

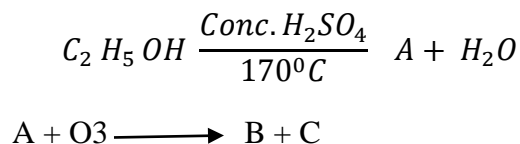
Important questions for Class XI

Subject: Chemistry

Group A : Very Short Questions

1. Define mole and molecular weight.
2. How many moles of O₂ molecules are present in 112ml of O₂ gas at NTP?
3. State Avogadro's law and define limiting reagent.
4. Define equivalent weight of an element. Calculate E.W. of Mg in MgO.
5. What do you understand by the terms ideal gas and real gas? Explain.
6. Define surface tension with its unit.
7. 1 lit flask contains 2gm of N₂, 0.4gm H₂ and 9gm of O₂ at 27°C. Calculate the total pressure of mixture.
8. Distinguish between crystalline solid and amorphous solid.
9. Define oxidation number of an element in a compound. Calculate oxidation number of P in H₃PO₄.
10. Give the electronic configuration of Cu (z = 29) in terms of s,p,d orbitals.
11. An atomic orbital has n = 3. What are the possible values of l and m?
12. State Hund's rule and Pauli's exclusion principle.
13. An equilibrium has a dynamic nature. comment this statement.
14. Define K_p and K_c.
15. Define the terms efflorescence and hygroscopy with examples.
16. Show that the reaction $\text{Hg}^{++} + \text{Sn}^{++} \longrightarrow \text{Hg} + \text{Sn}^{4+}$ is redox reaction.
17. State the law of multiple proportion.
18. How long will it take 1200ml of H₂ gas to diffuse through a porous partition if 600 ml of O₂ diffuse in 10 minute under the same condition.
19. Size of an anion is larger than its parent atom. Explain.
20. Define ionization energy. Why alkali metals have low ionization energy?
21. How many molecules of O₂ are contained in 100ml of air at NTP? [Air contains 21% O₂ by volume at NTP]
22. What do you mean by the terms (a) matrix (b) anode mud.
23. Differentiate flux and slag with examples.
24. What happens when carbon dioxide is passed into ammonical brine solution?
25. Why is the mixture of CaCl₂ and KF is added to NaCl during the extraction of sodium using Down's cell?
26. What do you mean by setting of plaster of paris?
27. Write any two reactions to show that nascent hydrogen is more powerful reducing agent than molecular hydrogen.
28. Classify the oxides with reactions.
 - a. BaO
 - b. N₂O₅
29. Write any two applications of heavy water.
30. What happens when copper is treated with mod. Conc. HNO₃?
31. What is Nessler's reagent? Write its action upon NH₃.
32. Give two oxidising properties of SO₂.

33. Why H₂S gas can not be dried using quick lime and conc. H₂SO₄?
34. What happens when?
- Ethylene is passed through bromine water.
 - AgNO₃ is added to aq. Solution of HCl followed by addition of NH₄OH solution.
35. Write molecular formula of carnallite. Give the action of halogen on hot and conc. NaOH.
36. How can you prepare phosgene gas starting from carbon monoxide gas.
37. How can you say that different allotropic modifications contain the same element carbon.
38. Point out the reducing properties of phosphine.
39. What are oxyacids of phosphorous. Give reaction when orthophosphoric acid is heated.
40. Give appropriate chemical reaction when AgNO₃ is added to Na₂S₂O₃.
41. Give an example of each of saturated and unsaturated alicyclic hydrocarbons. Why are they called so?
42. Write homologous series of acid amide and nitro compound.
43. What do you understand by (a) Inductive effect (b) substitution reaction?
44. Why it is necessary to boil sodium extract with dilute nitric acid before adding aq. AgNO₃?
45. Write a chemical test to detect N as a hetero element present in organic compound.
46. Define functional group. Give the functional group of : (a) ester (b) ketone
47. Give the structure of following organic compounds.
- 2-methoxypropanal
 - 2-ethylprop-en-1-ol
48. What happens when?
- Ethene is passed through alkaline solution of KMnO₄
 - Sodium acetate is heated with sodalime.
49. Write a short note on wurtz reaction.
50. Complete the following reaction.



Group B: Short Questions

51. Define relative molecular weight and vapour density of gas and give relationship between them. An oxide of nitrogen contains of its own volume of nitrogen and its V.D is 54. Determine its molecular formula applying Avogadro's hypothesis.
52. State law of mass action. Derive relationship between K_p and K_c at what condition K_p < K_c?
53. What do you understand by absorption and emission spectra. Discuss the hydrogen spectra in light of Bohr's atomic model.
54. Derive ideal gas equation. Calculate the value of R in lit.atm K⁻¹ mol⁻¹ and JK⁻¹ mol⁻¹.
55. Define disproportionation reaction. Balance the following redox reaction either by oxidation number method or by ion- electron method.
- $$MnO_4^- + H_2C_2O_4 + H^+ \longrightarrow Mn^{++} + CO_2 + H_2O$$
- Point out which one is oxidant and reductant and why?
56. Explain the principle for determination of equivalent weight of metals by oxide formation method. Dry hydrogen gas is passed over 5.203 gm of heated copper oxide, the water formed weighs 1.178 gm. find E.W. of copper.

57. Discuss the manufacture of caustic soda using Castner- Kellner's process. Give action of NaOH with metals and non metals.
58. Explain manufacture of ammonia by Haber's process. Why ammonia is highly soluble in water?
59. Discuss the laboratory preparation of phosphine gas. Starting from phosphorous how can you get P₂O₃ and P₂O₅?
60. Give principal chemical reactions for preparation of H₂S and SO₂ gas. Discuss the reducing properties of H₂S and SO₂.
61. Explain about comparative study of (a) Acidic character (b) Reducing character of halogen acids. Give chemical test of Br⁻ and I⁻ ions.
62. Convert the following organic compounds.
- Ethene to ethanol and vice versa.
 - Ethene to ethyne
- Write a concise account on peroxide effect.
63. Write chemistry about laboratory preparation of ethyne.
64. What is meant by homologous series? What are the characteristic features of homologous series? Write homologous series of aldehyde.

Group C : Long Questions

65. a. How much sulphuric acid containing 90% H₂SO₄ by weight is required for production of 500kg of hydrochloric acid containing 30% HCl by weight according to the following reaction?
- $$\text{H}_2\text{SO}_4 + \text{NaCl} \longrightarrow \text{HCl} + \text{Na}_2\text{SO}_4$$
- b. Write short note on solubility product principle.
66. a. describe Rutherford's α - ray scattering experiment which led to the discovery of nucleus. What are the defects of Rutherford's model of atom?
- b. Discuss the chemistry about Quantum numbers.
67. Explain Graham's law of diffusion. A vessel of volume 100 ml contains 10% of oxygen and 90% of an unknown gas. The gases diffuse in 86 seconds through a small hole of the vessel. If pure oxygen under same condition diffuses in 75 seconds, find the molecular weight of the unknown gas.
68. Describe manufacture of sulphuric acid by contact process. Write chemical reactions to support dehydrating nature of conc. H₂SO₄
69. Explain about principle, self explanatory diagram of preparation of nitric acid by Ostwald's process. Discuss the oxidising character of HNO₃.
70. Describe manufacture of washing soda by solvay ammonia process. How does sodium carbonate react with:
- CO₂ and SO₂
 - AgNO₃
 - Ca(OH)₂
71. Write short note on:
- Isomerism in organic compounds.
 - Laboratory preparation of ethane.
 - Classification of organic compound.