10. If the atomic mass were given by as $1/6^{th}$ part and molecular mass as $1/12^{th}$ part by mass of one atom of C^{12} isotope, what would be the molecular mass of water? Suppose Atomic masses of hydrogen and oxygen on new scale are 1 and 16, respectively,

(a) 18
(b) 9
(c) 36
(d) Unpredictable

11. Assuming that 1, 3, 5-hexatriene has only pure double bonds and pure single bonds, how many grams of it contain one mole of double bonds?

(a) 13.3 g (b) 26.7 g
(c) 40 g (d) 80 g

12. In an experiment, it is found that 2.0769 g of pure X produces 3.6769 g of pure X_2O_5. The number of moles of X is

(a) 0.04 (b) 0.06
(c) 0.40 (d) 0.02

13. The volume occupied by 20 g water at 1.2 atm and 4°C is about

(a) 20 ml
(b) $\frac{20\times0.082\times227}{18\times1.2}$ l
(c) $\frac{20\times0.082\times4}{18\times1.2}$
(d) 20 l

14. A quantity of 2.3 g of a mixture of NO_2 and N_2O_4 has a pressure of 0.82 atm, at temperature TK in a container of volume V litres such that the ratio, $T:V$ is 300:1 in magnitude. What is the degree of dissociation of N_2O_4?

(a) 0.17 (b) 0.33
(c) 0.67 (d) 0.70

15. When acetylene is passed through red hot metal tubes, some molecules trimerize to form benzene. The molecular mass of the gaseous mixture, when acetylene is passed through the tube, is 60. The degree of trimerization of acetylene is

(a) 0.85
(b) 0.60
(c) 0.15
(d) 0.283

16. When a sample of hydrogen fluoride is cooled to 303 K, most of the molecules undergo dimerization. If the vapour density of such a sample is 18, what per cent of total molecules in the sample are in dimer form? (F = 19)

(a) 88.89
(b) 80.0
(c) 20.0
(d) 11.11

17. Nitrogen (N), phosphorus (P) and potassium (K) are the main nutrients in plant fertilizers. According to an industry convention, the numbers on the label refer to the mass per cent of N, P_2O_5 and K_2O, in that order. What is N:P:K ratio of a 30:10:10 fertilizer in terms of moles of each element, expressed as x:y:1.0? (N = 14, P = 31, K = 39)

(a) 10:0.66:1.0
(b) 20:0.66:1.0
(c) 8.4:1.3:1.0
(d) 16.8:1.3:1.0

18. A certain mixture of MnO and MnO_2 contains 66.67 mol per cent of MnO. What is the approximate mass per cent of Mn in it? (Mn = 55)

(a) 66.67
(b) 24.02
(c) 72.05
(d) 69.62

19. A sample of impure cuprous oxide contains 66.67% copper, by mass. What is the percentage of pure Cu_2O in the sample? (Cu = 63.5)

(a) 66.67 (b) 75
(c) 70 (d) 80