

DELHI PUBLIC SCHOOL, JAMMU
Sample questions for Term Exam 2019-2020
(as per the pattern of CBSE Sample paper)

SUBJECT- CHEMISTRY

CLASS-XI

Questions 1 to 5 (Passage type one mark questions)

1. Sonu and Monu are friends. They love to play with cold drink bottles. Generally they shake the closed bottle of the cold drink and open it immediately, so that the cold drink fizzes out rapidly. One day, while learning Henry's law, they asked their teacher about the fizzing of cold drinks. They got satisfactory reply by their teacher.

Read the above passage to answer the following questions.

- i) What values are associated with Sonu and Monu?
- ii) What reason would have been given by the teacher for the fizzing of cold drink?
- iii) Which gas is filled in the cold drink bottles?
- iv) Would the fizzing of cold drink remain the same, if its temperature is raised?
- v) Which law is associated with this application?

2. Some students wanted to open a liquid ammonia bottle in the laboratory. The teacher cooled the bottle before opening the seal. The students were curious to know why it was necessary to cool the bottle of liquid ammonia, before opening the seal. The teacher explained satisfactorily.

- a) What would be the teacher explanation?
- b) Why are aerated water bottles kept under water in summer?
- c) What values are displayed by the teacher and the student?
 - d) Ammonia is a weak base or strong base?
 - e) Why it was necessary to cool the bottle of liquid ammonia , before opening the seal?

3. Professor of Delhi University found that some scraps emit high energy radiations which harmed large number of people. There are certain elements like Co-60 which emit radiations at their own and this phenomenon is called radioactivity. There are three kinds of rays.

- a) Name the ray which is used to treat cancer.
- b) Give the source of γ -rays used for treating cancer.
- c) Discuss the values not possessed by people disposing of radioactive waste materials.
 - d) Name the three kinds of rays?
 - e) Which complex compound is associated with cancer therapy?

4. Thermal power plants usually use coal as a fuel which liberates SO₂, CO₂ and CO gases. It produces huge amount of ash called fly ash. Fly ash causes air pollution. Mr. Sarathy engineer, suggested that fly ash should be used as substitute of cement. Using fly ash as cement substitute will reduce pollution to lot of extent. It can also be used in agriculture.

- a) What are the advantages of using fly ash in cement?
- b) How does it help in agriculture?
- c) What values are possessed by Mr. Sarathy?
- d) Why are gas power plants better than thermal power plants?

e) Which type of solution is caused by fly ash?

5. Ram uses urea and DAP for his crops whereas Shyam uses compost. Ammonia is prepared by Haber's process. It is used for making fertilizers. If it is used in excess, it is harmful for crops.

- What is DAP?
- What can be done with waste products?
- What is the use of avoiding excess of fertilizers?
- Natural manure is preferred than synthetic fertilizers. Why?
- How ammonia is produced by Haber's process?

Questions 06 to 10 (one word or one sentence type question of one mark)

- What is the significant figures in 1.050×10^4 ?
- What do mean by Mole fraction?
- What is the relation between temperature in degree Celsius and degree Fahrenheit?
- Calculate the formula mass of calcium chloride.
- What is the law called which deals with the ratios of the volumes of the gaseous reactants and products?

Questions 11 to 15(MCQ's type question of one mark)

- An element, X has the following isotopic composition 200X: 90% 199X: 8% 202X: 2.0%. The weighted average atomic mass of the naturally occurring element X is closest to
(a) 201 amu (b) 202 amu
(c) 199 amu (d) 200 amu
- Which has the maximum number of molecules among the following?
(a) 8 g H₂ (b) 64 g SO₂
(c) 44 g CO₂ (d) 48 g O₃
- What volume of oxygen gas (O₂) measured at 0°C and 1 atm, is needed to burn completely 1 L of propane gas (C₃H₈) measured under the same conditions?
(a) 10 L (b) 7 L
(c) 6 L (d) 5 L
- Volume occupied by one molecule of water (density = 1 g cm⁻³) is
(a) 5.5×10^{-23} cm³ (b) 9.0×10^{-23} cm³
(c) 6.023×10^{-23} cm³ (d) 3.0×10^{-23} cm³
- The total number of electrons in 1.6 g of CH₄ to that in 1.8 g of H₂O
(a) Double (b) Same
(c) Triple (d) One fourth

