precipated.Besides, the reaction mixture contained 90g
water and sodium nitrate.Calculate the amount of sodium nitrate formed.

39) Write an example of a polyatomic molecules.    **2**

40) Calculate the mass of 0.5 mole of sulphuric acid,(Atomic mass H=1u, S=32u, O=16u)    **2**

## Section-C

41) Sidak took 50 mL water in two beakers at room temperature and added sodium chloride to one beaker while    **5**
sugar to the other, till no more solute would be dissolved. Then she heated the contents of the beakers and
added more solutes in them.

(a) Will the amount of salt and sugar that can be dissolved in water at given temperature same?

(b) What will you expect to happen if she cools the contents of the beakers?justify your answer.

42) Write the symbol for following elements.    **5**

(i) Gold (ii) Mercury

43) O•.ur body is formed of millions of cells. Now, you can imagine how minute the cells are.We cannot see    **5**
unicellular bacteria or our cheek cell without the help of microscope.We can see a type of cell with naked eye.
These are shelled eggs, for example, egg of a hen. Eggs of a bird after hatching give rise young ones (chick).
With this information, answer the following questions:

(i) Egg of which bird is biggest?

(ii) Why is it said that take one egg daily?

(iii) Why should we not eat more eggs daily for a long period?

(iv) What is your duty after getting this information?

44) Find the number of atoms in 12g of carbon    **5**

45) Why is an atom neutral in spite of the presence of charged particles in it?  **5**

46) Nucleus does not contain any electrons.Even then the $\beta$-particle emission has been described as the ejection of an electron from the nucleus.Comment.  **5**

47) From Rutherford's $\alpha$-particle scattering experiment give the experimental evidence for deriving the conclusion that  **5**

   (i)most of the space inside the atom is empty

   (ii)the nucleus of an atom is positively charged

48) Explain with examples, (i)atomic number, (ii)Mass number (iii)Isotopes and (iv)Isobars.Give any two uses of isotopes.  **5**

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

## Section-A

1) (c) high density  **1**

2) (b) assertion is correct and reason is wrong  **1**

3) (a) particles smaller than $10^{-9}$ meter in diameter  **1**

4) (b) Humidity  **1**

5) (b) $^{32}_{16}A$  **1**

6) (b) Mass  **1**

7) (b) liquid dispersed in a gas  **1**

8) (a) HCl  **1**

9) (a) 3.0 g  **1**

10) (d) elements of group 5  **1**

11) (d) $P^{3-}$  **1**

12) (a) stain onion peel cells  **1**

13) (a) assertion is correct and reason is correct  **1**

14) (d) $10^{-15}$m  **1**

15) (d) Cell wall  **1**

16) (b) nerve cell  **1**

17) (d) tonoplast  **1**

18) (a) adenosine triphosphate  **1**

19) (c) DNA and ribosomes  **1**

20) (c) endoplasmic reticulum  **1**

## Section-B

21) 1 Mole of Carbon atom = 6.022 x $10^{23}$ atoms **2**

6.022 x $10^{23}$ atoms of carbon weigh = 12 g

1 atom of carbon weighs = $\frac{12}{6.022 \times 10^{23}}$

= 1.99 x $10^{-23}$

22) **2**

(i) 50+273=323K

(ii) **Activity** Take little amount of water in three containers which have different surface areas. Keep hem in sunlight for 2 h. Measure the volume of water left in all three containers.

**Observation** The amount of water left will be least in container having largest surface area among them.

**Conclusion** Greater the surface area, more will be the rate of evaporation.

23) **2**

A substance occuring in nature or coming in use in day to day life is called matter.Examples are naturally occuring minerals, plants to paper, chalk, coke, food etc.a matter may be available in varieties of shape, size, colour and odoour.Matter is thus anything that has and occupies space.

24) (i) Molecular mass of water ($H_2O$) **2**

=lx2+16=18u

:. Number of moles in 20 g of water=$\frac{20}{18}$

25) **2**

(i) • Lysosomes are membrane-bound sacs filled with digestive enzymes.These enzymes are made by rough endoplasmic reticulum.

• Lysosomes are a kind of waste disposal system of the cell.

• During the disturbance in cellular metabolism, e.g. when a cell gets damaged, lysosomes present in the cell may burst and the enzymes digest the damaged cell. Hence, lysosomes are called as 'suicidal bags' of a cell.

• Lysosomes break up the foreign materials entering into the cell, such as bacteria or food into smal piece

26) **2**

The substances are not classified only by their appearances.These are classified by their properties such as density, boiling point or melting point, conductivity, thermal capacity and other chemical properties.sugar and sodium chloride have different physical and chemical properties and so are different substances.

27) All substances have mass and occupy space and are called matter. **2**

28) (i) $25°C$ +273=298K **2**

(ii) $373°C$ +273=646K

29) Air is matter because it has mass and occupies space. **2**

30)                                                                                                    2

  (a) Naphthalene has the property of sublimation.So even at room temperature, it evaporates to vapours.
  (b) the molecules of gas are continuously moving at random either striking among themselves or with the
  walls of the container.The pressure on the walls of container is the force per unit area with which the
  moving gas particles strike per unit area of the containing vessel.

