



## **DELHI PUBLIC SCHOOL BANGALORE EAST**

### **POST-MID TERM EXAMINATION (2021-22)**

#### **SUBJECT – SCIENCE**

**GRADE IX**

**DATE: 15/12/2021**

**MAX MARK: 40**

**TIME: 90 MINS**

#### **GENERAL INSTRUCTIONS**

*Read all questions carefully.*

*Attempt all the questions.*

#### **SECTION-A**

1. A coolie is walking on a railway platform with a load of 27kg on his head. What is the amount of work done by him? 1M
2. A body is thrown vertically upwards, its velocity goes on decreasing. What happens to its kinetic energy at the maximum height? 1M
3. Two objects of masses  $m_1$  and  $m_2$  having the same size are dropped simultaneously from heights  $h_1$  and  $h_2$  respectively.
  - a) Find out the ratio of time they would take in reaching the ground.
  - b) Will this ratio remain the same if one of the object is hollow and the other is solid? 2M
4. Four men lift a 250kg box to a height of 1m and hold it without raising or lowering it.
  - a) How much work is done by the men in lifting the box? [ $g=10\text{m/s}^2$ ]
  - b) How much work do they do just holding it?
  - c) Why do they get tired while holding it? 2M
5.
  - i) The gravitational force between two objects is  $F$ . How will the force change when the distance between them is reduced to one-fourth?
  - ii) Derive an expression for the acceleration due to gravity on earth. 3M
6.
  - i) Derive an expression for the kinetic energy of a body.
  - ii) Certain force acting on a 20 kg mass changes its velocity from  $5\text{ m s}^{-1}$  to  $2\text{ m s}^{-1}$ . Calculate the work done by the force. 5M

#### **SECTION-B**

**Answer the following questions:**

**Q 1.** Write one example for each of the following (write their chemical formulae):

- (a) Molecule having one kind of atoms only
- (b) Molecule having three different kinds of atoms 1M

**Q 2. a)** An element X forms a compound  $\text{XCl}_4$ . Find the valency of X. What will be the formula of its oxide?

**b)** Write the following for a molecule of Methane ( $\text{CH}_4$ ):

i) ratio of number of Carbon and Hydrogen atoms.

ii) ratio by mass of Carbon and Hydrogen atoms. 2M

**Q 3. a)** What is taken as the standard reference for measuring atomic masses of elements?

b) Which of the following contains greater number of molecules?

0.2 moles of  $\text{H}_2$  or 8.0g  $\text{H}_2$  2M

**Q 4. a)** Write the chemical formula for the compounds in each box.

ANIONS →	Carbonate	Hydroxide
CATIONS ↓		
Potassium	(i)	(ii)
Aluminium	(iii)	(iv)

b) What mass of silver nitrate will react with 5.85 g of sodium chloride to produce 14.35g of silver chloride and 8.5 g of sodium nitrate if the Law of Conservation of mass is true?

3M

**Q5. a)** Sulphuric acid ( $\text{H}_2\text{SO}_4$ ), also known as Mattling acid or Oil of vitriol is a strong mineral acid and is corrosive. It is a syrupy liquid which is odourless and has no colour. It is water-soluble and releases heat when dissolved in water. It is widely used in the manufacturing of fertilizers. It is also used in chemical synthesis and wastewater processes.

i) Mention the anion and cation present in Sulphuric acid.

ii) Calculate the molecular mass of sulphuric acid.

iii) How many moles are there in 9.8 g of sulphuric acid?

**b)** In water, the ratio of mass of hydrogen to mass of oxygen is always 1:8, whatever the source of water. Explain this statement.

**c)** Calculate the total number of moles in a solution containing 58.5g of common salt in 360g of water.

5M

### SECTION -C

1.How do physicians pin point a disease on the basis of signs and symptoms? 1M

2.If we have a common cold, taking antibiotics does not reduce the severity or duration of the disease. Explain 2M

3. Elephantiasis is a chronic disease. Justify the statement giving two reasons. 2M

4. It was diagnosed that the body of a patient has lost his power of fighting any infection. 3M

a) Name the disease he is suffering from .

b) Name the pathogen and three means by which this disease spreads from an infected person to a healthy person.

5 i) In Japanese Encephalitis which organ gets infected? Write the causative agent. 5M

ii) Write two local effects seen due to inflammation.

iii) What determines the severity of disease manifestation?

iv) Female mosquitoes feed on warm blooded animals. Why?

v) Write any two symptoms when following organs are targeted by microbes.

a. Brain

b. Lungs