FINAL EXAM - PRACTICE TEST | MINNESOTA CHEMISTRY · FINAL EXAM · 50 QUESTIONS

Final Exam — Practice Test

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1

An atom has 11 protons and 12 neutrons. The element is

Question 1

An atom has 11 protons and 12 neutrons. The element is

A) sodium B) magnesium

C) neon D) aluminum

- A sodium
- B magnesium
- C neon
- D aluminum

Understand It with Pulse

Flag a mistake

2 Magnesium forms Mg^{2+} and chlorine forms Cl^{-}. The formula of the ionic compound formed is

Question 2

Magnesium forms Mg^{2+} and chlorine forms Cl^{-}. The formula of the ionic compound formed is

A) MgCl

B) $MgCl_2$

C) Mg_2Cl

D) $MgCl_3$

A MgCl

B $MgCl_2$

C Mg_2Cl

D $MgCl_3$

Understand It with Pulse

Flag a mistake

3 Using whole number atomic masses (H = 1, O = 16), the molar mass of water, in grams per mole, is ____

Question 3

Using whole number atomic masses (H = 1, O = 16), the molar mass of water, in grams per mole, is

____

ANSWER

Understand It with Pulse

Flag a mistake

4

A gas at 100 kPa occupies 6 L. At the same temperature, at 200 kPa, its volume, in liters, is _____

Question 4

A gas at 100 kPa occupies 6 L. At the same temperature, at 200 kPa, its volume, in liters, is ____

ANSWER

Understand It with Pulse | Flag a mistake

5

A neutral atom has 8 protons. The number of electrons it has is

Question 5

A neutral atom has 8 protons. The number of electrons it has is

A) 6 B) 8

C) 10 D) 16

A 6

B 8

C 10

D 16

Understand It with Pulse | Flag a mistake

6

Carbon dioxide has a central carbon atom bonded to two oxygen atoms and no lone pairs. The shape of the molecule is

Question 6

Carbon dioxide has a central carbon atom bonded to two oxygen atoms and no lone pairs. The shape of the molecule is

A) bent

B) trigonal planar

C) tetrahedral

D) linear

A bent

B trigonal planar

C tetrahedral

D linear

Understand It with Pulse

Flag a mistake

7 Molarity is defined as moles of solute per

Question 7

Molarity is defined as moles of solute per

A) gram of solution

B) liter of solvent

C) liter of solution

D) mole of solvent

- A gram of solution
- B liter of solvent
- C liter of solution
- D mole of solvent

Understand It with Pulse | Flag a mistake

8 A gas at 100 kPa and 300 K is heated to 600 K at constant volume. Its new pressure, in kilopascals, is ____

Question 8

A gas at 100 kPa and 300 K is heated to 600 K at constant volume. Its new pressure, in kilopascals, is

____

ANSWER

Understand It with Pulse | Flag a mistake

9

The element in group 2 and period 4 is

Question 9

The element in group 2 and period 4 is

A) potassium

B) calcium

C) strontium

D) argon

A potassium

B calcium

C strontium

D argon

Understand It with Pulse

Flag a mistake

10

Which of these molecules can form hydrogen bonds with other molecules of the same kind

Question 10

Which of these molecules can form hydrogen bonds with other molecules of the same kind

A) CH_4

B) CO_2

C) NH_3

D) O_2

A CH_4

B CO_2

C NH_3

D O_2

Understand It with Pulse

Flag a mistake

11 In a chemical reaction, the reactant that runs out first is the

Question 11

In a chemical reaction, the reactant that runs out first is the

A) excess reactant

B) catalyst

C) product

D) limiting reactant

- A excess reactant
- B catalyst
- C product
- D limiting reactant

Understand It with Pulse | Flag a mistake

12 At standard temperature and pressure, the volume, in liters, of 2 mol of gas is _____

Question 12

At standard temperature and pressure, the volume, in liters, of 2 mol of gas is ____

