

ARMY PUBLIC SCHOOL SHILLONG  
ANNUAL EXAMINATION – 2022-23

CLASS IX – SCIENCE

Time: 3 Hours

Maximum Marks: 80

**General Instructions:**

- i) The question paper consists of 39 questions in 5 sections.
- ii) All questions are compulsory. However, an internal choice is provided in some questions. A student is expected to attend only one of these questions.
- iii) **Section A** consists of 20 Objective Type questions carrying 1 mark each.
- iv) **Section B** consists of 6 Very Short Answer type questions carrying 02 marks each. Answers to these questions should be in the range of 30 to 50 words.
- v) **Section C** consists of 7 Short Answer type questions, carrying 3 marks each. Answers to these questions should be in the range of 50 to 80 words.
- vi) **Section D** consists of 3 Long Answer type questions, carrying 5 marks of each. Answer to these questions should be in the range of 80 to 120 words.
- vii) **Section E** consists of 3 source Based / Case Based units of assessment of 04 marks each with sub parts.

**SECTION A**

(Select and write one most appropriate option out of the four options given for each of the questions 1 – 20)

Q1 The symbol of polyatomic ion Sulphate is: 1

- (a)  $\text{SO}_4^{3-}$
- (b)  $\text{SO}_4^{2-}$
- (c)  $\text{SO}_2$
- (d) None of these

Q2 Which of the following will produce severe burns? 1

- (a) Cold water
- (b) Steam
- (c) Hot water
- (d) Boiling water

Q3 The formula unit mass of NaOH is: 1

- (a) 50u
- (b) 40u
- (c) 23u
- (d) 24u

Q4 Which of the following is a colloidal solution: 1

- (a) Starch solution
- (b)  $\text{Cu SO}_4$

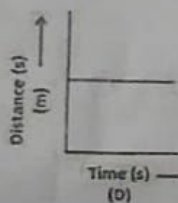
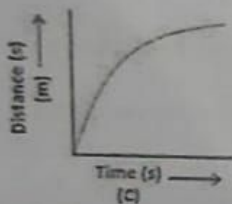
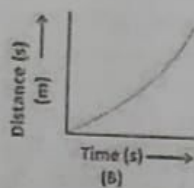
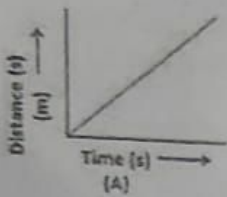
- (c) Chalk powder in  $H_2O$   
(d) Kerosene and Water
- Q5 State the number of atoms present in the chemical species  $P_2O_5$ .  
(a) 5 atoms  
(b) 7 atoms  
(c) 4 atoms  
(d) 2 atoms
- Q6 574K in Celsius scale is:  
(a)  $300^\circ C$   
(b)  $301^\circ C$   
(c)  $500^\circ C$   
(d)  $575^\circ C$
- Q7 Apiaries are:  
(a) Place to keep apes.  
(b) Place to keep bees.  
(c) Place to keep any organisms  
(d) All of the above.
- Q8 Flexibility in plants is due to  
(a) Collenchyma  
(b) Sclerenchyma  
(c) Parenchyma  
(d) Chlorenchyma
- Q9 Identify the following organism:



- (a) Amoeba  
(b) Steptococcus  
(c) Leishmania  
(d) Ascaris
- Q10 Tissue that store fats in our body  
(a) Tendon  
(b) Phloem  
(c) Blood  
(d) Adipose tissue
- Q11 Lysosomes arises from  
(a) Endoplasmic reticulum

- (b) Golgi bodies  
 (c) Nucleus  
 (d) Mitochondria  
 Power house of the cell  
 (a) Nucleus  
 (b) Mitochondria  
 (c) Vacuole  
 (d) Plastid

Q12 1  
 Q13 1  
 Which of the following is the distance – time graph for a body at rest?



- (a) (A)  
 (b) (B)  
 (c) (C)  
 (d) (D)
- Q14 1  
 A trolley while going down an inclined plane, has an acceleration of  $2\text{m/s}^2$ . What will be its velocity 3s after the start?  
 (a)  $6\text{ m/s}$   
 (b)  $3\text{ cm/s}$   
 (c)  $1.5\text{ m/s}$   
 (d)  $0\text{ m/s}$
- Q15 1  
 An oil tanker filled oil up to  $2/3^{\text{rd}}$  of its height is moving with a uniform speed. The sudden application of the brake, the oil in the tank would  
 (a) move forwards.  
 (b) move backwards.  
 (c) rise upwards.  
 (d) be unaffected.
- Q16 1  
 How high must a body to be lifted to gain an amount of potential energy equal to its kinetic energy?  
 (a)  $h = \frac{v^2}{2g}$   
 (b)  $h = 2gv$   
 (c)  $h = \frac{2g}{v^2}$

$$(d) h = \frac{v}{2g}$$

(Question no. 17 to 20 are Assertion Reason type questions)

Choose the correct option:

- (a) Both A and R are correct, and R is the correct explanation for A.
- (b) Both A and R are correct, and R is not the correct explanation for A.
- (c) A is true but R is false.
- (d) A is false but R is true.

