

## DPP - Daily Practice Problems

### Chapter-wise Sheets

Date :

Start Time :

End Time :

# CHEMISTRY

# CC01

SYLLABUS : Some Basic Concepts of Chemistry

Max. Marks : 120

Marking Scheme : + 4 for correct & (-1) for incorrect

Time : 60 min.

INSTRUCTIONS : This Daily Practice Problem Sheet contains 30 MCQ's. For each question only one option is correct. Darken the correct circle/ bubble in the Response Grid provided on each page.

1. In compound A, 1.00g of nitrogen unites with 0.57g of oxygen. In compound B, 2.00g of nitrogen combines with 2.24g of oxygen. In compound C, 3.00g of nitrogen combines with 5.11g of oxygen. These results obey the following law
- (a) law of constant proportion  
(b) law of multiple proportion  
(c) law of reciprocal proportion  
(d) Dalton's law of partial pressure
2.  $10^{21}$  molecules are removed from 200 mg of  $\text{CO}_2$ . The moles of  $\text{CO}_2$  left are :
- (a)  $2.88 \times 10^{-3}$                       (b)  $28.8 \times 10^{-3}$   
(c)  $288 \times 10^{-3}$                       (d)  $28.8 \times 10^3$
3. What volume of hydrogen gas, at 273 K and 1 atm. pressure will be consumed in obtaining 21.6 g of elemental boron (atomic mass = 10.8) from the reduction of boron trichloride by hydrogen ?
- (a) 67.2L                                  (b) 44.8L  
(c) 22.4L                                  (d) 89.6L
4. Number of g of oxygen in 32.2 g  $\text{Na}_2\text{SO}_4 \cdot 10\text{H}_2\text{O}$  is
- (a) 20.8                                    (b) 2.24  
(c) 22.4                                    (d) 2.08

RESPONSE GRID

1. (a)(b)(c)(d)    2. (a)(b)(c)(d)    3. (a)(b)(c)(d)    4. (a)(b)(c)(d)

Space for Rough Work

# Mastering Chemistry With Ravi Arora

**C-2** **DPP/ CC01**

5.  $6.02 \times 10^{20}$  molecules of urea are present in 100 ml of its solution. The concentration of urea solution is  
 (a) 0.02 M (b) 0.01 M  
 (c) 0.001 M (d) 0.1 M  
 (Avogadro constant,  $N_A = 6.02 \times 10^{23} \text{ mol}^{-1}$ )
6. If we consider that  $1/6$ , in place of  $1/12$ , mass of carbon atom is taken to be the relative atomic mass unit, the mass of one mole of the substance will  
 (a) be a function of the molecular mass of the substance  
 (b) remain unchanged  
 (c) increase two fold  
 (d) decrease twice
7. The weight of NaCl decomposed by 4.9g of  $\text{H}_2\text{SO}_4$ , if 6 g of sodium hydrogen sulphate and 1.825 g of HCl, were produced in the reaction is:  
 (a) 6.921 g (b) 4.65 g  
 (c) 2.925 g (d) 1.4 g
8. Which one of the following is the lightest?  
 (a) 0.2 mole of hydrogen gas  
 (b)  $6.023 \times 10^{22}$  molecules of nitrogen  
 (c) 0.1 g of silver  
 (d) 0.1 mole of oxygen gas
9. How many moles of magnesium phosphate,  $\text{Mg}_3(\text{PO}_4)_2$  will contain 0.25 mole of oxygen atoms?  
 (a)  $1.25 \times 10^{-2}$  (b)  $2.5 \times 10^{-2}$   
 (c) 0.02 (d)  $3.125 \times 10^{-2}$
10. The density (in  $\text{g mL}^{-1}$ ) of a 3.60 M sulphuric acid solution that is 29%  $\text{H}_2\text{SO}_4$  (molar mass =  $98 \text{ g mol}^{-1}$ ) by mass will be  
 (a) 1.45 (b) 1.64  
 (c) 1.88 (d) 1.22
11. A gas occupies a volume of 300 cc at  $27^\circ\text{C}$  and 620 mm pressure. The volume of gas at  $47^\circ\text{C}$  and 640 mm pressure is:  
 (a) 260 cc (b) 310 cc  
 (c) 390 cc (d) 450 cc
12. Haemoglobin contains 0.33% of iron by weight. The molecular weight of haemoglobin is approximately 67200. The number of iron atoms (at. wt. of Fe = 56) present in one molecule of haemoglobin is  
 (a) 6 (b) 1  
 (c) 2 (d) 4
13. The volume of 20 volume  $\text{H}_2\text{O}_2$  required to get 5 litres of  $\text{O}_2$  at STP is  
 (a) 250ml (b) 125 ml  
 (c) 100ml (d) 50ml.
14. In the reaction,  