ANSWER _____

Understand It with Pulse | Flag a mistake

13 Going across a period from left to right, ionization energy generally

Question 13

Going across a period from left to right, ionization energy generally

A) increases

B) decreases

C) stays the same

D) falls to zero

A increases

B decreases

C stays the same

D falls to zero

Understand It with Pulse

Flag a mistake

14 The reaction $CaCO_3 \rightarrow CaO + CO_2$ is a

Question 14

The reaction $CaCO_3 \rightarrow CaO + CO_2$ is a

A) synthesis reaction

B) combustion reaction

C) single replacement reaction

D) decomposition reaction

- **A** synthesis reaction
- **B** combustion reaction
- **C** single replacement reaction
- **D** decomposition reaction

Understand It with Pulse | Flag a mistake

15 Which solution is more concentrated

Question 15

Which solution is more concentrated

A) more solute in the same volume of solution

B) less solute in the same volume of solution

C) more solvent with the same solute

D) the same solute in more water

- **A** more solute in the same volume of solution
- **B** less solute in the same volume of solution
- **C** more solvent with the same solute
- **D** the same solute in more water

Understand It with Pulse | Flag a mistake

16 Using c = 4.2 J per gram per degree Celsius, the heat, in joules, absorbed by 100 g of water warmed by 10 degrees Celsius is ____

Question 16

Using $c = 4.2$ J per gram per degree Celsius, the heat, in joules, absorbed by 100 g of water warmed by 10 degrees Celsius is ____

ANSWER _____

Understand It with Pulse | Flag a mistake

17 In the Bohr model of the atom, electrons are described as

Question 17

In the Bohr model of the atom, electrons are described as

A) orbiting inside the nucleus

B) occupying energy levels around the nucleus

C) mixed with protons in shells

D) fixed in the nucleus

- **A** orbiting inside the nucleus
- **B** occupying energy levels around the nucleus
- **C** mixed with protons in shells
- **D** fixed in the nucleus

Understand It with Pulse | Flag a mistake

18 In the balanced equation $4Al + 3O_2 \rightarrow 2Al_2O_3$, the coefficient of aluminum is _____

Question 18

In the balanced equation $4\ Al + 3\ O_2 \rightarrow 2\ Al_2\ O_3$,

the coefficient of aluminum is ____

ANSWER _____

Understand It with Pulse | Flag a mistake

19

The percent by mass of oxygen in carbon dioxide, to one decimal place, is _____

Question 19

The percent by mass of oxygen in carbon dioxide, to one decimal place, is ____

ANSWER _____

Understand It with Pulse | Flag a mistake

20

At equilibrium, the forward and reverse reaction rates are

Question 20

At equilibrium, the forward and reverse reaction rates are

A) both zero

B) forward only

C) equal, while concentrations stay constant

D) reverse only

A both zero

B forward only

C equal, while concentrations stay constant

D reverse only

Understand It with Pulse | Flag a mistake

21 Which of these is a heterogeneous mixture

Question 21

Which of these is a heterogeneous mixture

A) salt dissolved in water

B) sand and water

C) air

D) sugar dissolved in water

A salt dissolved in water

B sand and water

C air

D sugar dissolved in water

Understand It with Pulse

Flag a mistake

22 Metallic bonding is best described as

Question 22

Metallic bonding is best described as

A) shared pairs between two atoms

B) electrons transferred to a nonmetal

C) hydrogen bonds between molecules

D) a sea of delocalized electrons around metal ions

- **A** shared pairs between two atoms
- **B** electrons transferred to a nonmetal
- **C** hydrogen bonds between molecules
- **D** a sea of delocalized electrons around metal ions

Understand It with Pulse | Flag a mistake

23 A compound contains 12 g of carbon (1 mol) and 2 g of hydrogen (2 mol). The number of hydrogen atoms per carbon atom in its empirical formula is _____

Question 23

A compound contains 12 g of carbon (1 mol) and 2 g of hydrogen (2 mol). The number of hydrogen atoms per carbon atom in its empirical formula is ____

