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Unit 4 - Week 1

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? ($\varrho_{aceticacid} = 1.04$ 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 ($\varrho_{water} = 1.00$ g/cc and $\varrho_{soln} = 1.05$g/cc at 298 K) ***1 point***

- 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***

- 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 :

$$CH_3CH_2OH + Cr^2O_7^{2-} + \mathbf{a}\, H^+ + \mathbf{b}\, e^- \rightarrow \mathbf{c}\, CH_3COOH + \mathbf{d}\, Cr^{3+} + \mathbf{e}\, H_2O$$

- 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 volumes and concentrations are mixed one after another in the ***1 point***
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 ^oC) at 10 mM concentration? ***1 point***

- 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 NH_4OH (molecular weight = 35 g). The molar concentration of NH_4OH in this solution is **1 point**

- 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 following occurs (K_{SP} (AgCl) 1.8×10^{-10}, K_{SP} (AgI) 8.5×10^{-17}, 25 ^{o}C) **1 point**

- 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