$$2\text{Al}(\text{s}) + 6\text{HCl}(\text{aq}) \rightarrow 2\text{Al}^{3+}(\text{aq}) + 6\text{Cl}^{-}(\text{aq}) + 3\text{H}_2(\text{g})$$
 (a) 11.2 L  $\text{H}_2(\text{g})$  at STP is produced for every mole  $\text{HCl}(\text{aq})$  consumed  
 (b) 6 L  $\text{HCl}(\text{aq})$  is consumed for every 3 L  $\text{H}_2(\text{g})$  produced  
 (c) 33.6 L  $\text{H}_2(\text{g})$  is produced regardless of temperature and pressure for every mole Al that reacts  
 (d) 67.2  $\text{H}_2(\text{g})$  at STP is produced for every mole Al that reacts.

<b>RESPONSE GRID</b>	5. (a)(b)(c)(d)	6. (a)(b)(c)(d)	7. (a)(b)(c)(d)	8. (a)(b)(c)(d)	9. (a)(b)(c)(d)
	10. (a)(b)(c)(d)	11. (a)(b)(c)(d)	12. (a)(b)(c)(d)	13. (a)(b)(c)(d)	14. (a)(b)(c)(d)

Space for Rough Work

15. The concentrated sulphuric acid that is peddled commercial is 95%  $\text{H}_2\text{SO}_4$  by weight. If the density of this commercial acid is  $1.834 \text{ g cm}^{-3}$ , the molarity of this solution is  
 (a) 17.8 M (b) 12.0 M  
 (c) 10.5 M (d) 15.7 M
16. What is the mass of precipitate formed when 50 mL of 16.9% solution of  $\text{AgNO}_3$  is mixed with 50 mL of 5.8%  $\text{NaCl}$  solution? ( $\text{Ag} = 107.8, \text{N} = 14, \text{O} = 16, \text{Na} = 23, \text{Cl} = 35.5$ )  
 (a) 28 g (b) 3.5 g  
 (c) 7 g (d) 14 g
17. Number of valence electrons in 4.2 gram of  $\text{N}_3^-$  ion is  
 (a)  $4.2 N_A$  (b)  $0.1 N_A$   
 (c)  $1.6 N_A$  (d)  $3.2 N_A$
18. A transition metal  $M$  forms a volatile chloride which has a vapour density of 94.8. If it contains 74.75% of chlorine the formula of the metal chloride will be  
 (a)  $M\text{Cl}_3$  (b)  $M\text{Cl}_2$   
 (c)  $M\text{Cl}_4$  (d)  $M\text{Cl}_5$
19. A gaseous hydrocarbon gives upon combustion 0.72 g of water and 3.08 g. of  $\text{CO}_2$ . The empirical formula of the hydrocarbon is :  
 (a)  $\text{C}_2\text{H}_4$  (b)  $\text{C}_3\text{H}_4$   
 (c)  $\text{C}_6\text{H}_5$  (d)  $\text{C}_7\text{H}_8$
20. Following is the composition of a washing soda sample :
- | Substance                | Molecular Wt. | Mass percent |
|--------------------------|---------------|--------------|
| $\text{Na}_2\text{CO}_3$ | 106.0         | 84.8         |
| $\text{NaHCO}_3$         | 84.0          | 8.4          |
| $\text{NaCl}$            | 58.5          | 6.8          |
- On complete reaction with excess  $\text{HCl}$ , one kilogram of the washing soda will evolve:  
 (a) 9 mol of  $\text{CO}_2$  (b) 16 mol of  $\text{CO}_2$   
 (c) 17 mol of  $\text{CO}_2$  (d) 18 mol of  $\text{CO}_2$
21. Arrange the numbers in increasing no. of significant figures. 0.002600, 2.6000, 2.6, 0.260  
 (a)  $2.6 < 0.260 < 0.002600 < 2.6000$   
 (b)  $2.6000 < 2.6 < 0.002600 < 0.260$   
 (c)  $0.260 < 2.6 < 0.002600 < 2.6000$   
 (d)  $0.002600 < 0.260 < 2.6 < 2.6000$
22. Dissolving 120 g of a compound (mol. wt. 60) in 1000 g of water gave a solution of density 1.12 g/mL. The molarity of the solution is:  
 (a) 1.00 M (b) 2.00 M  
 (c) 2.50 M (d) 4.00 M
23. A gaseous compound of nitrogen and hydrogen contains 12.5% (by mass) of hydrogen. The density of the compound relative to hydrogen is 16. The molecular formula of the compound is:  
 (a)  $\text{NH}_2$  (b)  $\text{N}_3\text{H}$   
 (c)  $\text{NH}_3$  (d)  $\text{N}_2\text{H}_4$
24. The amount of  $\text{BaSO}_4$  formed upon mixing 100 mL of 20.8%  $\text{BaCl}_2$  solution with 50 mL of 9.8%  $\text{H}_2\text{SO}_4$  solution with 50 mL of 9.8%  $\text{H}_2\text{SO}_4$  solution will be:  
 ( $\text{Ba} = 137, \text{Cl} = 35.5, \text{S} = 32, \text{H} = 1$  and  $\text{O} = 16$ )  
 (a) 23.3 g (b) 11.65 g  
 (c) 30.6 g (d) 33.2 g

