



PHYSICS GURUKUL

DPP - Daily Practice Problems

Chapter-wise Sheets

Date : Start Time : End Time :

CHEMISTRY

CC01

SYLLABUS : Some Basic Concepts of Chemistry

Max. Marks : 74

Time : 60 min.

GENERAL INSTRUCTIONS

- The Daily Practice Problem Sheet contains 20 Questions divided into 5 sections.
Section I has 5 MCQs with ONLY 1 Correct Option, 3 marks for each correct answer and -1 for each incorrect answer.
Section II has 4 MCQs with ONE or MORE THAN ONE Correct options.
For each question, marks will be awarded in one of the following categories:
Full marks: +4 If only the bubble(s) corresponding to all the correct option(s) is (are) darkened.
Partial marks: +1 For darkening a bubble corresponding to each correct option provided NO INCORRECT option is darkened.
Zero marks: If none of the bubbles is darkened.
Negative marks: -2 In all other cases.
Section III has 5 Single Digit Integer Answer Type Questions, 3 marks for each Correct Answer and 0 marks in all other cases.
Section IV has Comprehension/Matching Cum-Comprehension Type Questions having 5 MCQs with ONLY ONE correct option, 3 marks for each Correct Answer and 0 marks in all other cases.
Section V has 1 Matching Type Questions, 2 mark for the correct matching of each row and 0 marks in all other cases.
- You have to evaluate your Response Grids yourself with the help of Solutions.

Section I - Straight Objective Type

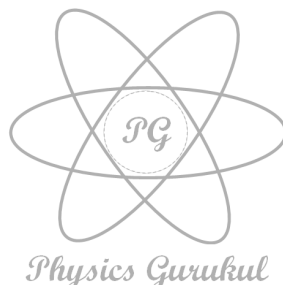
This section contains 5 multiple choice questions. Each question has 4 choices (a), (b), (c) and (d), out of which ONLY ONE is correct.

- If 0.20g chloride of a certain metal, when dissolved in water and treated with excess of AgNO_3 , yields 0.50g of AgCl , the equivalent mass of the metal is ($A_g = 108, \text{Cl} = 35.5$)
(a) 21.90 (b) 20.04
(c) 40.08 (d) 43.80
- In what ratio the amounts of H_2SO_4 and H_3PO_4 react with the same amount of NaOH to form normal salts?
(a) 1 : 1 (b) 3 : 2
(c) 2 : 3 (d) 1 : 3
- Blue vitriol ($\text{CuSO}_4 \cdot 5\text{H}_2\text{O}$) is often added to swimming pools to kill algae. It is prepared by the reaction between copper metal and hot sulphuric acid to give $\text{CuSO}_4(\text{aq})$ and $\text{SO}_2(\text{g})$. If one mole of copper is reacted with one mole of sulphuric acid, then the molecules of $\text{SO}_2(\text{g})$ obtained will be
(a) 3.0×10^{23} (b) 6.023×10^{23}
(c) 3.0×10^{24} (d) $64 \times 6.023 \times 10^{23}$

RESPONSE GRID

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

Space for Rough Work



C-2

DPP/ CC01

4. The maximum number of molecules are present in
 (a) 15 L of H_2 gas at STP (b) 5 L of N_2 gas at STP
 (c) 0.5 g of H_2 gas (d) 10 g of O_2 gas
5. An organic compound whose empirical and molecular formula are same, contains 20% carbon, 6.7% hydrogen, 46.7% nitrogen and the rest oxygen. On heating it yields ammonia, leaving a solid residue. The solid residue gives a violet colour with dilute solution of alkaline copper sulphate. The organic compound is
 (a) NH_2COONH_4 (b) $HCOONH_4$
 (c) NH_2NHCHO (d) NH_2CONH_2
8. Which of the following statements are correct for a solution of H_2O_2 having a strength of 17 g/litre ?
 (a) The volume strength of H_2O_2 solution is 5.6 at 1 atmosphere pressure and 273 K temperature.
 (b) The molarity of given H_2O_2 solution is 0.5 M
 (c) 1 mL of the given H_2O_2 solution will give out 2.8 mL of O_2 at 2 atmosphere pressure and 273 K temperature
 (d) The normality of given H_2O_2 solution is 2N.
9. 10 mL of a gaseous hydrocarbon is exploded with 200 mL of oxygen. The gaseous product was then allowed to cool and attain room temperature and pressure, the volume was then found to be 180 mL. This mixture of gases was then passed through KOH solution followed by anhydrous $CaCl_2$. The resulting gas measured 100 mL. The hydrocarbon is
 (a) C_4H_8 (b) C_8H_6
 (c) C_8H_8 (d) C_4H_6