- Q17 Assertion (A) – When a piece of Camphor is burnt, a lot of residue is left behind. Reason(R) – Camphor undergoes a change from solid to gas without going through the liquid state. 1
- Q18 Assertion (A) – The number of electrons is equal to the number of protons. Reason(R) – An atom is made up of sub-atomic particles. 1
- Q19 Assertion (A) – Good health is only freedom from disease. Reason(R) – Good health is essential for proper living. 1
- Q20 Assertion (A) – A piece of cork pressed into water comes back to the surface of water once released. Reason(R) – When a solid is immersed in a fluid, it experiences a buoyant force. 1

#### SECTION B

Q21 What is the mechanism of action of antibiotics? (Q.no. 21 to 26 are very short answer questions.) 2

OR

- Q22 Why are antibiotics not effective for viral disease? 2
- Q23 What are the advantages of composite fish culture? 2
- Q24 What is genetic manipulation? How is it useful in agricultural practices? 2
- Q25 A mixture of water and milk shows Tyndall effect but a Copper Sulphate solution does not show Tyndall effect. Explain why? 2
- An insect moves along a circular path of radius 10 cm with a constant speed. It takes 1 minute to move from a point on the path to the diametrically opposite point. Find the 2
- a) distance covered.
  - b) displacement.
- Q26 What is meant by free fall? What will be the weight of an object on the surface of moon whose mass is 10 kg? 2

OR

Write the differences between mass and weight.

#### SECTION C

(Q.no. 27 to 33 are short answer questions.) 3

Q27 Write the chemical formula of the following using criss-cross method:

- (a) Ammonium Sulphate
- (b) Calcium Carbonate
- (c) Sodium Sulphate

Q28 List three steps of the experiment performed by Rutherford for his model of an atom. 3

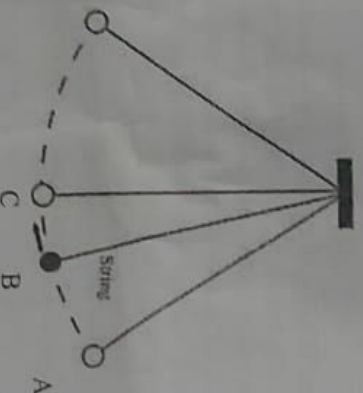
OR

Q29 Describe the Bohr's model of an atom. 3  
What are weeds? Discuss various methods for weed control.

OR

Q30 What is an organic farming? Differentiate between manure and fertilizer. 3  
State second law of motion. How would you arrive at a mathematical formula to measure force using second law of motion? An object of mass 2kg is sliding with a constant velocity of 4 m/s on a frictionless horizontal table. What will be the force required to keep the object moving with the same velocity?

Q31 The diagram below shows a pendulum which was released from position A. 3



Q32 a) What forms of energy did pendulum have at positions i) A ii) B iii) C 3  
b) Eventually the pendulum would stop moving. Explain what has happened to the initial energy of the pendulum?  
What are ultrasonic waves? Explain two uses of ultra sound in industries.

OR

Q33 Which property of sound leads to the formation of echoes? State two conditions for an echo to be heard. Why is the ceiling and wall behind the stage of good conference halls or concert halls made curved? 3  
Draw well labeled diagram of various types of muscles found in human body.

#### SECTION D

(Q.no. 24 to 36 are long answer questions.)

Q34 Calculate the molecular mass of: 5  
(a)  $C_{12}H_{22}O_{11}$  (b)  $K_2CO_3$

OR

Write the names of the elements present in the following compounds:

- (a) Baking Powder
- (b) Hydrogen Sulphide
- (c) Calcium Chloride
- (d) Potassium Hydroxide

Q35 (c) Aluminum Oxide  
What is immunization? Name some immunization programme. Discuss the causes, symptoms and preventive measures of AIDS.

5

OR

Explain giving reasons:

- a) Balance diet is necessary for healthy body.
- b) Our surrounding area should be free of stagnant water.
- c) Good economic conditions are necessary for good health.
- d) Health of an organism depends on the surrounding environment.
- e) Vaccination is important for all organisms.

Define kinetic energy. Derive a relation for it. Two bodies of equal masses move with uniform velocities  $v$  and  $3v$  respectively. Find the ratio of their kinetic energies.

5

Q36

**(Q.no. 37 to 39 are case based / data – based questions.)**

**SECTION E**

Electrons are distributed in the energy shells which are represented by the letters K, L, M, N, etc. The maximum number of electrons that are present in any shell is given by the formula  $2n^2$ . Electrons are not accommodated in a given shell unless the inner shells are filled. Valency is the number of atoms of a particular element that is combined with an atom of another element to form a molecule. It is the combining capacity of an atom.

Observe the table given below and answer the following questions:

Elements	Electronic Configuration
A	2
B	2,1
C	2,4
D	2,8
E	2,8,8

- (a) Which of the following element(s) is a noble gas? 1
- (b) An element with three electron shells. 1
- (c) Identify the elements C and E and draw their electronic configuration. 2

Q38 Plastids are cytoplasmic organelles involved in the synthesis and storage of food. These are membrane bound organelles and are similar to mitochondria in external structure. These are considered semi-autonomous bodies as they also have their own DNA and ribosome.

- (a) Name the colour less plastid present in plant and write its function. 1
- (b) Name the double membrane bound cell organelle which is present in plant cell but absent in animal cell. 1
- (c) Where ribosome is synthesized inside the cell? 2

Q39 One of the most important forces in nature is the force between all material bodies. This force appearing between any two bodies is called force of gravitation. The earth itself attracts all the bodies towards its centre. The law governing the gravitational force of attraction between two particles was formulated by Sir Isaac

Newton widely accepted to find the magnitude of force of gravitation between two bodies in the universe. This law is known as the universal law of gravitation. Greater the distance between the bodies weaker is the gravitational force.

(a) How does the gravitational force change if the distance between the objects is halved? 1

(b) What is the importance of Universal law of gravitation? 1

(c) If an apple and earth attract each other with same force, then why does an apple fall towards the earth and not the earth towards the apple? 2

OR

(d) What is the magnitude of gravitational force between earth and a unit mass on its surface? (Mass of the earth =  $6 \times 10^{24}$  kg, Radius of the earth =  $6 \times 10^6$  m)