CLASS IX (2019-20)
SCIENCE (CODE 086)
SAMPLE PAPER-6

Time : 3 Hours   **Maximum Marks : 80**

General Instructions :

(i)   The question paper comprises of three sections-A, B and C. Attempt all the sections.

(ii)   All questions are compulsory.

(iii)   Internal choice is given in each sections.

(iv)   All questions in Section A are one-mark questions comprising MCQ, VSA type and assertion-reason type questions. They are to be answered in one word or in one sentence.

(v)   All questions in Section B are three-mark, short-answer type questions. These are to be answered in about 50-60 words each.

(vi)   All questions in Section C are five-mark, long-answer type questions. These are to be answered in about 80-90 words each.

(vii)   This question paper consists of a total of 30 questions.

SECTION - A

Q1.   A person is sitting in a travelling train and facing the engine. He tosses up a coin and the coin falls behind him. It can be concluded that the train is :   [1]

(a) Moving forward and gaining speed.

(b) Moving forward and losing speed.

(c) Moving forward with uniform speed.

(d) Moving backward with uniform.

Q2.   Ms. Shukla, a science teacher gave different mixtures to four groups of students to separate their components. Which group was not following the correct method?   [1]

(a) Group 1 was separating a mixture of ethyl alcohol and water by using separating funnel.

(b) Group 3 was separating a mixture of iron pins and sand by using a magnet.

(c) Group 2 was separating a mixture of ammonium chloride and sodium chloride using sublimation.

(d) Group 4 was separating mud particles suspended in water using sedimentation and decantation.

OR

What happens when graphite is burnt?

(a) There will be remaining residue.

(b) There will be no residue.

(c) It will not catch fire.

(d) It will turn into diamond.

DIRECTION : For question numbers 3 and 4, two statements are given- one labelled Assertion (a) and the other labelled Reason (R). Select the correct answer to these questions from the codes (a), (b), (c) and (d) as given below :

(a) Both A and R are true and R is correct explanation of the A.

(b) Both A and R are true but R is not the correct explanation of the A.

(c) A is true but R is false.

(d) Both A and R are false.

Q3.   Assertion (A) : Electron microscope uses very high voltage electricity.   [1]
         Reason (R) : An electron microscope uses electromagnets instead of glass lenses and beam of electrons instead of light.

Q4.   Assertion (A) : If we push a massive truck parked along the roadside, it will not move.   [1]
         Reason (R): Two opposite and equal forces acted on two bodies in contact cancel each other.

Q5.   Calculate the number of moles 23.3 g of zinc.   [1]

(a) 0.37 moles   (b) 0.36 moles

(c) 0.5 moles   (d) 0.53 moles

OR

What is the full form of IUPAC?
(a) International Union Power of Applied Chemistry.
(b) International Union of Pure and Applied Chemistry.
(c) Internal Union of Pure Applied Chemistry.
(d) International Universal Pure and Applied Chemistry.

Q6. The phenomenon of increase in concentration of non-biodegradable organic compounds with each trophic level in a food chain is called : [1]
(a) Biological evolution   (b) Biological fixation
(c) Bioenlargement   (d) Biomagnification

Q7. The electronic configuration of elements A, B, C and D are (2, 8, 4), (2, 8, 5), (2, 8, 6) and (2, 8, 7) respectively. Which of them can make an ion with two negative charges? [1]
(a) A   (b) B
(c) C   (d) D

Q8. Select the incorrect match of disease and its vector/carrier. [1]
(a) Cholera - Housefly   (b) Sleeping sickness - Tsetse fly
(c) Typhus fever - Body louse   (d) Chikungunya - Sandfly

Q9. If the change in the value of g at a height h above the surface of earth is same as at a depth d below it, then (both d and h being much smaller than the radius of the earth). [1]
(a) $d = h/2$ (b) $d = h$
(c) $d = 2h$ (d) $d = h^2$

OR

A sphere of mass 40 kg is attached by another of mass 15 kg when their centers are 0.2 m apart, with a force of 9.8×10^{-7} N. Calculate the constant of gravitation.
(a) $9.2 \times 10^{-7} \, \mathrm{Nm^0 kg^{-2}}$ (b) $6.13 \times 10^{-11} \, \mathrm{Nm^2 kg^{-2}}$
(c) $6.53 \times 10^{-18} \, \mathrm{Nm^2 kg^{-2}}$ (d) $6.53 \times 10^{-11} \, \mathrm{Nm^2 kg^{-2}}$

Q10. What happens to collagen when boiled in water at normal pressure and temperature? [1]
(a) Changes into gelatin   (b) Changes into fibrine
(c) Changes into elastin   (d) No changes

Q11. An atom has mass number A and atomic number Z [1]
(a) How many protons are present in the nucleus?
(b) How many electrons revolve around the nucleus?
(c) How many neutrons are present in the nucleus?

