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**DAV PUBLIC SCHOOLS, ODISHA ZONE-I
TERM-II EXAMINATION (2021-22)**

- Check that this question paper contains **06** printed pages.
- Check that this question paper contains **15** questions.
- Write down the Serial Number of the question in the left side of the margin before attempting it.
- **10** minutes time has been allotted to read this question paper. The question paper will be distributed **10** minutes prior to the commencement of the examination. The students will read the question paper only and will not write any answer on the answer script during this period.

**CLASS IX
SCIENCE (086)**

Time Allowed: 2 Hours

Maximum Marks: 40

General Instructions:

- (i) All questions are compulsory.*
- (ii) The question paper has three sections and 15 questions.*
- (iii) Section-A has 7 questions of two marks each, Section-B has 6 questions of 3 marks each and Section-C has two case based questions of 4 marks each.*
- (iv) Internal choices have been provided in some questions. A student has to attempt only one of the alternatives in such questions.*

SECTION-A

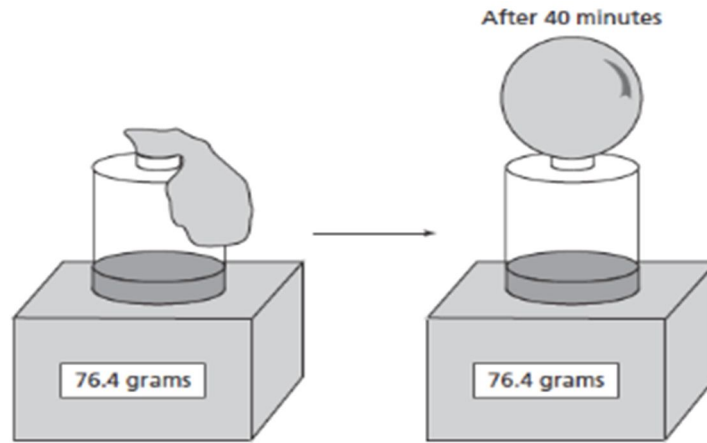
1. Composition of the nuclei of two atomic species X and Y are given below: 2

	X	Y
Protons	6	6
Neutrons	6	8

Find out the mass numbers of X and Y. Mention the relation between the two species and justify.

2. Observe the experiment which is shown below.

2

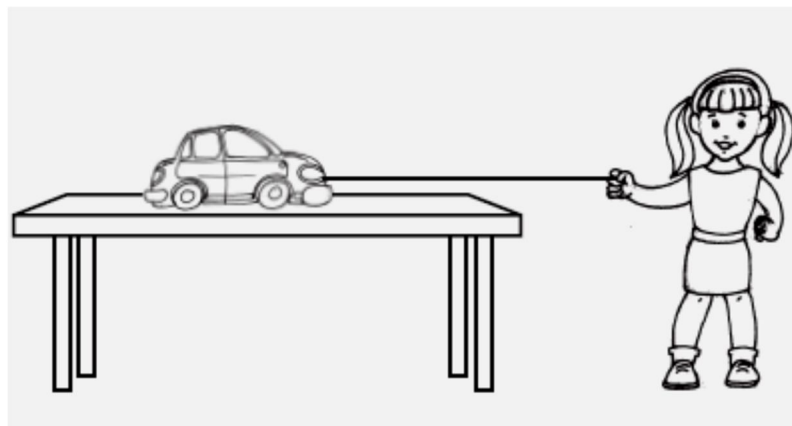


(a) Identify and state the law.

(b) Which postulate of Dalton's atomic theory explains this law?

3. A little girl is pulling a toy car parallel to the ground on the rough surface of a table as shown in the figure below. The toy car is displaced towards the girl.

2



(a) Write the nature of work done by the

- (i) muscular force exerted by the girl.
- (ii) frictional force on the surface of table.
- (iii) gravitational force of the earth.

(b) Mention the angle between frictional force and displacement of the toy car.

4. Calculate the amount of money to be paid to the Electricity Board for the month of November, if 5 tube lights each of 60W are used for 6 hours per day. The cost per unit is 3.50 rupees.

2

OR

A force of 6000N is applied on a car of mass 1200kg by the engine and it moves with a constant speed of 72 km/h on a straight road. Calculate the

- (a) power of the engine in SI unit.
- (b) work required to be done to stop the car.

5. (a) The signs and symptoms of a disease depend on the tissue or organ which the microbe targets. Justify the statement by citing two examples. 2

(b) Write the major factor that determines the number of microbes surviving in the body.

OR

(a) It is the other infections that kill people suffering from HIV-AIDS. Justify by citing two examples.

(b) Write any two general mode of prevention of diseases.

6. Verify by calculating that 240 g of calcium and 240 g of magnesium have a mole ratio of 3:5. (atomic mass of Ca is 40u and Mg is 24u). 2

OR

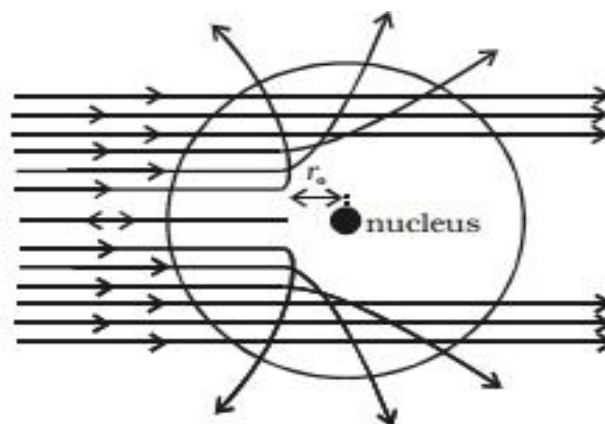
Estimate the number of aluminium ions present in 2g of aluminium oxide. (atomic mass of aluminium is 27 u and oxygen is 16u).

