

Half yearly Examination - 2013
 $(A=10)$ $(all=5)$

- (A)
- (1) How many moles of NaOH are contained in 27 ml of 0.15 (M) NaOH (1)
 - (2) Heavy water is toxic in nature. why? (1)
 - (3) Explain the amphoteric nature of water (1)
 - (4) What is Pauli exclusion principle? why is it called so? (1)
 - (5) If 10^{21} molecules are removed from 200 mg of CO_2 , then how many moles of CO_2 are left. (1)
 - (6) An electron is placed in 4f orbital what possible values for quantum no n, l, m, s can it have (1)
 - (7) What is ~~normality~~ mole fraction (1)
 - (8) Calculate the no of electron present in 1.6 gram of methane (1)
 - (9) What is the maximum no of emission lines when the excited electron of a hydrogen atom in $n=6$ drops to the ground state. (1)
 - (10) Calculate (i) wave no (ii) frequency of yellow radiation having wave length of 5800 Å (1)

Section A

(B) Convert the following

- | | |
|----------------------|----------------------------------|
| (1) methane → Ethane | (6) propyne → Acetone (20) |
| (2) Ethane → methane | (7) Ethyne → Glycerol |
| (3) Ethene → Benzene | (8) Ethyne → Glyoxal |
| (4) Ethyne → Acetone | (9) Calcium Carbide to acetylene |
| (5) Ethene → Ethyne | (10) Ethane → Glycol |

(C) Give the electronic configuration of the following atomic no (5)

(1) (29) (2) 57 (3) 89 (4) (24) (5) 41

- (D)
- (1) State and explain Niels Bohr's theory (5)
 - (2) Find out the radius and Energy of an electron moving around the nucleus.

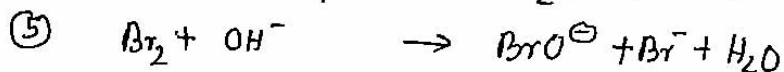
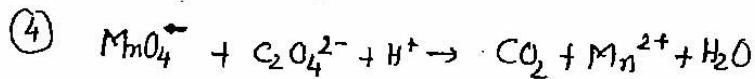
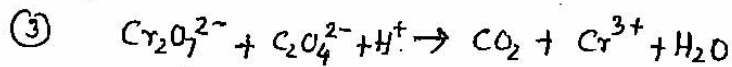
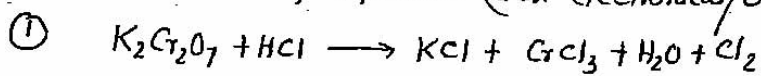
(E) Explain what is temporary and permanent hardness of water. Give 2 methods to remove each type of hardness. Write chemical equation (5)

(F) (1) Write short notes on optical isomerism
(2) Write the I.U.P.A.C name and isomerism of the following compound (5)
(1) C_4H_8 , (2) normal heptane

(G) (1) Define Normality and Molarity (5)

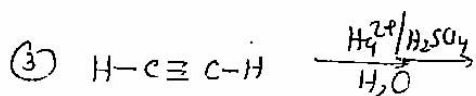
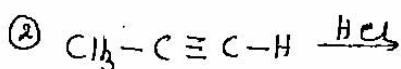
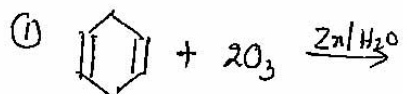
(2) 25 gram of a sample of ferrous sulphate was dissolved in dil H_2SO_4 and water and the volume was made up to 1-litre. 25 ml of this solⁿ required 20 ml of $N/10$ $KMnO_4$ solution for complete oxidation. Calculate the percentage of $FeSO_4 \cdot 7H_2O$ in the sample.

(H) Balance the following equation (Ion electronical/O.N. method) (5)

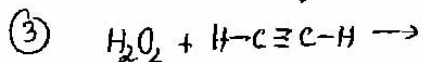
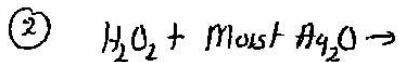
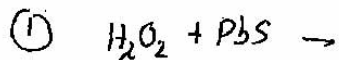


(I) (1) A compound A which on ozonolysis gives glyoxal, acetone and acetaldehyde what is (A) (10)

(2) Solve the following equation



(J) Give the chemical reaction of H_2O_2 with the following (5)



(b) A 5.0 cc. solution of H_2O_2 liberates 0.508 gm of I_2 from KI
Solⁿ: Calculate the strength of H_2O_2 solution in term volume strength at S.T.P.

(K) (1) 10 cc. of H_2O_2 solution when reacted with KI produced 0.5 gram of I_2 . Calculate the percentage of purity of H_2O_2 [I = 127] (5)

(2) What volume of O_2 will be required for the complete combustion of 18.2 litres of propane at N.T.P.