Techior Solutions Pvt. Ltd.

CBSE IX Science Paper

Total Time: 3 Hr | Total Marks: 80.0

Science

MCQ Single Correct (1 Marks) **$20 \times 1 = 20$**

1) Assertion(A): The unit of loudness is given by Decibel. **1**

Reason (R): Decibel is 1/10th of a bel.

A) Both A and R are true and R is the correct explanation of A
B) Both A and R are true but R is not the correct explanation of A
C) A is true but R is false
D) A is false but R is true

2) Potassium, nitrogen and phosphorous are used in farming activities as they act as **1**

A) Fertilizers
B) Micro nutrients
C) Macro nutrients
D) Both (b) and (c)

3) Which of the following are Indian cattle? **1**

(i) Bos indicus (ii) Bos domestica (iii) Bos bubalis (iv) Bos vulgaris

A) (i) and (iii)
B) (i) and (ii)
C) (ii) and (iii)
D) (iii) and (iv)

4) The molecular formula of a compound is $C_6H_{12}O_6$. What is the empirical formula of this compound? **1**

A) $C_6H_{12}O_6$
B) CH_2O
C) $C_2H_4O_2$
D) CHO

5) The tissue whose cells have the ability of dividing and re – dividing is called **1**

A) Epidermal issue
B) Protective tissue
C) Meristematic tissue
D) Simple tissue

6) Which of the following cells is found in the cartilaginous tissue of the body? **1**

A) Mast cells
B) Basophiles
C) Osteocytes
D) Chondrocytes

7) Which of the following statements is incorrect about isotopes? **1**

A) Isotopes have the same number of protons but different numbers of neutrons
B) Isotopes have different atomic masses but the same atomic number
C) Isotopes of an element exhibit the same chemical properties
D) Isotopes of an element have different electronic configurations

8) If the force of attraction between two specific unit point masses is separated by a unit distance, it is known as: **1**

A) gravitational field
B) acceleration caused due to the presence of gravity
C) universal gravitational constant
D) none of the above

9) The maximum number of electrons in a subshell with l=3 and n = 4 is **1**

A) 11
B) 15
C) 12
D) 14

10) An object weighs 10 N in air. When immersed fully in water, it weighs only 8 N. The weight of the liquid displaced by the object will be **1**

A) 2 N
B) 8 N
C) 10 N
D) 12 N

11) Sita is standing on a box having 50 cm length, 30 cm breadth and 10 cm width in 3 ways. In which of the following cases, the pressure exerted by the brick will be maximum. **1**

A) when the breadth and width form the base
B) when the length and width form the base
C) when the length and breadth form the base
D) it will be maximum in all the three cases

12) Which of the following statements about isotopes is incorrect? **1**

A) Isotopes have the same number of protons
B) Isotopes have the same atomic number
C) Isotopes have different chemical properties
D) Isotopes have different mass numbers

13) Which of the following statements are true for pure substances? **1**

(i) Pure substances contain only one kind of particles

(ii) Pure substances may be compounds or mixtures

(iii) Pure substances have the same composition throughout

(iv) Pure substances can be exemplified by all elements other than nickel

A) (i) and (ii)
B) (i) and (iii)
C) (iii) and (iv)
D) (ii) and (iii)

14) Which is not a function of epidermis? **1**

A) Protection from adverse condition
B) Gaseous exchange
C) Conduction of water
D) Transpiration

15) Out of the below-mentioned waves, name the wave that can propagate without any medium. **1**

A) Earthquake waves
B) Light waves
C) Sound waves
D) Ultrasonic waves

16) Assertion: When a batsman hits a cricket ball, the ball comes to rest after covering a short distance. **1**

Reason: The ball stops because of the presence of an external force which opposes the ball's motion.

A) Both A and R are true and R is the correct explanation of A
B) Both A and R are true but R is not the correct explanation of A
C) A is true but R is false
D) A is false but R is true

17) Assertion: Earth receives and transfers most of its energy in the form of radiant energy. **1**

Reason: Sun is the biggest source of energy.

