DPP # 01

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1. Find the molar mass of the following molecules :

Given : Atomic mass : O = 16, N = 14, S = 32, C = 12, Cu = 63.5

(i) O_2 (ii) N_2 (iii) NO_2

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(iv) H_2O (v) NH_3 (vi) N_2O_4

(vii) SO_2 (viii) H_2SO_4 (ix) CO_2

(x) Glucose ($C_6H_{12}O_6$) (xi) Acetic acid (CH_3COOH) (xii) Sucrose ($C_{12}H_{22}O_{11}$)

(xiii) Blue vitriol ($CuSO_4.5H_2O$)

2. Find the number of moles of the following :

(i) 28 g of N_2 (ii) 28 g of N (iii) 64 g of O_2

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(iv) 64 g of O (v) 54 mg of H_2O (vi) 48 mg of CH_4

(vii) 23 mg of NO_2 (viii) 15 mg of CH_3COOH

3. Find the following for 180 gm of glucose :

Give : Glucose ($C_6H_{12}O_6$)

Atomic weight : C = 12 , H = 1 , O = 16

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(i) Number of mole of glucose

(ii) Number of molecules of glucose

(iii) Number of moles of carbon atom

(iv) Number of moles of hydrogen atom

(v) Number of moles of oxygen atom

(vi) Number of atoms of carbon, hydrogen and oxygen

(vii) Total number of atoms

4. For 49 g of H_2SO_4, Find the following :

(i) Number of moles of H_2SO_4

(ii) Number of moles of hydrogen, sulphur and oxygen atom

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(iii) Number of molecules of H_2SO_4

(iv) Number of atoms of hydrogen, sulphur and oxygen

(v) Total number of atoms

5. For 180 gm of Acetic acid (CH_3COOH), calculate the following :

(i) Number of moles of acetic acid

(ii) Number of molecules of acetic acid

7 (iii) Number of moles of carbon, oxygen and hydrogen atom

(iv) Number of atoms of carbon, oxygen, and hydrogen

(v) Total number of atoms

6. For the ideal gas, find the missing parameter in each part among P, V, T and n :

8	(i) P = 0.8314 Pa	V = 6000 m^3	T = 300 K
8	(ii) P = 5 atm	V = 8.21 L	T = 200 K
8	(iii) P = 831.4 Pa	V = 5000 L	T = 250 K
9	(iv) V = 8.21 L	T = 500 K	n = 10
9	(v) V = 100 m^3	T = 300 K	n = 3
9	(vi) P = 831.4 Pa	V = 1000 L	n = 0.1
10	(vii) P = 22.4 atm	T = 273 K	n = 2
10, 11	(viii) V = 45.4 m^3	T = 2730 K	n = 5

12 7. Find the volume of ideal gas at STP :

(i) 2 moles of PCl_5 (ii) 0.25 moles of NH_3

(iii) 0.5 moles of NO_2 (iv) 4 moles of N_2

8. Find the moles of ideal gas at STP :

12	(i) 22.7 L of O_2	12	(ii) 45.4 L of N_2
12	(iii) 45.4 mL of NO_2	12	(iv) 11.35 mL of NH_3
13	(v) 2.27 dm^3 of SO_3	13	(vi) 113.5 m^3 of CO_2