Section II - Multiple Correct Answer Type

This section contains 4 multiple correct answer(s) type questions. Each question has 4 choices (a), (b), (c) and (d), out of which **ONE OR MORE** is/are correct.

6. 0.2 mol of Na_3PO_4 and 0.5 mol of $Ba(NO_3)_2$ are mixed in 1L of solution. Which of the following is/ are correct about this system?
 (a) 0.2 mol of barium phosphate precipitate is obtained
 (b) 0.1 mol of barium phosphate precipitate is obtained.
 (c) Molarity of Ba^{2+} ions in the resulting solution is 0.2
 (d) Molarities of Na^+ and NO_3^- ions are 0.6 and 1.0 respectively.
7. 100 mL mixture of CO and CO_2 is mixed with 30 mL of oxygen and sparked in a eudiometer tube. The residual gas after treatment with aqueous KOH has a volume of 10 mL which remains unchanged when treated with alkaline pyrogallol. If all the volumes are under the same conditions, point out the correct option(s).
 (a) The volume of CO that reacts, is 60 mL.
 (b) The volume of CO that remains unreacted, is 10 mL.
 (c) The volume of O_2 that remains unreacted, is 10 mL.
 (d) The volume of CO_2 that gets absorbed by aqueous KOH, is 90 mL.

Section III - Integer Type

This section contains 5 questions. The answer to each of the questions is a single digit integer ranging from 0 to 9.

10. A 20 cm^3 mixture of CO, CH_4 and He gases was exploded by an electric discharge at room temperature with excess oxygen. The volume contraction was found to be 13.0 cm^3 . A further contraction of 14.0 cm^3 occurred when the residual gas was treated with KOH solution. Find out the value of x if the composition of CH_4 in the mixture in terms of volume percentage is 5x.
11. A mixture of HCOOH and $H_2C_2O_4$ is heated with concentrated H_2SO_4 . The gas produced is collected and on treating with KOH solution, the volume of gas decreases by one-sixth. Calculate the molar ratio of the two acids (HCOOH : $H_2C_2O_4$) in the original mixture.

RESPONSE
GRID

4. (a)(b)(c)(d) 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. (0)(1)(2)(3)(4)(5)(6)(7)(8)(9) 11. (0)(1)(2)(3)(4)(5)(6)(7)(8)(9)

Space for Rough Work



12. 2.68×10^{-3} moles of a solution containing an ion A^{n+} require 1.61×10^{-3} moles of MnO_4^- for the oxidation of A^{n+} to AO_3^- in acid medium. What is the value of n ?
13. A 1.0 g sample of Fe_2O_3 solid of 55.2% purity is dissolved in acid and reduced by heating the solution with zinc dust. The resultant solution is cooled and made upto 100.0 mL. An aliquot of 25.0 mL of this solution requires 17.0 mL of 0.0167 M solution of an oxidant for titration. Calculate the number of electrons taken up by the oxidant in the reaction of the above titration.
14. Silver (atomic weight = 108 g mol^{-1}) has a density of 10.5 g cm^{-3} . The number of silver atoms on a surface of area 10^{-12} m^2 can be expressed in scientific notation as $y \times 10^x$. The value of x is :

Section IV - Comprehension Type

Directions (Qs. 15-19) : Based upon the given paragraphs, 5 multiple choice questions have to be answered. Each question has 4 choices (a), (b), (c) and (d), out of which **ONLY ONE** is correct.

PARAGRAPH-1

Some reactions are given in Column I and their n-factor and strength is given in Column II & III respectively.

