YAKEEN NEET 2.0

2026

Some Basic Concept of Chemistry

MPQ Solution - 07 | **Physical Chemistry**

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Magarmach Practice Questions (MPQ)

Question (NCERT: PL-20 | NV, JEE Main July 25, 2022 (II))

56.0 L of nitrogen gas is mixed with excess of hydrogen gas and it is found that 20 L of ammonia gas is produced. The volume of unused nitrogen gas if found to be __46__ L.

f g

$$1N_2(g) + 3H_2(g) \longrightarrow 2NH_3(g)$$

$$\frac{1}{2} = \frac{V_f}{20}$$

$V_f = 10\ L$ = vol. of N_2 used

V_{N_2} left $= 56 - 10 = 46\ L$

Question (NCERT: PL-20 | JEE Main April 03, 2025 (II))

Mass of magnesium required to produce 220 mL of hydrogen gas at STP on reaction with excess of dil. HCl is Given : Molar mass of Mg is 24 g mol^{-1}.

$V_{H_2(g)} = 220\,mL$

$Mg(s) + 2HCl(aq.) \longrightarrow MgCl_2(s) + H_2(g)$

$\frac{1}{1} = \frac{n_{Mg} \times 22400}{22000}$

$n_{Mg} = \frac{22000}{22400}$

$mass\ Mg = \frac{22}{224} \times 24 = \frac{66}{28} = \frac{33}{14}$

$n_{H_2} = \frac{220}{22.4 \times 1000}$

$14\overline{)33}\ (2.3$

28

50

(A) 235.7 g

(B) 0.24 mg

(C) 236 mg

(D) 2.444 g

Question (NCERT: PL-20 | NV, JEE Main Jan. 27, 2025 (I))

Xg of benzoic acid on reaction with aq. $NaHCO_3$ release CO_2 that occupied 11.2 L volume at STP. X is __________ g.

C_6H_5COOH (B.A.) + aq. $NaHCO_3 \longrightarrow C_6H_5COONa + H_2O + CO_2(g)$

Xg

C_6H_5COOH

$7 \times 12 + 6 \times 1 + 2 \times 16 =$

84 + 32 = 116

$n_{CO_2} = \frac{11.2}{22.4} = \frac{1}{2}$

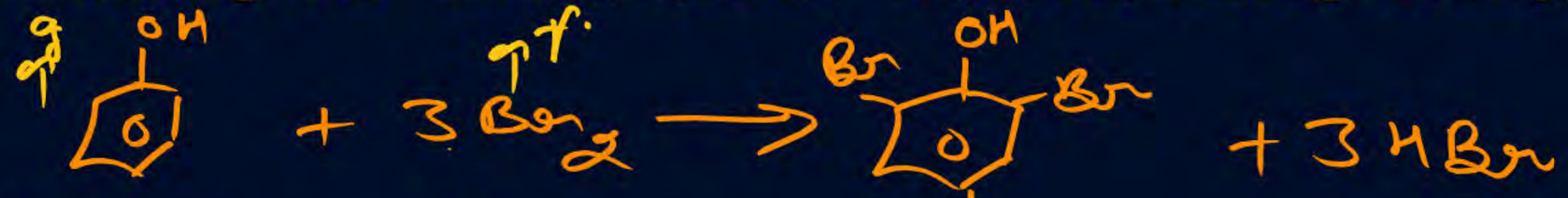
$\frac{1}{1} = \frac{2n_{B.A.}}{1}$

$n_{B.A.} = \frac{1}{2}$

Mass B.A $= \frac{1}{2} \times 116 = 58g$

Question (NCERT: PL-20 | JEE Main Jan. 23, 2025 (I))

What amount of bromine will be required to convert 2 g of phenol into 2, 4, 6-tribromophenol?
(Given molar mass in g mol^{-1} of C. H, O, Br are 12, 1, 16, 80 respectively)



$C_6H_5OH \rightarrow n = \frac{2}{72+6+16} = \frac{2}{94} = \frac{1}{47}$

$\frac{3}{1} = \frac{47 n_{Br_2}}{1}$

$n_{Br_2} = \frac{3}{47}$

$\text{mass } Br_2 = \frac{3}{47} \times 160 = \frac{480}{47}$

(A) 10.22 g

(B) 6.0 g

(C) 4.0 g

(D) 20.44 g

Question (NCERT: PL-22 | NV, JEE Main Jan. 27, 2024 (I))

Mass of methane required to produce 22 g of CO_2 after complete combustion is _____ g.

[Given Molar mass in g mol^{-1} ; C = 12.0, H = 1.0, O = 16.0]

$$1CH_4(g) + 2O_2(g) \longrightarrow CO_2(g) + 2H_2O$$

f

g

$$n_{CO_2} = \frac{22}{44} = \frac{1}{2}$$

$$\frac{1}{1} = \frac{2\, n_{CH_4}}{1}$$

$$n_{CH_4} = \frac{1}{2}$$

$$\text{mass } CH_4 = \frac{1}{2} \times 16 = 8\,g$$

Question (NCERT: PL-18 | NV, JEE Main April 13, 2023 (II))

1 g of a carbonate (M_2CO_3) on treatment with excess HCl produces 0.01 mol of CO_2. The molar mass of M_2CO_3 is _____ g mol^{-1}. (Nearest integer)

$$1\ M_2CO_3 + 2HCl \longrightarrow MCl_2 + CO_2 + H_2O$$

mass = 0.01 × G.M.M. ← 0.01

$$1 = 0.01 \times G.M.M.$$

$$G.M.M. = \frac{1}{0.01} = 100\ g$$

Question (NCERT: PL-18 | NV, JEE Main April 11, 2023 (II))

The volume of hydrogen liberated at STP by treating 2.4 g magnesium with excess of hydrochloric acid 22.4 $\times 10^{-2}$ L.

Given : Molar volume of gas is 22.4 L at STP. Molar mass of magnesium is 24 g mol^{-1}.

$$\underset{1}{Mg} + 2HCl \rightarrow MgCl_2 + \underset{1}{H_2}$$

given: 2.4 g; formed: 1

$$n_{Mg} = \frac{2.4}{24} = 0.1$$

0.1 → 0.1

$0.1 \times 22.4\ L$

$= 0.224\ L.$

$= 22.4 \times 10^{-2}\ L.$

THANK YOU