APEEJAY COMMON EXAMINATON 2021-22

CLASS IX

SCIENCE

Term - II

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 a) Write the molecular formula for the following compounds. **2**

i) Magnesium Sulphate

ii) Zinc Hydroxide

b) Name the following compounds:

i) $(NH_4)_2SO_4$

ii) KNO_3

2 a) Classify each of the following on the basis of their atomicity. **2**

i) Helium

ii) Sulphur

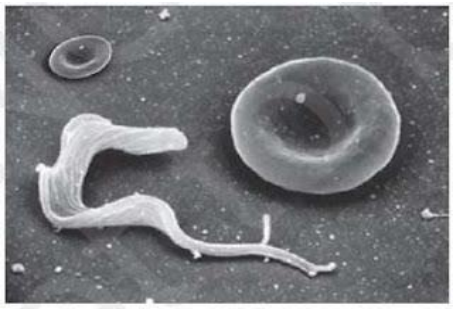
b) Give an example for the following:

i) A negatively charged ion

ii) A polyatomic ion

3 The percentage abundance of the isotope of Neon $^{20}_{10}Ne$ is 90% and that of the isotope $^{22}_{10}Ne$ is 10%, calculate the average atomic mass of Neon. **2**

4 Define acceleration due to gravity, g and derive an expression for it? **2**

5  2

Identify the organism shown above. Also name the diseases caused by it.

OR

Identify the organism shown above. Also name the diseases caused by it.

6 A person can lift a mass of 10 kg on the Moon. What will be the maximum mass which can be lifted by the same force applied by the person on the earth? **2**

OR

If the distance between two masses is increased by a factor of 4, by what factor would the mass of one of them have to be altered to maintain the same gravitational force?

7 An atom of an element 'A' contains three protons, three electrons and four neutrons: **2**

a) What is the atomic number of element 'A'?

b) Write the electronic configuration of element 'A'.

c) State whether element 'A' is a metal or non-metal.

d) Identify element 'A'.

SECTION - B

8 **a)** Calculate the number of moles present in 60g of Calcium (Atomic mass of Ca=40u). **3**

b) Calculate the number of molecules in 8g of Oxygen molecule (Atomic mass of O=16u).

9 **a)** Calculate the formula unit mass of Al_2O_3 (Atomic mass of Al=27u, O=16u) **3**

b) How would you represent the following?

i) Two molecules of oxygen

ii) Three atoms of oxygen

iii) Oxygen ion

iv) An atom of oxygen

10 Give reasons for the following: **3**

a) Influenza spreads faster and is difficult to control.

b) Cancer is considered as a chronic disease.

c) If we have common cold, taking antibiotics does not reduce the severity or duration of the disease.

11 A stone is thrown vertically upward with an initial velocity of 40 m s^{-1}. Taking g = 10 m s^{-2}, find the maximum height reached by the stone. What is the net displacement and the total distance covered by the stone? **3**

12 a) Define 1 joule of work. **3**

b) A car weighing 2000 kg and travelling at 40 m/s stops at a distance of 50 m decelerating uniformly. What is the force exerted on it by the brakes? What is the work done by the brakes?

OR

a) State the law of conservation of energy.

b) A boy weighing 45 kg makes a high jump of 2 m. What is his potential energy at the highest point? What is his kinetic energy when he is at a height of 0.5 m from the ground?

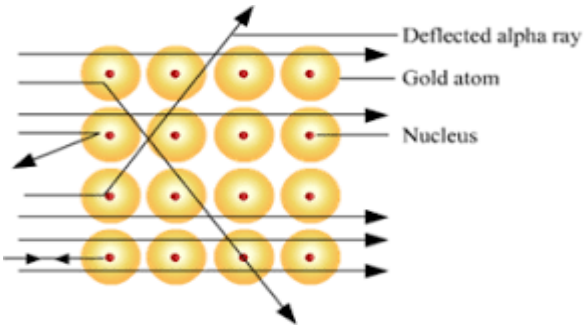
13 **a)** The sign and symptoms of a disease depends on the tissue or organ which the microbe targets. Explain with examples. **3**

b) What is the importance of vaccination?

SECTION – C

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

14 Rutherford conducted an experiment by bombarding a thin sheet of gold with α-particles and then studied the trajectory of these particles after their interaction with the gold foil. Rutherford, in his experiment, directed high energy streams of α-particles from a radioactive source at a thin sheet (100 nm thickness) of gold. In order to study the deflection caused to the α-particles, he placed a fluorescent zinc sulphide screen around the thin gold foil. Rutherford made certain observation that contradicted Thomson's atomic model. **4**



a) Why did Rutherford selected a gold foil for his α-Particle Scattering experiment?

b) What was the main drawback of Rutherford model?

c) Write any two observations of Rutherford's model of atom.

OR

Which of the two would be chemically more reactive? An element 'X' with atomic number 10 or an element 'Y' with atomic number 17? Give reasons.

15 During winters, Rohan bought an electric room heater. On the packet of the heater, 300 W was written. He used the heater every day for 2 hours. **4**

a) What energy transformation is taking place in the heater?

(b) How much heat energy is produced by the heater in 1 day (in joules)?

c) What is the cost of using it for a month of 30 days if one-unit costs Rs. 3?

OR

In how much time can a water pump of same power take 150 kg of water to a tank situated at a height of 20 m. ($g=10m/s^2$)