Column I	Column II	Column III
(I) 9.8% H_2SO_4 by weight ($d = 1.8 \text{ g mL}^{-1}$)	(i) n-factor = 3	(P) 3.6 N
(II) 9.8% H_3PO_4 by weight (density = 1.2 g mL^{-1})	(ii) n-factor = 1	(Q) 1.2 M
(III) $1.8 N_A$ molecules of HCl in 500 mL	(iii) n-factor = 2	(R) 1.8 equiv.
(IV) 250 mL of 4 N NaOH + 250 mL of 1.6 M $Ca(OH)_2$	(iv) n-factor = 4	(S) 1.10 m

15. For 9.8% H_2SO_4 given in column I, the only correct combination is

- (a) (I)(iv)(P) (b) (I)(ii)(Q)
(c) (I)(iii)(S) (d) (I)(i)(R)

16. For $1.8 N_A$ molecules of HCl given in column I, the only correct combination is

- (a) (III)(i)(P) (b) (III)(ii)(R)
(c) (III)(iii)(Q) (d) (III)(ii)(S)

17. For 9.8% H_3PO_4 given in column I, the only correct combination is

- (a) (II)(i)(Q) (b) (II)(iii)(S)
(c) (II)(ii)(P) (d) (II)(i)(R)

PARAGRAPH-2

From a mixture which makes up crude oil, a particular hydrocarbon ingredient (that is one containing hydrogen and carbon atoms only) has been isolated. 10 g of this liquid are burned in excess of oxygen and the products are 31.4 g of carbon dioxide and 12.4 g of water.

18. The ratio of C : H in the substance i.e., the products) formed:

- (a) 1 : 1 (b) 1 : 2
(c) 2 : 1 (d) 4 : 1

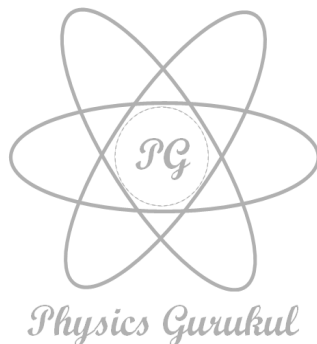
19. If we burn an equimolar mixture of the above hydrocarbon and oxygen in a closed vessel, then after the reaction the gaseous mixture present in the vessel will consist of

- (a) CO_2 and H_2O
(b) CO_2 , H_2O and O_2
(c) CO_2 , H_2O and hydrocarbon
(d) CO_2 , H_2O , hydrocarbon and oxygen

RESPONSE
GRID

12. (0) (1) (2) (3) (4) (5) (6) (7) (8) (9) 13. (0) (1) (2) (3) (4) (5) (6) (7) (8) (9)
14. (0) (1) (2) (3) (4) (5) (6) (7) (8) (9) 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)

Space for Rough Work



Section V - Matrix-Match Type

This section contains 1 questions. It contains statements given in two columns, which have to be matched. Statements in column I are labelled as A, B, C and D whereas statements in column II are labelled as p, q, r and s. The answers to these questions have to be appropriately bubbled as illustrated in the following example. If the correct matches are A-p, A-r, B-p, B-s, C-r, C-s and D-q, then the correctly bubbled matrix will look like the following:

	p	q	r	s
A	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
B	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
C	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
D	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

20.	Column I	Column II
(A)	1.5 mole of $\text{CO}_2(\text{g})$	p. 33600 ml at STP
(B)	3.0 g of H_2	q. Total number of atoms = $4.5 \times N_A$
(C)	1.5 mole of $\text{O}_3(\text{g})$	r. Weighs 72 g
(D)	1 mole of oxygen	s. Weighs 32 g

RESPONSE GRID 20. A - (p)(q)(r)(s); B - (p)(q)(r)(s); C - (p)(q)(r)(s); D - (p)(q)(r)(s)

DAILY PRACTICE PROBLEM DPP CHAPTERWISE 1 - CHEMISTRY

Total Questions	20	Total Marks	74
Attempted		Correct	
Incorrect		Net Score	
Cut-off Score	26	Qualifying Score	38
Success Gap = Net Score – Qualifying Score			
Net Score = (Correct \times 4) – (Incorrect \times 1)			

Space for Rough Work

