

9th CBSE Science Mock-2

Time: 3 hrs

Max. Marks : 80

GENERAL INSTRUCTIONS

1. The question paper comprises three Sections A, B and C. Attempt all the sections.
2. All questions are compulsory.
3. Internal choice is given in each section.
4. All questions in section A are one-mark questions comprising MCO, VSA type and assertion-reason type questions. They are to be answered in one word or in one sentence.
5. All questions in Section B are three-marks, short-answer type questions. These are to be answered in about 50-60 words each.
6. All questions in Section C are five-marks, long-answer type questions. These are to be answered in about 80-90 words each.
7. This question paper consists of a total of 30 questions.

Section {A} (objective Type Questions, 1 Mark)

1. Astronauts tie heavy weight at their back before landing on the moon. Why?
2. Why do liquids take up the shape of the container in which they are kept?
3. **Answer Q. Nos. 3(a)-3(d)** on the basis of your understanding of the following paragraph and the related studied concepts :
Calcium carbonate decomposes on heating to form calcium oxide and carbon dioxide. When 10 g of calcium carbonate is decomposed completely then 5.6 g of CaO is formed.
(a) Write the balanced chemical equation.
(b) Calculate the mass of CO₂ formed.
(c) Which law of chemical combination is used in solving the problem?
(d) State the law.
4. **For Q. Nos. a(i)-a(iv)** are based on the table given below. Study these table related to answer the questions that follow :
Air pollution occurs when harmful or excessive quantities of substances including gases, particles and biological molecules are introduced into the Earth's atmosphere. This may be caused due to various human activities like burning of coal, smoke from the automobiles, etc., which produce oxides of nitrogen and sulphur.
They are very harmful for the living beings as well as the environment because of they lead to acid rain, smog, etc. Air pollution can cause several disease like irritation in eyes and throat, injuries in lungs, liver, kidney and ailments of heart, etc.

Air pollution has been steadily rising in absence of stringent methods of control. The following statistics show the status of air quality in Metropolitan cities in India, a survey conducted by Central Pollution Control Board (CPCB).

Status of Ambient Air Quality in 12 Metropolitan Cities of India

S.No.	Name of the City	State	2011		
			SO ₂	O ₂	PM 10*
1.	Agra	Uttar Pradesh	3	23	155
2.	Bengaluru	Karnataka	14	28	91
3.	Chennai	Tamil Nadu	92	49	2
4.	Delhi	U.T.	6	61	222
5.	Gwalior	Madhya Pradesh	12	20	311
6.	Hyderabad	Andhra Pradesh	5	28	74

Source Data as reported by CPCB/SPCBs/NEERI

- (i) Studies have shown that regularly inhaling the air containing pollutants (such as suspended particles) increases the incidence of
 - (a) allergies
 - (b) cancer
 - (c) heart diseases
 - (d) All of these
 - (ii) Organisms called A are found to be very sensitive to the level of SO₂ contamination in air. Here A is
 - (a) lichens
 - (b) fungus
 - (c) mushrooms
 - (d) green algae
 - (iii) Describe a harmful effect caused due to high levels of SO₂ and NO₂ present in the atmosphere.
 - (iv) Why is smog called visible indication of pollution?
5. Suppose two bodies A and B having equal masses are kept at heights of h and 3h, respectively. The ratio of their potential energies will be
 - (a) 1 : 3
 - (b) 1 : 4
 - (c) 1 : 6
 - (d) 1 : 5
 6. Which amongst the following is not a source of starch?
 - (a) Rice
 - (b) Wheat
 - (c) Sunflower seed
 - (d) Potato tuber
 7. The process in which a liquid changes into vapour below its boiling point is called
 - (a) condensation
 - (b) evaporation
 - (c) freezing
 - (d) sublimation

Or

- Which of the following is a property of non-metal?
- (a) Malleability
 - (b) Ductility
 - (c) High tensile strength
 - (d) Non-sonorous
8. Rocket works on the principle of conservation of
 - (a) mass
 - (b) energy
 - (c) momentum
 - (d) velocity

Or

- When a person jumps down from a tower into a stretched trampoline he receives
- (a) greater injury
 - (b) less injury
 - (c) no injury
 - (d) None of these
9. The methods of transmission of AIDS are
 - (a) sexual contact
 - (b) infected needles
 - (c) blood transfusion
 - (d) All of these

10. Find out the correct sentence about manure.
- It contains large quantities of organic matter and small quantities of nutrients
 - It decreases the water holding capacity of sandy soil
 - It decreases draining out of excess of water from clayey soil
 - Its excessive use pollutes environment because it is made of animal excretory waste

Or

Which of the following are exotic breeds?