ANSWER _____

Understand It with Pulse | Flag a mistake

24 Entropy increases when a solid

Question 24

Entropy increases when a solid

A) freezes

B) condenses

C) crystallizes

D) melts

A freezes

B condenses

C crystallizes

D melts

Understand It with Pulse

Flag a mistake

25 Going down a group, electronegativity generally

Question 25

Going down a group, electronegativity generally

A) increases

B) stays the same

C) becomes zero

D) decreases

A increases

B stays the same

C becomes zero

D decreases

Understand It with Pulse

Flag a mistake

26 In a water molecule, the oxygen atom has this many lone pairs of electrons

Question 26

In a water molecule, the oxygen atom has this many lone pairs of electrons

A) 0

B) 2

C) 1

D) 4

A 0

B 2

C 1

D 4

Understand It with Pulse | Flag a mistake

27 In the reaction 2Mg + O_2 → 2MgO, the mass, in grams, of magnesium oxide formed from 2 mol of magnesium is ____

Question 27

In the reaction $2\ Mg + O_2 \rightarrow 2\ MgO$,

the mass, in grams, of magnesium oxide formed from 2 mol of magnesium is ____

ANSWER

Understand It with Pulse | Flag a mistake

28

A gas occupies 6 L at 546 K. At constant pressure, at 273 K, its volume, in liters, is _____

Question 28

A gas occupies 6 L at 546 K. At constant pressure, at 273 K, its volume, in liters, is ____

ANSWER _____

Understand It with Pulse | Flag a mistake

29

Which particles are found in the nucleus of an atom

Question 29

Which particles are found in the nucleus of an atom

A) protons and neutrons

B) electrons and protons

C) electrons only

D) neutrons only

A protons and neutrons

B electrons and protons

C electrons only

D neutrons only

Understand It with Pulse | Flag a mistake

30 The strongest intermolecular force among these substances is found in

Question 30

The strongest intermolecular force among these substances is found in

A) CH_4

B) HCl

C) HF

D) CO_2

A CH_4

B HCl

C HF

D CO_2

Understand It with Pulse

Flag a mistake

31 Using atomic masses (Na = 23, Cl = 35.5), the molar mass of sodium chloride, in grams per mole, is _____

Question 31

Using atomic masses (Na = 23, Cl = 35.5), the molar mass of sodium chloride, in grams per mole, is

___

ANSWER

Understand It with Pulse

Flag a mistake

32 Gas pressure is caused by gas particles

Question 32

Gas pressure is caused by gas particles

A) colliding with the walls of the container

B) bonding to the container

C) freezing in place

D) dissolving in the container

- **A** colliding with the walls of the container
- **B** bonding to the container
- **C** freezing in place
- **D** dissolving in the container

Understand It with Pulse | Flag a mistake

33 Sulfur has atomic number 16. The number of electrons in S^{2-} is ____

Question 33

Sulfur has atomic number 16. The number of electrons in S^{2-} is ____

ANSWER _____

Understand It with Pulse | Flag a mistake

34 The total number of atoms in one formula unit of $Ca(OH)_2$ is _____

Question 34

The total number of atoms in one formula unit of Ca (OH)$_2$ is ____

ANSWER _____

Understand It with Pulse | Flag a mistake

35 The concentration of a solution increases when

Question 35

The concentration of a solution increases when

A) more solvent is added

B) solute is removed

C) solvent evaporates

D) the solution is cooled

A more solvent is added

B solute is removed

C solvent evaporates

D the solution is cooled

Understand It with Pulse | Flag a mistake

36 **A gas occupies 4 L at 273 K. At constant pressure, at 546 K, its volume, in liters, is _____**

Question 36

A gas occupies 4 L at 273 K. At constant pressure, at 546 K, its volume, in liters, is ____

ANSWER

Understand It with Pulse | Flag a mistake

37 **Iron-56 has atomic number 26. The number of neutrons in iron-56 is _____**

Question 37

Iron – 56 has atomic number 26. The number of neutrons in iron – 56 is ____

ANSWER

Understand It with Pulse | Flag a mistake

38 **In the balanced equation $H_2 + Cl_2 \rightarrow 2HCl$, the coefficient of hydrogen chloride is _____**

Question 38

In the balanced equation $H_2 + Cl_2 \rightarrow 2HCl$,

the coefficient of hydrogen chloride is ____

ANSWER

Understand It with Pulse | Flag a mistake

39 A balanced chemical equation conserves

Question 39

A balanced chemical equation conserves

A) mass

B) volume only

C) temperature

D) pressure

A mass

B volume only

C temperature

D pressure

Understand It with Pulse

Flag a mistake

40 Hess law states that the total enthalpy change of a reaction is

Question 40

Hess law states that the total enthalpy change of a reaction is

A) always zero

B) dependent on the path taken

C) changed by a catalyst

D) the sum of the enthalpy changes of its steps

- **A** always zero
- **B** dependent on the path taken
- **C** changed by a catalyst
- **D** the sum of the enthalpy changes of its steps