A) Both A and R are true and R is the correct explanation of A
B) Both A and R are true but R is not the correct explanation of A
C) A is true but R is false
D) A is false but R is true

18) What is the SI unit of wavelength? **1**

A) metre

B) metre/second

C) s^{-1}

D) Hertz

19) Choose the reference point from the following options which can help to determine an object's position. **1**

A) Magnitude

B) Origin

C) Diameter

D) None of the above

20) If the displacement of an object is proportional to square of time, then the object moves with **1**

A) uniform velocity

B) uniform acceleration

C) increasing acceleration

D) decreasing acceleration

$6 \times 2 = 12$

Very Short (2 Marks)

21) A diver is able to cut through water in a swimming pool. Which property of matter does this observation show? **2**

---OR---

Mention two properties of water to justify that water is liquid at room temperature.

22) Soni says that the acceleration in an object could be zero even when several forces are acting on it. Do you agree with her? Why? **2**

23) What are the limitations of Rutherford's model of the atom? **2**

24) Practical Based Question: **2**

Write two characteristics of the cells of the onion peel observed?

25) Define work. Write an expression for work in terms of force and displacement. State SI unit of work done. **2**

---OR---

An electric bulb of 60 W is used for 6 h per day. Calculate the 'units' of energy consumed in one day by the bulb.

26) What management practices are common in dairy and poultry farming? **2**

Short Answer (3 Marks) **$7 \times 3 = 21$**

27) Classify the following into elements, compounds and mixtures: **3**

(a) Sodium

(b) Soil

(c) Sugar solution

(d) Silver

(e) Calcium carbonate

(f) Tin

(g) Silicon

(h) Coal

(i) Air

(j) Soap

(k) Methane

(l) Carbon dioxide

(m) Blood

---OR---

List the points of differences between homogeneous and heterogeneous mixtures.

28) Why does our palm feel cold when we put some acetone or petrol or perfume on it? **3**

29) An element is sonorous and highly ductile. Under which category would you classify this element? What other characteristics do you expect the element to possess? **3**

30) What is the difference between speed and velocity? **3**

---OR---

Define acceleration. How is it calculated?

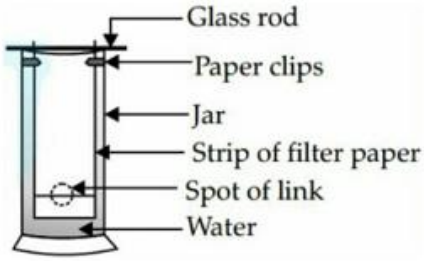
31) How do you calculate the total distance traveled when given speed and time? **3**

32) A child wanted to separate the mixture of dyes constituting a sample of ink. He marked a line by the ink on the filter paper and placed the filter paper in a glass containing water as shown in figure. The filter paper was removed when the water moved near the top of the filter paper. **3**

(i) What would you expect to see, if the ink contains three different coloured components?

(ii) Name the technique used by the child.

(iii) Suggest one more application of this technique.



33) Why does a desert cooler cool better on a hot dry day? **3**

Long Answer (5 Marks) **3 × 5=15**

34) Discuss the limitations of Rutherford's atomic model and how Bohr's model addressed them. **5**

---OR---

Explain the significance of the atomic number and mass number in identifying elements.

35) Define velocity. How is it different from speed? **5**

36) Carry out the following osmosis experiment: **5**

Take four peeled potato halves and scoop each one out to make potato cups. One of these potato cups should be made from a boiled potato. Put each potato cup in a trough containing water. Now,

(a) Keep cup A empty

(b) Put one teaspoon sugar in cup B

(c) Put one teaspoon salt in cup C

(d) Put one teaspoon sugar in the boiled potato cup D.

Keep these for two hours. Then observe the four potato cups and answer the following:

(i) Explain why water gathers in the hollowed portion of B and C.

(ii) Why is potato A necessary for this experiment?

(iii) Explain why water does not gather in the hollowed out portions of A and D.

