CLASS IX
SCIENCE
TERM-2 (2021-22)

Max. Marks:40 **Time allowed: 2 hours**

General Instructions:

i) All questions are compulsory.

ii) The question paper has **three sections** and **15 questions**. All questions are compulsory.

iii) Section–A has 7 questions of 2 marks each; Section–B has 6 questions of 3 marks each; and Section–C has 2 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	The weight of an object on the earth's surface is 196 N. Find its- (i) mass on the earth. (ii) mass and weight on the moon.	2
2	(i) Write the formula to find the magnitude of gravitational force between the earth and an object on the surface of earth. (ii) What happens to the force of gravitation between two objects, if the masses of both the objects are doubled?	2
3	Glucose has the molecular formula $C_6H_{12}O_6$. Calculate (i) Its molecular mass (ii) Its atomicity	2
4	Write the chemical formula for the following compounds: (i) Magnesium carbonate (ii) Zinc Chloride	2
5	Give two features of the nucleus of an atom discovered by Rutherford on the basis of his alpha particle scattering experiment	2
6	An unknown element X, forms an oxide X_2O_3. (i) What is the valency of element X (ii) What will be the formula of chloride of X **OR** Calculate the number of moles present in: (i) 3.011×10^{23} number of oxygen atoms. (it) 60 g of calcium [Given that atomic mass of Ca = 40 u, Avogadro No. = 6.022×10^{23}]	2
7	A mother who had suffered from chicken pox in her childhood, is now taking care of her child who is suffering from the same disease. What are the chances of her mother having chicken pox? Explain.	2
	SECTION-B	
8	(i) What is meant by acceleration due to gravity? (ii) Write an expression for acceleration for an object falling freely. What are the SI units of acceleration due to gravity? (iii) A stone is dropped from the edge of a roof. How long does it take to fall 4.9 m?	3
9	A student lifts an object in the upward direction. In doing so, he applies the force on the object in the upward direction and displaces it in that direction: (however, the force of gravity is also acting on the object.) (i) State the direction in which force of gravity is acting on it. (ii) Which one of these forces is doing positive work? Give reason. (iii) Which one of these forces is doing negative work? Give reason.	3
10	(i) On the basis of Thomson's model of an atom, explain how the atom is neutral as a whole (ii) Are $^{3}_{1}H$ and $^{3}_{2}He$ isotopes? Give reason for your answer **OR** The atomic number and mass number of an element Y is 16 and 32 respectively (i) Write down the electronic configuration of Y (ii) Draw Bohr's atomic structure for element Y	3

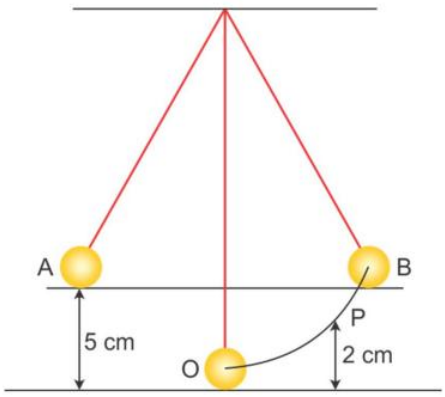
	(ii) What will be the valency of Y?	
11	Which has more number of atoms, 100 grams of sodium or 100 grams of iron (given atomic mass of Na = 23 u, Fe = 56 u)?	3
12	a. Distinguish between acute and chronic diseases giving an example for each. b. Name the causative organisms for- peptic ulcers, sleeping sickness.	3
13	a. Write the principles of treatment that are generally followed by a doctor to treat infectious diseases. b. Write two ways by which HIV may get transmitted from one person to another. **OR** a. Define 'disease'. b. Why do female mosquitoes need highly nutritious food in the form of human blood? c. What are infectious and non-infectious causes of diseases?	3

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 (4)

The following diagram shows that a simple pendulum consisting of a bob of mass 0.1 kg. Initially the bob of the pendulum is at rest at 'O'. It is then displaced to one side at A. The height of 'A' above 'O' is 5 cm. (Take g = 10 m/s^2)



a. What is kinetic energy? (1 mark)

b. What is the value of potential energy of bob at point 'A'? (1 mark)

c. State the law of conservation of energy. What is the value of total energy of the bob at position A? (2 marks)

OR

Discuss the energy changes which occur when pendulum goes from point 'A' to point 'O' and then to point 'B'.

15 (4)

Number of electrons, protons and neutrons in chemical species A, B, C and D are given below:

Elements	Electrons	Protons	Neutrons
A	2	3	4
B	10	9	8
C	18	18	22
D	20	20	20

Answer the following question, based on the information given in table:

i) What is the mass number of A and B (1 mark)

ii) Give the scientific notation for representing Element D (1 mark)

iii) What types of ion (if any) will be formed by an atom of element C? Why (2 marks)

OR

iii) What is the relationship between chemical species C and D. Justify your answer (2 marks)