

ATOMIC ENERGY CENTRAL SCHOOL-2, MUMBAI

PERIODIC TEST-III, 2023-24

Class : IX

Time : 1 ½ hours

Subject: SCIENCE

Max Marks: 40

**General instructions:**

1. The question paper comprises of three sections A, B, C and D. All questions are compulsory. Attempt all the sections.
2. Section A has 10 Multiple choice questions and each question carries 1mark.
3. Section B has 3 questions and each question carries 2 marks.
4. Section C has 4 questions and each question carries 3 marks.
5. Section D has 3 questions and each question carries 4 marks
6. Wherever necessary, neat and properly labelled diagrams should be drawn.

**SECTION- A**

**I. Choose the correct options from the following options. (1x10=10)**

1. Law of gravitation gives the gravitational force between  
(a) the earth and a point mass only      (b) the earth and Sun only  
(c) any two bodies having some mass      (d) two charged bodies only
2. The weight of an object at the centre of the earth of radius R is  
(a) zero      (b) infinite  
(c) R times the weight at the surface of the earth  
(d)  $1/R^2$  times the weight at surface of the earth
3. A car is accelerated on a levelled road and attains a velocity 4 times of its initial velocity. In this process the potential energy of the car  
(a) does not change      (b) becomes twice to that of initial  
(c) becomes 4 times that of initial      (d) becomes 16 times that of initial
4. Two atoms are said to be Isobars if \_\_\_\_\_  
(a) They have same atomic number but different mass number  
(b) They have same number of electrons but different number of neutrons  
(c) They have the same number of neutrons but different numbers of electrons.  
(d) None of the above
5. Atomic radius is measured in \_\_\_\_\_  
(a) millimeters      (b) micrometers      (c) nanometers      (d) both a & b
6. How many electrons are occupied in the M shell?  
(a) 8      (b) 16      (c) 18      (d) 32
7. Cyperinus and Parthenium are types of

(a) Diseases      (b) Pesticide      (c) Weeds      (d) Pathogens

Question No.6,7 and 8 consist of two statements – **Assertion (A) and Reason**

**(R)**. Answer the question selecting the appropriate option given below:

- a) Both Assertion and Reason are true and Reason is the correct explanation of Assertion.
- b) Both Assertion and Reason are true but Reason is not the correct explanation of Assertion.
- c) Assertion is true but Reason is false. d) Assertion is False but Reason is true

8. **Assertion** : A nail has a pointed tip, knives have sharp edges and buildings have wide foundations.

**Reason** : The same force acting on a smaller area exerts a larger pressure, and a smaller pressure on a larger area.

9. **Assertion**: Use of fertilizers greatly enhances crop productivity.

**Reason**: Irrigation is very important in increasing crop productivity.

10. **Assertion**: An atom is the smallest particle in an element that has the properties of the element.

**Reason**: Molecules are formed by the combination of two or more atoms.

### SECTION – B

III. Answer the following questions.

(2x3=6)

- 11. The power of a motor pump is 2 kW. How much water per minute the pump can raise to a height of 10 m? (Given  $g=10\text{ms}^{-2}$ )
- 12. What is valency ? How to find the valency of sodium?
- 13. How do biotic and abiotic factors affect crop production?

### SECTION – C

IV. Answer the following questions in three to four sentences (3x 4=12)

- 14. (a)What is the kinetic energy of an object?  
(b)Write mathematical expressions for the kinetic energy and potential energy of an object.  
(c) State the law of conservation of energy
- 15. An Italian bee variety *A. mellifera* has been introduced in India for honey production. Write about its merits over other varieties.
- 16. Which of the following symbols of elements are incorrect? Give their correct symbols

S. No.	Element	Formula
1.	Cobalt	CO
2.	Carbon	c
3.	Aluminium	AL
4.	Helium	He
5.	Sodium	So

17. Draw the atomic structure of (i) an atom with same number of sub-atomic particles, (ii) an atom with same number of electrons in L and M shell.

### SECTION – D

**IV .** Read the given passage and answer the questions based on the passages and related studied concepts. **(3x 4 =12)**

18. The weight of any person on the moon is about  $\frac{1}{6}$  times that on the earth. He can lift a mass of 15 kg on the earth.

- What will be the maximum mass, which can be lifted by the same force applied by the person on the moon?
- An object weighs 10 N when measured on the surface of the earth. What would be its weight when measured on the surface of the moon?
- Distinguish between mass and weight.

19. Atomicity and valency are two chemical terms that are often used regarding atoms and molecules. Atomicity is the number of atoms present in a molecule. Valency is the maximum number of electrons that an atom has to lose, gain or share in order to get stabilized. Therefore these are two distinct properties of atoms and molecules. The main difference between atomicity and valency is that atomicity explains a molecular property whereas valency describes an elemental property. Atomicity is the total number of atoms present in a molecule. According to this definition, molecules can be divided into groups depending on the atomicity of molecules. For example, molecules can be monoatomic, diatomic, triatomic or polyatomic. Monoatomic compounds are composed of a single atom. For example, inert gases such as Helium (He), Argon (Ar), etc. are monoatomic compounds. Diatomic compounds are composed of two atoms per one molecule. Valency can be defined as the maximum number of electrons that an atom can lose, gain or share in order to become stabilized. For metals and nonmetals, the octet rule describes the most stable form of an atom. It says that if