Q12. If wavelength of a sound wave in a medium is reduced by 50%, then what is the percentage change in its frequency? [1]

Q13. Answer question numbers 13.1–13.4 on the basis of your understanding of the following paragraph and the related studied concepts.
Aaron went to the chemical laboratory in his school to do an experiment on iron filings and sulphur. First he took 3 g of sulphur powder and 5 g of iron filings. He put them on a china dish and heated it till the mixture became red hot. Then he let the mixture cool and weighed the mixture. The quantity seemed less to the naked eyes, but after he saw the weight he was surprised.
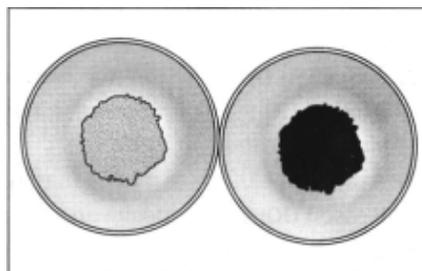
13.1 How much did the mixture weight at the end?   [1]

13.2 Which law is applicable here?   [1]

13.3 State one property of a compound.   [1]

13.4 What is the name of the compound formed?   [1]

Q14.   Questions 14.1 to 14.4 are based on the Table A. Study this table and answer the following questions.

Table A: Cell size and number of chromosomes

Cells	Size (pm)	Number of chromosomes
Cell A	5	3
Cell B	26	2
Cell C	12	4
Cell D	2	1
Cell E	45	6

14.1 Can you find any discrepancy in the above given (Table A) table?   [1]

14.2 Find out the eukaryotic cells from the given table.   [1]

14.3 State two differences between prokaryotic cell and eukaryotic cell.   [1]

14.4 Give two examples of an eukaryote.   [1]

SECTION B

Q15.   (a) A bat can hear sound at frequency upto 120 kHz. Determine the wavelength of sound in air at this frequency. Take speed of sound as 344 m/s.
        (b) How are the wavelength and frequency of a sound wave related to its speed?
        (c) How does sonic boom occur?   [3]

Q16.   With the help of an activity show that gases are more easily compressible than liquids and solids.   [3]

Q17.   (a) Why mitochondria are able to make some of their own proteins?
        (b) For what reason do we need to stain bacteria?   [3]

OR

Explain your observation in the following with reason involved in the process.
        (a) Salt is applied to raw mango pieces.
        (b) Dried raisins are kept in water for a few hours.

Q18.   (a) What should be the mass of a man if he has to do 2500 joules of work in climbing a tree 5 m tall? ($g = 10 \, \text{m/s}^2$)
        (b) List two conditions which need to be satisfied for the work to be done on an object.
        (c) If energy of universe is constant, why are we facing energy crisis?   [3]

Q19.   Draw a phylogenetic tree to show the natural relationship among various animal phyla.   [3]

Q20.   (a) Name the principle used to separate kerosene and water. Draw a neat and labelled diagram of the apparatus used in this separation.
        (b) Can physical and chemical changes happen at the same time? Support your answer with illustrative example. [3]

OR

        (a) Why did Rutherford select a gold foil in his alpha scattering experiments?
        (b) Mention any two drawbacks of Rutherford's model.

Q21.   (a) Describe an activity to demonstrate balanced forces.
        (b) Why is it advised to wear a seat belt in a moving car?   [3]

Q22.   Given below are the names of some connective tissues. Mention the composition and function of each of them: Blood, cartilage and bone.   [3]

OR

(a) Write a note on the protective tissue in plant.
(b) What is differentiation plant tissue?

Q23.	State the universal law of gravitation. Derive its expression.						[3]

Q24.	What are the desirable characters of bee varieties suitable for honey production?			[3]

SECTION - C

Q25.	Describe Galileo's experiment to demonstrate motion of objects on an inclined plane.			[5]

OR

Explain the following briefly:
(a) A greater force is required to impart greater velocity to an object.
(b) An applied unbalanced force causes a change in momentum.
(c) A cricket ball causes much severe injury than a tennis ball on hitting a spectator.

Q26.	What is chromatography? State its principle with the help of a diagram.					[5]

Q27.	(a) In what way smooth muscles are different from striated muscles with respect to the number of nuclei?
(b) Water hyacinth floats on water surface. Explain.
(c) Why is epidermis present as a thick waxy coating of cutin in desert plants?				[5]

OR

What are simple permanent tissues of plants? Explain in detail (also give differences in them).

Q28.	The brakes applied to a car produce an acceleration of 6m/s. in opposite direction to the motion. If the car takes 2 second to stop after the application of break, calculate the distance its travel during this time?		[5]

Q29.	(a) What are ionic and molecular compounds? Give examples.
(b) Calculate the number of moles of magnesium present ribbon weighing 14 g. Molar atomic mass of magnesium is 24 gmol^{-1}.												[5]

OR

How will you prove experimentally the law of conservation of mass?

Q30.	Describe the nitrogen cycle with appropriate diagrams.							[5]