

Multiple Choice Questions

Hydrogen, Isotopes of hydrogen, Preparation of dihydrogen, properties of dihydrogen and uses of dihydrogen

[MHT-CET 2020]

1. Water gas is mix of
a) $\text{CO} + \text{H}_2$ b) $\text{CO}_2 + \text{H}_2$ c) $\text{CO} + \text{H}_2 + \text{H}_2\text{O}$ d) $\text{O}_2 + \text{H}_2$
2. During production of dihydrogen from water gas, proportion by volume of water gas to steam is
a) 3 : 1 b) 1 : 2 c) 2 : 1 d) 1 : 3
3. Strength of 20 volume solution of hydrogen peroxide is
a) 6.8 g/L b) 60.71 g/L c) 6.071 g/L d) 68 g/L

[MHT-CET 2021]

4. Which of the following reactions does not produce dihydrogen ?
a) Action of aqueous NaOH on zinc
b) Electrolysis of pure H_2O using acid or alkali
c) Reaction of steam on hydrogen
d) Action of dil. HCl on Zn granules.
5. Which of the following steps is NOT involved in industrial preparation of dihydrogen?
a) Electrolysis of pure water b) Reaction of steam with hydrocarbon
c) Removal of $\text{CO}_2(\text{g})$ d) Conversion of $\text{CO}(\text{g})$ into $\text{CO}_2(\text{g})$
6. Which of the following is radioactive ?
a) ${}^1_3\text{H}$ b) ${}^4_2\text{H}$ c) ${}^1_1\text{H}$ d) ${}^2_1\text{H}$
7. Which of the following processes does not involve use of dihydrogen ?
a) Gasification of coal b) Formation of vanaspati ghee
c) Preparation of HCl d) Preparation of metal hydride.
8. Pure dihydrogen (99.5 %) is obtained by the electrolysis of
a) $\text{NaOH}_{(\text{aq})}$ using Zn electrode
b) Pure water
c) dil. H_2SO_4 using cadmium electrode.
d) Warm barium hydroxide using Ni electrodes

Alkali metals and alkaline earth metals, Electronic configuration

[MHT-CET 2020]

9. What is the electronic configuration of third element of group - 2 in periodic table ?
a) $[\text{Ne}] 3\text{S}^2$ b) $[\text{Ar}] 4\text{S}^2$ c) $[\text{Ne}] 3\text{S}^1$ d) $[\text{Ar}] 4\text{S}^1$
10. Valence shell electronic configuration of fourth element of group - 2 in periodic table is
a) 5S^2 b) 5S^1 c) 4S^2 d) 4S^1
11. The electronic configuration of hydrogen is similar to outer electronic configuration of
a) Inner transition metals b) Alkali metals
c) Transition metals d) Alkaline earth metals

12. Which of the following is an alkaline earth metal ?
a) Radium b) Rubidium c) Caesium d) Francium
13. Which of the following is an alkali metal ?
a) Barium b) Rubidium c) Strontium d) Gallium
14. Which of the following is an alkali metal ?
a) Ba b) Cs c) Ca d) Sr

[MHT-CET 2022]

15. Which among the following elements has only one electron in valence shell?
a) Rb b) Ba c) Ca d) Ra
16. Which among the following elements develops noble gas configuration in +1 oxidation state?
a) Fr b) Ca c) Mg d) Sr
17. Identify the most electropositive element from the following.
a) K b) Cs c) Li d) Na
18. Which among the following elements develops noble gas configuration after losing two electrons?
a) K b) Cs c) Ba d) Rb
19. Which among the following elements exhibits noble gas electronic configuration in +2 oxidation state?
a) Fr b) Na c) Sr d) Cs
20. Identify the element having ns^2 electronic configuration.
a) Radium b) Francium c) Sodium d) Rubidium
21. Which among the following elements in +1 oxidation state forms colourless compounds and is diamagnetic?
a) Potassium b) Magnesium c) Calcium d) Strontium
22. Which among the following elements is alkaline earth metal?
a) Strontium b) Rubidium c) Francium d) Caesium

Physical and Chemical properties of alkali and alkaline earth metals, uses

[MHT-CET 2018]

- [MHT-CET 2018]**
23. Which among the following elements of group - 2 exhibits anomalous properties?
- a) Be b) Mg c) Ca d) Ba

[MHT-CET 2019]

- [MHT-CET 2019]**
24. Which of the following elements does not form amide when reacted with ammonia?
- a) K b) Li c) Rb d) Na
25. Which among the following alkali metal chlorides crystallizes in form of hydrate?
- a) NaCl b) LiCl c) CsCl d) KCl
26. Which of the following properties of hydrogen is similar to halogen family?
- a) Formation of unipositive ion
c) Ionisation enthalpy
- b) Electronic configuration
d) Electron gain enthalpy

[MHT-CET 2020]

27. Which of the following halogens combines with dihydrogen at lowest temperature ?
a) Bromine b) Chlorine c) Fluorine d) Iodine
28. The increasing order of reactivity of alkaline earth metals with water is
a) $Mg < Sr < Ca < Ba$ b) $Mg < Ca < Sr < Ba$
c) $Ba < Sr < Ca < Mg$ d) $Ba < Mg < Ca < Sr$
29. Which among the following chlorides of alkali metals is deliquescent ?
a) NaCl b) CsCl c) KCl d) LiCl
30. Which of the following is the strongest reducing agent ?
a) Mg b) Li c) Na d) Ca
31. Which among the following alkali metal chlorides forms hydrates ?
a) NaCl b) CsCl c) KCl d) LiCl
32. Caesium is used in
a) Extraction of boron b) Air conditioning plants
c) Devising photoelectric cells d) Fast breeder nuclear reactors
33. Which among the following is used as a source of oxygen in submarine in emergency breathing apparatus ?
a) Rubidium superoxide b) Potassium superoxide
c) Sodium peroxide d) Lithium monoxide
34. Which among the following alkali metal elements is used as coolant in fast breeder nuclear reactor ?
a) Sodium b) Lithium c) Potassium d) Caesium

[MHT-CET 2021]

35. Which alkaline earth metal is used as a moderator in nuclear reactors ?
a) Barium b) Beryllium c) Magnesium d) Calcium
36. When alkali metal is dissolved in liquid ammonia the colour of resulting solution is
a) deep red b) deep blue c) violet d) green
37. How many water molecules are present in formula of crystalline chloride of Lithium ?
a) 4 b) 3 c) 1 d) 2
38. Which among the following statements is NOT true ?
a) Compounds of unipositive ions of alkali metals are paramagnetic
b) Alkali metals have low density
c) All alkali metals are silvery white and soft
d) Alkali metals are most electropositive elements
39. Which of the following is NOT true for alkaline earth metals ?
a) Their divalent ions are inert gas configuration
b) They are most electropositive than alkali metals
c) Alkaline earth metals are silvery white and soft
d) Their compounds are diamagnetic and colourless
40. Identify the correct composition of water gas from following :
a) $CO_{(g)} + H_2O_{(g)}$ b) $NO_{(g)} + 2H_{2(g)}$ c) $CO_{2(g)} + 3H_2O_{(g)}$ d) $CO_{(g)} + H_{2(g)}$