13. A volume of 50 ml of the hydrocarbons given in Column I is burnt completely at 400 K and 1 atm and the volumes of products formed at 400 K and 1 atm are given in Column II. Match the hydrocarbons (Column I) with the suitable products (Column II).

Column I	Column II
(A) CH_4	(P) 100 ml CO_2
(B) C_2H_6	(Q) 100 ml H_2O
(C) C_2H_4	(R) 150 ml H_2O
(D) C_3H_4	(S) 150 ml CO_2
	(T) 50 ml CO_2

14. Match the following columns

Column I	Column II
(A) 400 g/l NaOH	(P) 6.25m – NaOH ($d_{solution}$ = 1.0 g/ml)
(B) 20% (w/w) NaOH	(Q) 0.166 mole fraction of NaOH ($d_{solution}$ = 1.3 g/ml)
	(R) 10 M-NaOH ($d_{solution}$ = 2 g/ml)
	(S) 7142.5 ppm ($d_{solution}$ = 1 g/ml)

15. Match the following columns

Column I	Column II
(A) 5m NaOH solution ($d_{solution}$ = 0.6 g/ml) Molarity of solution is	(P) 16 M
(B) 250 ml of H_2O_2 solution provides 64 g O_2. Molarity of H_2O_2 solution is	(Q) 1 M
(C) 100 ml of 1 M-H_2SO_4 solution ($d_{solution}$ = 1.5 g/ml) is mixed with 400 ml of water, density of final solution = 1.25 g/ml. Molarity of resulting solution is	(R) 2.5 M
(D) 100 ml of 6 M-NaCl solution is mixed with 100 ml of 17% (w/w) $AgNO_3$ solution ($d_{solution}$ = 8 g/ml). Molarity of Ag^+ ions in the resulting solution is	(S) 0.227 M

Section F (Subjective)

Single-digit Integer Type

1. The density of mercury is 13.6 g/ml. The diameter of an atom of mercury (in Å) assuming that each atom of mercury is occupying a cube of edge length equal to the diameter of the mercury atom is (Hg = 200)

2. Atoms of elements A, B and C combine to form a compound in the atomic ratio of 1:6:2. Atomic masses of A, B and C are 64, 9 and 16 amu, respectively. The maximum mass of the compound (in g) formed from 1.28 g of A, 3.0×10^{23} atoms of B and 0.04 mole atom of C is