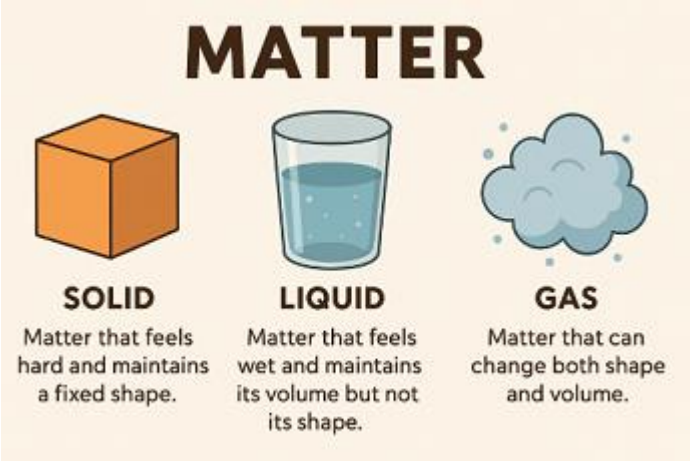
---OR---

What would happen to the life of a cell if there was no Golgi apparatus?

Solve Question 37 to Question 39 based on the following paragraph:

The word 'matter' refers to everything in the universe that has mass and takes up space. States of matter are generally described on the basis of qualities that can be seen or felt. Three states of matter can be found in daily life: solid, liquid and gas.

Matter that feels hard and maintains a fixed shape is called a solid, matter that feels wet and maintains its volume but not its shape is called a liquid. Matter that can change both shape and volume is called a gas.



Read the given passage carefully and give the answer of the following questions:

37) Which one of the following statements is wrong for gases? **1**

A) Gases do not have a definite shape and volume

B) Volume of the gas is equal to the volume of the container confining the gas

C) Confined gas exerts uniform pressure on the walls of container in all directions

D) Mass of the gas cannot be determined by weighing a container in which it is enclosed

38) In which form, do the water molecules have less kinetic energy? **1**

A) Ice

B) Water

C) Steam

D) All of them have equal kinetic energy

39) Which of the following describes the liquid phase? **2**

A) It has a definite shape and a definite volume

B) It has a definite shape but not definite volume

C) It has a definite volume but not a definite shape

D) It has neither a definite shape nor a definite volume

---OR---

As the solid melts to form liquid:

A) interparticle forces of attraction decrease

B) the kinetic energy of particles increases

C) compressibility increases

D) All of the above

Solve Question 40 to Question 42 based on the following paragraph:

Rutherford conducted the famous alpha particle scattering experiment by bombarding thin gold foil with positively charged alpha particles. Most particles passed through the foil undeflected , while a few were deflected at small angles and very few bounced back. This led to the conclusion that the atom is mostly empty space, the positive charge and mass are concentrated in a small nucleus, and electrons revolve around it.

40) What conclusion was drawn when most alpha particles passed straight through the gold foil? **1**

A) Atom is positively charged

B) Atom has a large volume

C) Atom has empty space

D) Atom is neutral

41) What caused some alpha particles to deflect at small angles? **1**

A) Repulsion from electrons

B) Attraction by neutrons

C) Presence of empty space

D) Repulsion from positively charged nucleus

42) Which part of the atom did Rutherford discover through this experiment? **2**

A) Neutron

B) Proton

C) Electron

D) Nucleus

---OR---

What is a major limitation of Rutherford's model?

A) It cannot explain atom's mass

B) It violates the laws of motion

C) It could not explain stability of the atom

D) It does not consider neutrons

Solve Question 43 to Question 45 based on the following paragraph:

An atom has 4 electrons, 4 protons, and 4 neutrons. Electrons carry a negative charge, protons carry an equal but positive charge, and neutrons are neutral. The atom, in this case, has equal numbers of positively and negatively charged particles, making it electrically neutral. The presence of 4 protons also determines the atomic number of the element, while the mass number is the sum of protons and neutrons.

Use the information to answer the following questions:

43) What is the mass number of this atom? **1**

A) 4
B) 8
C) 12
D) 16

44) What is the atomic number of this atom? **1**

A) 4
B) 8
C) 12
D) 0

45) The atom is electrically neutral because: **2**

A) It contains more electrons than protons
B) It contains more protons than electrons
C) The number of electrons and protons are equal
D) It has neutrons only

---OR---

The element described in the passage is:

A) Hydrogen
B) Helium
C) Beryllium
D) Boron