- | | | | |
|-------------------|--------------------|-------------------|-------------------|
| (i) Brawn | (ii) Jersey | (iii) Brown Swiss | (iv) Jersey Swiss |
| (a) (i) and (iii) | (b) (ii) and (iii) | (c) (i) and (iv) | (d) (ii) and (iv) |
11. Infrasound can be heard by
- dog
 - bat
 - rhinoceroses
 - human beings
12. Weeds are unwanted plants in the cultivated fields. They compete with main crop plants for nutrients and reduce the growth of crops in many ways. These can be controlled by
- chemical methods
 - mechanical methods
 - integrated management
 - All of these

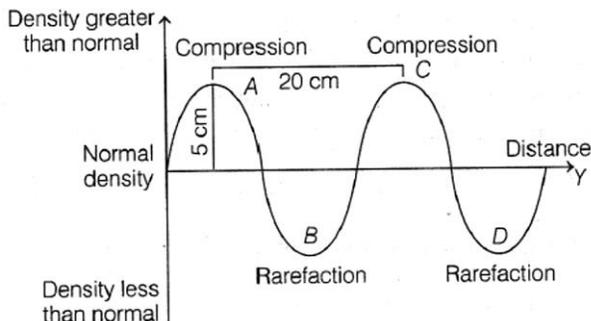
Assertion-Reason Type Questions (Q. Nos. 13-14)

In each of the following questions, a statement of Assertion is given by the corresponding statement of Reason. Out of the given statements, chose the correct one.

- If both Assertion and Reason are true and Reason is the correct explanation of Assertion.
 - If both Assertion and Reason are true, but Reason is not the correct explanation of Assertion.
 - If Assertion is true, but Reason is false.
 - If Assertion is false, but Reason is true.
13. **Assertion** Epithelial tissue is the protective covering of our body.
Reason This protects the body of animals from invasion of parasites.
14. **Assertion** At the centre of earth, weight of the body will be zero.
Reason This is because, $g = 0$ at the centre of the earth.

Section {B} (Short Answer Type Questions, 3 Marks)

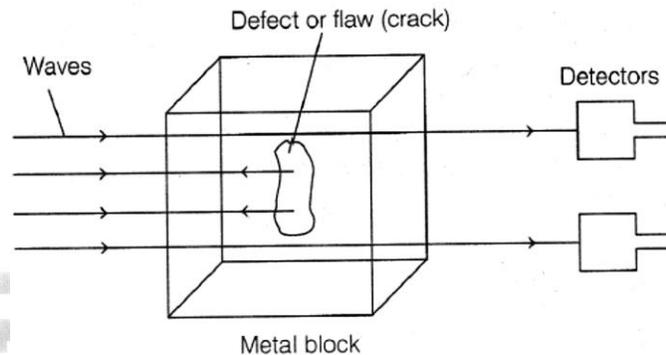
15. Soil is formed by weathering of rocks. It involves the role of biotic and abiotic factors which lead to the formation of soil. Given- below are some factors. Classify them into abiotic and biotic factors, i.e. earthworm, rocks, ants, water, nematodes, fungi, bacteria, Sun, bryophytes, lichens, wind.
16. A wave in air is represented by a density-distance graph as shown below :



- (i) What is the amplitude of the wave?
- (ii) What is wavelength of the wave?
- (iii) Is it longitudinal wave?
- (iv) If yes, then define the longitudinal wave.

Or

Metal blocks are used in the construction of big structures like bridges in the figure given below:



To detect flaws or cracks in metal block, waves are passed through it. If there is even a small defect, the waves get reflected back indicating the presence of the flaw or defect shown in the figure.

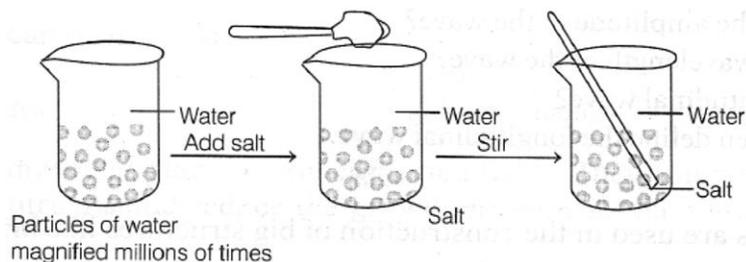
- (i) Name the wave which is used in this process.
 - (ii) What is the frequency of wave, which are passed through metal blocks?
 - (iii) Ordinary sound waves cannot be used for detecting flaw in metal block. Why?
17. State three points of differences between an atom and a molecule.
 18. List out some common features in cat, rat and bat.

Or

What are cold-blooded and warm-blooded animals?

