

X


<https://swayam.gov.in>

https://swayam.gov.in/nc_details/NPTEL

reviewer4@nptel.iitm.ac.in ▾

[NPTEL \(https://swayam.gov.in/explorer?ncCode=NPTEL\)](https://swayam.gov.in/explorer?ncCode=NPTEL) » [Quantitative Methods in Chemistry \(course\)](#)
[Announcements \(announcements\)](#) [About the Course \(https://swayam.gov.in/nd1_noc20_cy02/preview\)](#)
[Ask a Question \(forum\)](#) [Progress \(student/home\)](#) [Mentor \(student/mentor\)](#)

Unit 4 - Week 1

Course outline

How does an NPTEL online course work?

Week 0

MATLAB

Week 1

- A brief history of the beginnings of quantitation in Chemistry, defining chemical stoichiometry and molarity (unit? unit=18&lesson=19)
- Defining Molality and Normality, relationship with Molarity (unit? unit=18&lesson=20)
- Defining other parameters for concentration (% , ppm/ppb, p-value) (unit? unit=18&lesson=21)

Assignment 1

The due date for submitting this assignment has passed. **Due on 2020-02-12, 23:59 IST.**
As per our records you have not submitted this assignment.

1) How many millilitres of acetic acid makes up 0.35 moles of it? ($\rho_{acetic\ acid} = 1.04\text{ g/cc}$ at 298 K) **1 point**

- 21.0 mL
- 20.2 mL
- 10.1 mL
- 35.0 mL
- 40.4 mL

No, the answer is incorrect.
Score: 0

Accepted Answers:
20.2 mL

2) Calculate molarity, molality and normality when the above is dissolved in 50 g of water (**1 point**
 $\rho_{water} = 1.00\text{ g/cc}$ and $\rho_{soln} = 1.05\text{g/cc}$ at 298 K)

- 10 M, 7 molal, 5 N
- 10 M, 3.5 molal, 10 N
- 5 M, 7 molal, 10 N
- 5 M, 7 molal, 5 N
- 5 M, 3.5 molal, 5 N

No, the answer is incorrect.
Score: 0

Accepted Answers:
5 M, 7 molal, 5 N

3) The mole fraction of water in the above problem is: **1 point**

Relationship between various concentration parameters (unit? unit=18&lesson=22)

Problems on acid-base equilibria, calculation of pH of strong and weak acids (unit? unit=18&lesson=23)

Quiz : Assignment 1 (assessment? name=27)

Quantitative Methods in Chemistry : Week 1 Feedback Form (unit? unit=18&lesson=28)

Lecture materials (unit? unit=18&lesson=79)

Assignment 1 solutions (unit? unit=18&lesson=134)

Week 2

Week 3

Week 4

Week 5

Week 6

Week 7

Week 8

Week 9

Week 10

Week 11

Week 12

Download Videos

- 0.89
 0.11
 1.00
 0.30
 0.70

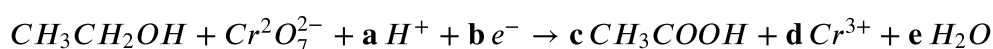
No, the answer is incorrect.

Score: 0

Accepted Answers:

0.89

4) The breathalyzer test exploits the redox reaction between potassium dichromate and ethanol **0 points** to detect alcohol levels in motorists, where a color change helps identify the presence of alcohol. Balance the following reaction and the value **a,b,c,d**, and **e** are :



- 10,2,1,2,6
 5,1,1,1,3
 4,2,1,2,10
 4,1,1,1,10
 3,2,1,2,9
 3,1,1,1,9
 10,2,1,2,3
 10,1,1,1,3

No, the answer is incorrect.

Score: 0

Accepted Answers:

10,2,1,2,6

5) The equivalent weight of ethanol and potassium dichromate in the above reaction is: **1 point**

- 46 g, 294 g
 11.5 g, 98 g
 46 g, 49 g
 46 g, 98 g
 11.5 g, 49 g

No, the answer is incorrect.

Score: 0

Accepted Answers:

11.5 g, 49 g

6) What is the final concentration of NaOH and NaCl when three solutions of it at the given **1 point** volumes and concentrations are mixed one after another in the given order? 30 mL of 0.5M NaOH, 25 mL of 0.2 M NaOH, 30 mL of 0.3 M HCl

- 0.13 M and 0.11 M, respectively
 0.11 M and 0.13 M, respectively
 0.13 M and 0.13 M, respectively
 0.11 M and 0.11 M, respectively
 0.20 M and 0.16 M, respectively

Text Transcripts

No, the answer is incorrect.

Score: 0

Accepted Answers:

0.13 M and 0.11 M, respectively

7) What is the pH of 10^{-8} M HCl?

0 points

- 6.96 units
- 6.70 units
- 8.00 units
- 7.04 units
- 6.99 units

No, the answer is incorrect.

Score: 0

Accepted Answers:

6.96 units

8) What will be the pH of a solution containing 1 M trifluoroacetic acid (K_a 0.5888 units, 298 K)? **1 point**

- 1.28
- 0.53
- 0.28
- 1.94
- 0.56

No, the answer is incorrect.

Score: 0

Accepted Answers:

0.28

9) To a 100-mL solution that consists of 3 M NaOH, if 10 mL of 2 M acetic acid is added, what is the resultant pH? **1 point**

- 14.0
- 13.6
- 14.4
- 0.4
- 0.4
- 8.0
- 10.2
- 12.4

No, the answer is incorrect.

Score: 0

Accepted Answers:

14.4

10) What are the concentrations of the disodium (pK_a 7.20) and monosodium (pK_a 2.14) salts of phosphoric acid required to make a buffer at pH 7.5 (25 °C) at 10 mM concentration?

- 3.34 mM and 6.66 mM, respectively
- 6.66 mM and 3.34 mM, respectively
- 0 mM and 10 mM, respectively
- 10 mM and 0 mM, respectively
- 5 mM and 5 mM, respectively

No, the answer is incorrect.

Score: 0

Accepted Answers:

3.34 mM and 6.66 mM, respectively

11) A 25% w/w solution of ammonia in water (density of 0.91 g/ml) is presumed to contain only **1 point**
 NH_4OH (molecular weight = 35 g). The molar concentration
of NH_4OH in this solution is

- 65 M
- 7.14 M
- 6.5 M
- 7.14 mM
- 6.5 mM

No, the answer is incorrect.

Score: 0

Accepted Answers:

6.5 M

12) When 1 mM AgNO_3 is added dropwise to a solution containing 1 mM NaCl and 1 mM NaI , the **1 point**
following occurs ($K_{\text{SP}}(\text{AgCl}) 1.8 \times 10^{-10}$, $K_{\text{SP}}(\text{AgI})$
 8.5×10^{-17} , 25 °C)

- AgCl precipitates out first
- AgI precipitates out first
- Both AgI and AgCl precipitate simultaneously
- No precipitation occurs
- We get a uniform solution

No, the answer is incorrect.

Score: 0

Accepted Answers:

AgI precipitates out first