Understand It with Pulse | Flag a mistake

41 A sample has mass 120 g and density 3 g per cubic centimeter. Its volume, in cubic centimeters, is _____

Question 41

A sample has mass 120 g and density 3 g per cubic centimeter. Its volume, in cubic centimeters, is ____

ANSWER _____

Understand It with Pulse | Flag a mistake

42 The total number of hydrogen atoms in $2H_2O$ is _____

Question 42

The total number of hydrogen atoms in $2\,H_2O$ is ____

ANSWER

Understand It with Pulse | Flag a mistake

43 In the reaction $CaCO_3 \rightarrow CaO + CO_2$, the mass, in grams, of calcium oxide formed from 1 mol of calcium carbonate is _____

Question 43

In the reaction $CaCO_3 \rightarrow CaO + CO_2$,

the mass, in grams, of calcium oxide formed from 1 mol of calcium carbonate is ____

ANSWER

Understand It with Pulse | Flag a mistake

44 Removing a product from a system at equilibrium shifts equilibrium toward the

Question 44

Removing a product from a system at equilibrium shifts equilibrium toward the

A) reactants

B) products

C) catalyst

D) neither side

A reactants

B products

C catalyst

D neither side

Understand It with Pulse

Flag a mistake

45 Using whole number atomic masses (C = 12, O = 16), the molar mass of carbon dioxide, in grams per mole, is _____

Question 45

Using whole number atomic masses (C = 12, O = 16), the molar mass of carbon dioxide, in grams per mole, is ____

ANSWER

Understand It with Pulse

Flag a mistake

46 In the balanced equation $4Fe + 3O_2 \rightarrow 2Fe_2O_3$, the coefficient of iron is _____

Question 46

In the balanced equation $4\ Fe + 3\ O_2 \rightarrow 2\ Fe_2\ O_3$,

the coefficient of iron is ____

ANSWER _____

Understand It with Pulse | Flag a mistake

47 A percent yield of 80% means the actual yield is

Question 47

A reaction has a theoretical yield of 50 g and an actual yield of 40 g. The percent yield is

A) 40%

B) 125%

C) 80%

D) 20%

- A larger than the theoretical yield
- B equal to the theoretical yield
- C 80% of the theoretical yield
- D unrelated to the theoretical yield

Understand It with Pulse | Flag a mistake

48

A gas at 100 kPa occupies 12 L at 300 K. At 200 kPa and 600 K, its volume, in liters, is _____

Question 48

A gas at 100 kPa occupies 12 L at 300 K. At 200 kPa and 600 K, its volume, in liters, is ____

ANSWER

Understand It with Pulse | Flag a mistake

49

An atom has mass number 27 and 14 neutrons. The number of protons in the atom is _____

Question 49

An atom has mass number 27 and 14 neutrons. The number of protons in the atom is ____

ANSWER

Understand It with Pulse | Flag a mistake

50

The total number of ions in two formula units of NaCl is _____

Question 50

The total number of ions in two formula units of NaCl is ____

ANSWER

Understand It with Pulse | Flag a mistake

ANSWER KEY

1.	A	**18.**	4	**35.**	C
2.	B	**19.**	72.7	**36.**	8
3.	18	**20.**	C	**37.**	30
4.	3	**21.**	B	**38.**	2
5.	B	**22.**	D	**39.**	A
6.	D	**23.**	2	**40.**	D
7.	C	**24.**	D	**41.**	40
8.	200	**25.**	D	**42.**	4
9.	B	**26.**	B	**43.**	56
10.	C	**27.**	80	**44.**	B
11.	D	**28.**	3	**45.**	44
12.	44.8	**29.**	A	**46.**	4
13.	A	**30.**	C	**47.**	C
14.	D	**31.**	58.5	**48.**	12
15.	A	**32.**	A	**49.**	13
16.	4200	**33.**	18	**50.**	4
17.	B	**34.**	5		

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