19. A stone of size 1 kg is thrown with a velocity of 20 m/s across the frozen surface of a lake and comes to rest after travelling a distance of 50 m. What is the force of friction between the stone and the ice?
20. (i) The potential energy of freely falling object decreases progressively. Does this violate the law of conservation of energy? Why?
(ii) A car is moving on a levelled road and gets its velocity doubled. How would the potential energy of the car change in this process?
21. Nitrogen is an important element for both plants and animals. It forms amino acids which ultimately form proteins. It is present in the atmosphere in non-reactive gaseous form and is fixed by nitrogen-fixing bacteria and lightening, so that it can be used by the living forms. The complex molecules are then broken down again to release nitrogen back into atmosphere. use and compile the above information and discuss the nitrogen cycle.
22. Why is prevention of a disease considered a better option than curing it?

23. Consider the following figure :



Matter is made up of tiny particles and have intermolecular space. Compile the information in the above experimental set up and draw your own conclusions.

24. (i) A teacher explains to a class that valency is the combining capacity of an element. She gives an example that an element X has a valency of 2. Then, she asks the students to write the chemical formula for
- bromide of the element.
 - oxide of the element.
 - nitride of the element.

Evaluate the chemical formulas of the above compounds.

Or

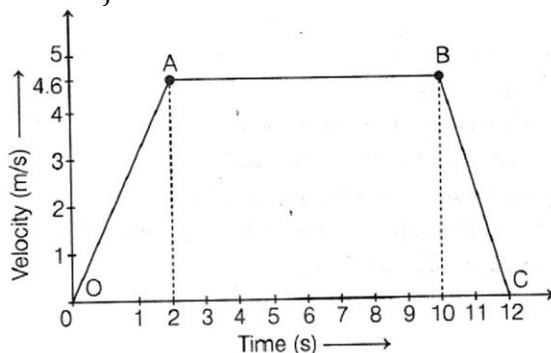
Raunak took 5 moles of carbon atoms in a container and Krish also took 5 moles of sodium atoms in another container of same weight.

- Whose container is heavier?
- Whose container has more number of atoms?

Section {C} {Long Answer Type Questions, 5 Marks}

25. The epithelial tissue covers the entire body surfaces of animals. Discuss the various types of epithelial tissues with examples.
26. (i) From Rutherford's α -particle scattering experiment, give the experimental evidence for deriving the conclusion that
- most of the space inside the atom is empty.
 - the nucleus of an atom is positively charged.
- (ii) An element has mass number = 32 and atomic number = 16, find
- the number of neutrons in the atom of the element.
 - the number of electrons in the outermost shell of the atom.
- (iii) On the basis of Rutherford's model of an atom, which subatomic particle is present in the nucleus of an atom?

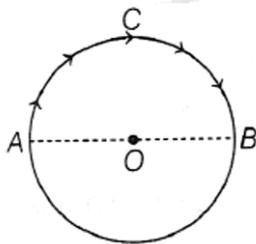
27. The v-t graph of an object as shown below :



- (i) Identify the type of motion in lines OA and BC.
- (ii) Velocity at $t = 8\text{s}$.
- (iii) Calculate acceleration
 - (a) between 3s and 10s,
 - (b) last 2s.

Or

An insect moves along a circular path of radius 10 cm with a constant speed. It takes 1 min to move from a point on the path to the diametrically opposite point, find (i) the distance covered, (ii) the speed, (iii) the displacement and (iv) the average velocity.



28. (i) Write the steps involved in the process of obtaining pure copper sulphate from an impure sample.
- (ii) Give any one application of this method.
- (iii) Why is this technique better than simple evaporation to purify solids?

Or

Classify each of the following, as a physical or a chemical change. Give reasons.

- (i) Drying of a shirt in the sun.
 - (ii) Rising of hot air over a radiator.
 - (iii) Burning of kerosene in a lantern.
 - (iv) Change in the colour of black tea on adding lemon juice to it.
 - (v) Churning of milk cream to get butter.
29. Write the Newton's laws of motion. Give one example of each law of motion.
30. The membranous cell structure present in the close vicinity of nuclear membrane is an important site for synthesis of biomolecules.

Name the structure and how do you think it helps in the laying down of cell membrane between the dividing cells? Give differences between the two types of this cell organelle.

Or

Assess the following statements on the basis of your knowledge of cell organelles and briefly state what happens when

- (i) Dry apricots are left for sometime in pure water and later transferred to sugar solution?
- (ii) A red blood cell is kept in concentrated saline solution?
- (iii) The plasma membrane of a cell breaks down?
- (iv) Rheo leaves are boiled in water first and then a drop of sugar syrup is put on it?
- (v) Golgi apparatus is removed from the cell?