31)                                                                                                    2

  Particles of matter are always in a state of motion.They move to interect with other particles and
  distribute themselves equally in all available space.This intermixing of particles of two substances on their
  own is called diffusion.Particles of a gas diffuse faster than particles of a liquid.
  Example:Light an agarbatti in one corner of the room, and stand in the other corner.Very soon, you will
  feel smell of agarbatti.The particles of perfume in the agarbatti stick mix with particles of air and spread
  out eventually and reach to us even at a distance.this is due to diffusion of agarbatti particles into
  particles of air.

32)                                                                                                    2

  When a crystal of pottasium permaganate is dropped in a glass tumbler containing water, then the colour
  of pottasium permanganate spreads throughout the water in the glass.This shows that the particles of
  matter are continuosly moving.

33)  The intermolecular force of attraction is minimum in gases.                                        2

34)                                                                                                    2

  The liquid would boil off at a constant temperature whereas the liquid mixture (solution) would boils off
  at two different temperature. Thus the liquid which boils through at a constant temperature is a
  compound or pure substance.

35)                                                                                                    2

  (a) Hydrogen gas
  (b) Hydrogen sulphide
  (c) In (a) iron reacts with dil. H2SO4 gas. In (b) iron sulphide compound formed reacts with dil. $H_2SO_4$ to
  give $H_2S$ gas.

36)  Ammonium chloride, naphthalene and camphor                                                         2

37)  Soap solution                                                                                     2

38)                                                                                                    2

  50 g of 10% lead nitrate means the solution contains 5 g lead nitrate and 45 g water.Similarly, 50 g of 10%
  sodium chloride means the solution contains 5 g sodium chloride and 45 g water.
  Thus total contents before reaction = 5+5+90 = 100 g
  After reaction, amount of water = 90 g
  Amount of precipitate= 6.83 g
  Since according to law of conservation of mass, the total mass of reaction mixture = 100 g
  Amount of sodium nitrate = 100-90-6.83 = 3.17g

39)  Any molecule containing more than four atoms, $H_2SO_4$ (Sulphuric acid) is a polyatomic molecule.  2

40)  1 mole of sulphuric acid = 1 x 2 + 32 x 1 + 16 x 4 = 98 g                                          2
  0.5 mole of sulphuric acid = $\frac{98}{2}$ = 49 g

## Section-C

41)   **5**

(a) The amount of sugar will be more because sugar is more soluble in water than salt at a given temperature.

(b) When we cool, the contents of two beakers, salt will be precipitated out first.

42)   (i) Gold - Au   **5**

(ii) Mercury - Hg

43)   **5**

(i) Ostrich (Struthio cametus), its egg size is about 15 em x 13 cm weighing about 3 pounds.

(ii) An egg provides sufficient proteins, fats, vitamin A and vitamin D.

(iii) Eggs contains lot of cholestrol that may cause heart diseases. We should not eat many eggs in a day for long period.

(iv) Our duty is that we should make our friends, relatives and community to know about useful and harmful effects of eating eggs

44)   1 mole of carbon = 12 g = 6.022 x $10^{23}$ atoms   **5**

45)   **5**

The number of negatively charged electrons (total negative charge) is the same as the number of positively charged protons (total positive charge) in the atom of an element.

46)   It is believed that electrons are produced as a result of a decay of neutrons as indicated below   **5**

Neutron $\longrightarrow$ Proton + electron + neutron

The electron produced escapes as a $\beta$-particle leaving the proton behind in the nucleus.

47)   **5**

(i)When $\alpha$-particles are allowed to strike a very thin gold foil, it is found that most of these particles pass through the foil without any deflection.It is calculated that one particle in $10^5$ deflected back by $180^0$ showing that larger part $(10^5:1)$ of the atomic space is empty

(ii) The fact that atomic nuclei are positively charged can be shown by performing Rutherford's $\alpha$-particle scattering experiment.Take a thin sheet of metal foil.Allow $\alpha$-particle to bombard over it.It will be observed that only a small fraction of $\alpha$-particles (positively charged) are deflected through large angles and the rest pass through the foil without any deflection.This shows that positive charge of the atom is concentrated at the centre of the nucleus

48)

(i)Atomic number is defined as number of protons present in the nucleus of an atom.For example, there are 6 protons in carbon, so the atomic number of carbon is 6.All atoms are characterized by their atomic numbers.

(ii)Mass number is defined as the sum of the total number of protons and neutrons present in the nucleus of an atom.For example there are 6 protons and 6 neutrons in the nucleus of carbon, so its mass number is 12

(iii)Isotopes are atoms of the same element thus having same atomic number but different mass number.For example, chlorine has two isotopes with atomic number 17 but mass number as 35 and 37

(iv)Isobars are such atoms which have same mass number but different atomic numbers.Thus isobars are different elements.For example, Ne has atomic number as 10 and sodium has atomic number as 11 but both of these have mass numbers as 22.

**Uses of Isotopes**

(i)Isotope of cobalt, ($^{60}$Co), is used in the treatment of cancer.

(ii)Isotope of uranium ($^{235}$U) is used as a fuel in nuclear reactors