7. Find the number of moles present in 2

- (a) 3.011×10^{23} number of oxygen atoms.
- (b) 46 g of sodium.

SECTION-B

8.



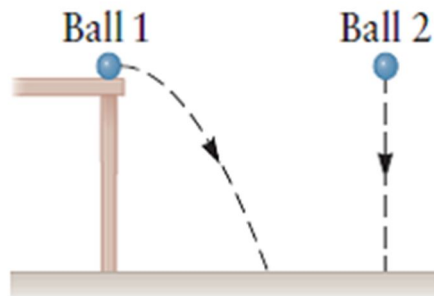
- (a) Name the experiment that is represented in the above figure. 3
- (b) List any two observations of this experiment.
- (c) Write any two conclusions of the above observations.

OR

Write the postulates of Thomson's atomic model and mention the limitation of this model.

9. (a) Calculate the number of molecules of water present in 36 g of water. 3
(b) Identify the cation and anion present in CH_3COONa .

10. (a) **Ball 1 is thrown from a height in a direction parallel to the earth's surface while ball 2 is simultaneously dropped from the same height as shown in the figure below. Which ball would reach the ground first? Justify your answer.** 3



- (b) A falling apple is attracted towards the earth and the apple also attracts the earth, but the earth does not move towards the apple. Explain the reason.

OR

- (a) Identical packets are dropped from two aeroplanes, one above the equator and the other above the north pole, both at height h . Assuming all conditions are identical, will those packets take same time to reach the surface of earth? Justify your answer.
- (b) The earth does not fall into Sun even though it is acted upon by the gravitation of the Sun. Explain.
11. **A stone is thrown vertically upward with a velocity of 30 m/s and returns to the same ground after certain time. (Take $g = 10 \text{ m/s}^2$)** 3

Calculate the

- (a) maximum height to which it rises.
(b) net displacement of the stone.
(c) total time taken by the stone to return to the ground.
12. (a) Define antibiotics. 3
(b) How does antibiotic penicillin act against bacteria?
(c) Antibiotics are not effective for viral diseases. Give reason.

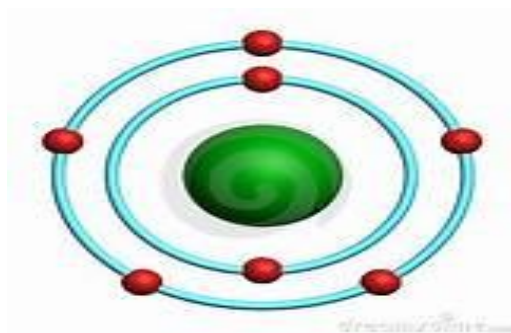
13. **Give reason for the following :** 3
- (a) Our surrounding area should be free of stagnant water.
(b) Infectious diseases are called communicable diseases.
(c) It is advised to take bland and nourishing food when we are sick.

SECTION-C

This section has 02 case-based questions (14 and 15). Each case is followed by 03 sub questions (a, b and c). Parts a and b are compulsory. However, an internal choice has been provided in part c.

14. Atomic number of an element is equal to the number of protons present in the nucleus of the atom of that element. The distribution or arrangement of electrons in different shells of the atom is called the electronic configuration of the element. The electrons present in the outermost shell of the atom of an element are called valence electrons. The outermost shell is called valence shell. The number of electrons gained, lost or shared by the atom of an element so as to complete its octet is called the valency of the element.

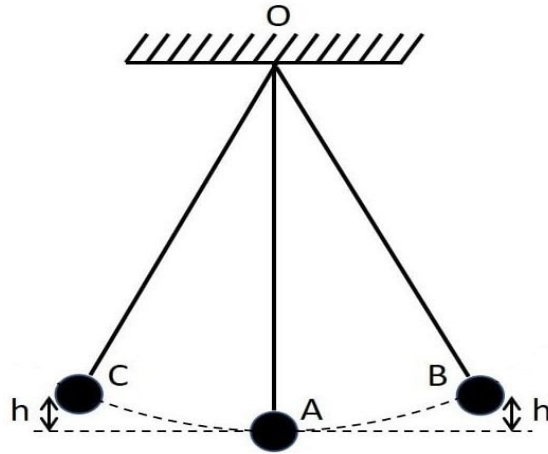
- (a) Considering an element **X** having fully filled two shells, find the maximum number of electrons present in outermost shell of **X**. Name the element **X**. 1
- (b) Atomic numbers of two elements **A** and **B** are 11 and 16 respectively. Write the formula of the compound formed by **A** and **B**. 1
- (c) Identify the atom represented by the following figure. Find the number of electrons, protons and neutrons present in that atom. 2
(mass number of the atom is 14).



OR

A certain cation X^{2+} contains 10 electrons and 12 neutrons. Write the electronic configurations of **X** and X^{2+} .

15. A simple pendulum is suspended from a rigid support **O**. Its resting position is **A**. When it is displaced to one side and then released, it swings from one side to other, reaching equal distance and equal height on either side as shown in the figure below.



- (a) Identify the point/points at which the simple pendulum has maximum potential energy. 1
- (b) The pendulum comes to rest eventually. Explain the reason. 1
- (c) The motion of the pendulum is based on the law of conservation of energy. 2
- Justify it.

OR

The potential energy of a freely falling object decreases progressively, but it does not violate the law of conservation of energy. Explain the reason.