**RESPONSE  
GRID**

15. (a)(b)(c)(d)	16. (a)(b)(c)(d)	17. (a)(b)(c)(d)	18. (a)(b)(c)(d)	19. (a)(b)(c)(d)
20. (a)(b)(c)(d)	21. (a)(b)(c)(d)	22. (a)(b)(c)(d)	23. (a)(b)(c)(d)	24. (a)(b)(c)(d)

Space for Rough Work

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**c-4**

**DPP/ CC01**

25. 2 g of a mixture of CO and CO<sub>2</sub> on reaction with excess I<sub>2</sub>O<sub>5</sub> produced 2.54 g of I<sub>2</sub>. What will be the mass % of CO<sub>2</sub> in the original mixture?  
 (a) 35 (b) 70  
 (c) 30 (d) 60
26. 7.5 grams of a gas occupy 5.6 litres of volume at STP. The gas is  
 (a) N<sub>2</sub>O (b) NO  
 (c) CO (d) CO<sub>2</sub>
27. Number of moles of KMnO<sub>4</sub> required to oxidize one mole of Fe(C<sub>2</sub>O<sub>4</sub>) in acidic medium is  
 (a) 0.167 (b) 0.6  
 (c) 0.2 (d) 0.4
28. What is the weight of oxygen required for the complete combustion of 2.8 kg of ethylene ?  
 (a) 2.8 kg (b) 6.4 kg  
 (c) 9.6 kg (d) 96 kg
29. A gas mixture of 3 litres of propane (C<sub>3</sub>H<sub>8</sub>) and butane (C<sub>4</sub>H<sub>10</sub>) on complete combustion at 25° C produced 10 litre CO<sub>2</sub>. Find out the composition of gas mixture (Propane : Butane)  
 (a) 2:1 (b) 1:2  
 (c) 1.5:1.5 (d) 0.5:2.5
30. An organic compound contains 49.3% carbon, 6.84% hydrogen and its vapour density is 73. Molecular formula of the compound is :  
 (a) C<sub>3</sub>H<sub>5</sub>O<sub>2</sub> (b) C<sub>4</sub>H<sub>10</sub>O<sub>2</sub>  
 (c) C<sub>6</sub>H<sub>10</sub>O<sub>4</sub> (d) C<sub>3</sub>H<sub>10</sub>O<sub>2</sub>

**RESPONSE  
GRID**

25. (a)(b)(c)(d) 26. (a)(b)(c)(d) 27. (a)(b)(c)(d) 28. (a)(b)(c)(d) 29. (a)(b)(c)(d)  
 30. (a)(b)(c)(d)

## DAILY PRACTICE PROBLEM DPP CHAPTERWISE 1 - CHEMISTRY

Total Questions	30	Total Marks	120
Attempted		Correct	
Incorrect		Net Score	
Cut-off Score	37	Qualifying Score	52
Success Gap = Net Score – Qualifying Score			
Net Score = (Correct × 4) – (Incorrect × 1)			

————— *Space for Rough Work* —————