

Date Planned : __ / __ / __	Daily Tutorial Sheet-3	Expected Duration : 90 Min
Actual Date of Attempt : __ / __ / __	JEE Main Archive	Exact Duration : _____

31. The temporary hardness of water is due to : (2019)
 (A) NaCl (B) $\text{Ca}(\text{HCO}_3)_2$ (C) Na_2SO_4 (D) CaCl_2
32. A water sample has ppm level concentration of the following metals : Fe = 0.2; Mn = 5.0; Cu = 3.0; Zn = 5.0. The metal that makes the water sample unsuitable for drinking is : (2019)
 (A) Mn (B) Zn (C) Cu (D) Fe
33. The correct statements among (1) to (4) regarding H_2 as a fuel are : (2019)
 (1) It produces less pollutants than petrol
 (2) A cylinder of compressed dihydrogen weighs ~ 30 times more than a petrol tank producing the same amount of energy.
 (3) Dihydrogen is stored in tanks of metal alloys like NaNi_5 .
 (4) On combustion, values of energy released per gram of liquid dihydrogen and LPG are 50 and 142 kJ, respectively.
 (A) (2), (3) and (4) only (B) (1), (2) and (3) only
 (C) (2) and (4) only (D) (1) and (3) only
34. The total number of isotopes of hydrogen and number of radioactive isotopes among them, respectively, are : (2019)
 (A) 3 and 1 (B) 3 and 2 (C) 2 and 1 (D) 2 and 0
35. Among the following reactions of hydrogen with halogens, the one that requires a catalyst is : (2019)
 (A) $\text{H}_2 + \text{Br}_2 \rightarrow 2\text{HBr}$ (B) $\text{H}_2 + \text{Cl}_2 \rightarrow 2\text{HCl}$
 (C) $\text{H}_2 + \text{F}_2 \rightarrow 2\text{HF}$ (D) $\text{H}_2 + \text{I}_2 \rightarrow 2\text{HI}$
36. The hydride that is not electron deficient is : (2019)
 (A) AlH_3 (B) GaH_3 (C) SiH_4 (D) B_2H_6
37. The hardness of a water sample (in terms of equivalents of CaCO_3) containing 10^{-3} M CaSO_4 is : (2019)
 (molar mass of $\text{CaSO}_4 = 136 \text{ g mol}^{-1}$)
 (A) 100 ppm (B) 50 ppm (C) 10 ppm (D) 90 ppm
38. NaH an example of : (2019)
 (A) electron -rich hydride (B) metallic hydride
 (C) saline hydride (D) molecular hydride
39. The amphoteric hydroxide is : (2019)
 (A) $\text{Mg}(\text{OH})_2$ (B) $\text{Be}(\text{OH})_2$ (C) $\text{Ca}(\text{OH})_2$ (D) $\text{Sr}(\text{OH})_2$
40. A metal on combustion in excess air forms X. X upon hydrolysis with water yields H_2O_2 and O_2 along with another product. The metal is : (2019)
 (A) Rb (B) Mg (C) Li (D) Na

41. The correct statement(s) among I to III with respect to potassium ions that are abundant within the cell fluids is/are : **(2019)**
- I. They activate many enzymes
 II. They participate in the oxidation of glucose to produce ATP
 III. Along with sodium ions, they are responsible for the transmission of nerve signals
- (A) I and III only (B) I, II and III (C) III only (D) I and II only
42. The metal used for making X-ray tube window is : **(2019)**
- (A) Be (B) Mg (C) Ca (D) Na
43. Match the following item in column I with the corresponding items in Column II. **(2019)**
- | Column-I | Column-II |
|---------------------------------------------------------|--------------------------------------------|
| (i) $\text{Na}_2\text{CO}_3 \cdot 10\text{H}_2\text{O}$ | (A) Portland cement ingredient |
| (ii) $\text{Mg}(\text{HCO}_3)_2$ | (B) Castner-Kellner process |
| (iii) NaOH | (C) Solvay process |
| (iv) $\text{Ca}_3\text{Al}_2\text{O}_6$ | (D) Temporary hardness |
| (A) (i) (C); (ii) (D); (iii) (B); (iv) (A) | (B) (i) (D); (ii) (A); (iii) (B); (iv) (C) |
| (C) (i) (B); (ii) (C); (iii) (A); (iv) (D) | (D) (i) (C); (ii) (B); (iii) (D); (iv) (A) |
44. The chemical nature of hydrogen peroxide is : **(2019)**
- (A) Reducing agent in basic medium, but not in acidic medium
 (B) Oxidising agent in acidic medium, but not in basic medium
 (C) Oxidising and reducing agent in acidic medium, but not in basic medium
 (D) Oxidising and reducing agent in both acidic and basic medium
45. The alkaline earth metal nitrate that does not crystallise with water molecules, is : **(2019)**
- (A) $\text{Mg}(\text{NO}_3)_2$ (B) $\text{Sr}(\text{NO}_3)_2$ (C) $\text{Ba}(\text{NO}_3)_2$ (D) $\text{Ca}(\text{NO}_3)_2$