BASED ON HYDROGEN

1. Out of the following metals which will give H_2 on reaction with NaOH :
I : Zn, II.: Mg, III : Al, IV: Be
(1) I, II, III, IV (2) I, III, IV
(3) II, N (4) I, III

2. The gas used in the hydrogenation of oils, in presence of nickel as a catalyst is :
(1) methane (2) ethane (3) ozone (4) hydrogen

3. Hydrogen has the tendency to loose one e^- and form H^+, In this respect it resembles with :
(1) Alkali metal (2) Carbon
(3) Alkaline earth metal (4) Halogens

4. H_2 gas can not be prepared by :-
(1) Be + NaOH (2) Na + NaOH
(3) Mg + NaOH (4) By (2 & 3) method

5. Deuterium, an isotope of hydrogen is:-
(1) Radioactive (2) Non radioactive
(3) Heaviest (4) Lightest

6. Hydride gap in periodic table is from :
(1) Group 7 to group 9 (2) Group 5 to group 7
(3) Group 4 to group 6 (4) Group 7 to group 10

7. Which of the following r~ction is called water gas shift reaction ?
(1) $C(s) + H_2O(g) \longrightarrow CO(g) + H_2(g)$
(2) $3Fe(s) + 4H_2O(steam) \longrightarrow Fe_3O_4 + 4H_2(g)$
(3) $CH_4(g) + H_2O(g) \xrightarrow[1270K]{Ni} CO(g) + 3H_2(g)$
(4) $CO(g) + H_2O \xrightarrow[FeCrO_4]{773K} CO_2(g) + 3H_2(g)$

BASED ON WATER

8. Which is true statement about D_2O and H_2O :
(1) D_2O has lower dielectric constant than H_2O
(2) NaCl is more soluble in D_2O thanin H_2O
(3) both are correct
(4) none is correct

9. The reactions of heavy water are slow.
The reason is :-
(1) Heavy water is associated (2) Heavy water is dissociated
(3) High bond energy of D–O bond (4) Heavy water is of lower mass

10. Hard water when passed through ion exchange resin containing RCOOH group, becomes free from :-

(1)CI^- (2) SO_4^{-2} (3) H_3O^+ (4) Ca^{+2}

11. Permutit is a technical name given to :
(1) Aluminates of Ca and Na (2) Hydrated silicates of Al and Na
(3) Silicates of Ca and Na (4) Silicates of Ca and Mg

12. The formula of sodium zeolite which is used in permutit process for softening water is :c
(1) $Na_2O.Al_2O_3.Si_2O_4.xH_2O$ (2) $Na_2OAl_2O_3.Si_2O_4.xH_2O$
(3) $Na_2O.AlO_3.SiO_4.xH_2O$ (4) $K_2Al_2Si_2O_8.xH_2O$

13. The compound sodium hexameta phosphate $Na_2[Na_4(PO_3)_6]$ is called calgon because:-
(1) It was developed by the scientist
(2) It was developed first in California
(3) It refers to calcium gone
(4) It is based on the name of the company which developed it.

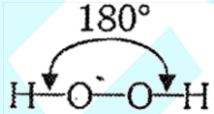
14. Permanent hardness in water due to presence of :-
(1) Ca^+, Mg^+ (2) $CaCl_2$, $MgCl_2$
(3) $CaCO_3$, $MgCO_3$ (4) All

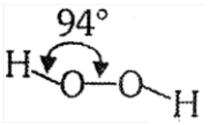
15. Temporary unstable hardness of water due to presence of :-
(1) $CaCl_2$, $MgSO_4$ (2) Ca^{+2}, Mg^{+2}
(3) K^+, $CaCO_3$ (4) $Ca(HCO_3)_2$, $Mg(HCO_3)_2$

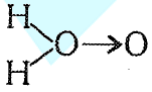
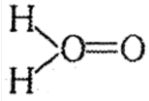
16. In which of the following method of the removal of hardness, Ca^{+2} and Mg^{2+} are not separated from sample of hard water ?
(1) By boiling of temporary hard water
(2) Addition of sodium carbonate
(3) Using sodium hexamexa.phosphate
(4) Synetl1etic resins and zeolite method

BASED ON HYDROGEN PEROXIDE

17. H_2O_2 is used but not as:-
(1) oxidant, reductant (2) bleaching agent
(3) antiseptic (4) catalyst

18. Which of the following is a true structure of H_2O_2:-
(1) 

(2) 

(3) 
(4) 

19. In the reaction $2H_2O_2 \longrightarrow 2H_2O + O_2$, oxidation state of oxygen changes as :-
(1) Only –1 to –2 (2) Only –1 to zero
(3) Both of the above (4) –1 to –3

20. The dipole moment of H_2O_2 is 2.10. This indicates that the structure of H_2O_2 is :-
(1) Linear (2) Non-linear
(3) Symmetrical (4) None

21. Bleaching action of H_2O_2 is due to its:
(1) Oxidising nature (2) Reducing nature
(3) Acidic nature (4) Thermal instability

22. Correct order of boiling point is :
(1) $H_2 > H_2O_2 > D_2O > H_2O > D_2$ (2) $H_2O_2 > H_2 > D_2O > H_2O > D_2$
(3) $H_2O_2 > D_2O > H_2O > O_2 > H_2$ (4) $H_2O_2 > D_2O > H_2O > H_2 > O_2$

23. $H_2O < H_2O_2$ order is incorrect for :-
(1) Boiling point (2) Acidic nature
(3) Dipole moment (4) Strength of H-bond

ANSWER KEY

EXERCISE-I

1.	(2)	**2.**	(4)	**3.**	(1)	**4.**	(4)	**5.**	(2)	**6.**	(1)	**7.**	(4)
8.	(1)	**9.**	(3)	**10.**	(4)	**11.**	(2)	**12.**	(1)	**13.**	(3)	**14.**	(2)
15.	(4)	**16.**	(3)	**17.**	(4)	**18.**	(2)	**19.**	(3)	**20.**	(2)	**21.**	(1)
22.	(3)	**23.**	(4)										