Questions 16 to 20 (Assertion Reasoning type question of one mark question)

- (A) Both assertion and reason are correct statements, and reason is the correct explanation of the assertion.
- (B) Both assertion and reason are correct statements, but reason is not the correct explanation of the assertion.
- (C) Assertion is correct, but reason is wrong statement.

(D) Assertion is wrong, but reason is correct statement.

16. A : 1 a.m.u. = 1.66×10^{-24} gram.

R : Actual mass of one atom of C-12 is equal to 1.99×10^{-23} g.

17. A : Unit of specific gravity is gram-cc-1.

R : Specific gravity is same as density of a liquid in normal conditions.

18. A : Number of atoms in 2 mole of NH_3 is equal to number of atoms in 4 mole of CH_4

R : Both are chemically similar species.

19. A : Mass of 1 gram molecule of H_2SO_4 is 98 gram.

R : One gram atom contains NA atoms.

20. A : Ratio of empirical formula mass and molecular formula mass may be a whole number.

R : Molecular formula mass = $n \times$ empirical formula mass, where n is the simplest whole number.

Questions 21 to 27 (short type questions of two mark)

21. What is the mass percent of different elements present in sodium sulphate?

22. Calculate the number of hydrogen atoms in 5 moles of ethane molecule.

23. What do mean by molarity and molality which one is dependent on temperature.

24. Calculate the molarity of NaOH in the solution prepared by dissolving its 4 g in enough water to form 250 ml of the solution.

25. Calculate wave number of yellow radiations having wavelength of 5800 \AA .

26. Write the complete symbol for the atom with the given atomic number (Z) and mass number (A).

(a) $Z = 17, A = 35$ (b) $Z = 92, A = 233$

27. Using s, p, d and f notation, describe the orbital with the following quantum numbers-

(a) $n=1, l=0$ (b) $n=3, l=1$ (c) $n=4, l=2$ (d) $n=4, l=3$

Questions 28 to 34 (short type questions of three mark)

28. State (a) Hund's Rule of maximum Multiplicity (b) Aufbau Principle (c) $n+l$ rule

29. Write down the quantum numbers n and l for the following orbitals

a. 2p b. 3d c. 5f

30. State Heisenberg's uncertainty principle. Calculate the uncertainty in the position of an electron if the uncertainty in its velocity is $5.7 \times 10^5 \text{ m/s}$.

31. Write the 6 points of difference between orbit and orbital.

32. State and explain the law of multiple proportions with the help of an example.

33. 2.3 gm of H_2 react with 29 gm of O_2 to yield water.

i) Which is a limiting reagent?

ii) Calculate the maximum amount of water that can be formed?

34 .i) State Pauli Exclusion Principle.

ii) What is the difference between a quantum and a photon?

Questions 35 to 39 (Long type question of five mark)

35. What is the difference between empirical and molecular formula? A compound contains 4.07 % hydrogen, 24.27 % carbon and 71.65 % chlorine. Its molar mass is 98.96 g. What are its empirical and molecular formulas?
36. A compound made up of two elements A and B has A = 70 %, B = 30 %. Their relative number of moles in the compound are 1.25 and 1.88. Calculate
- Atomic masses of the elements A and B
 - Molecular formula of the compound, if its molecular mass is found to be 160 u.
37. A crystalline compound has the following composition: Mg = 20 %, S = 26.66 % and O = 53.33%. Calculate the molecular formula of the anhydrous compound if the molecular mass of anhydrous compound is 120 u.
38. a) Define matter. Explain the classification of matter on the basis of physical properties?
b) Calculate the total number of electrons present in 1.6 g of methane?
39. Define the terms:
- Element
 - Molality
 - Mole fraction
 - Molarity
 - Percentage composition.