

Name: _____ Key _____ Period: _____ Date: _____

Reference Table Review

The Chemistry Reference tables are undoubtedly your most important resource for the Chemistry Regents exam. Knowledge of the information in the reference tables and how to use it will be of critical importance in your performance. Please keep in mind that completing this paper should be a learning activity. If you are unable to answer any of these items, use this as an opportunity to review your skills.

1. What is the value of standard pressure in kilopascals? 101.3kPa
In atmospheres? 1 atm
2. How many times larger is a kilometer than a meter? 1000m=1km
3. What does ppm mean? parts per million
4. How much energy would be released by 5 grams of water vapor when it condenses?
Show all work.

$$q=mHv$$

$$=(5g)(2260J/g)= 11300J$$

5. How much energy would be absorbed by 15.7 grams of ice to make it melt? Show all work

$$q=mHf$$

$$=(15.7g)(334J/g)= 524.3J$$

6. What is the difference between the hypochlorite, chlorite, chorate, and perchlorate ions?
number of oxygen

7. Is PbCl_2 soluble? _____ no _____
8. Is $\text{Ca}(\text{OH})_2$ soluble? _____ yes _____

9. What three substances become less soluble as the temperature increases?

SO_2 , NH_3 , HCl

10. Why do they become less soluble?

all gases- increase temp-decrease solubility

11. What is the mass of sodium nitrate that would dissolve in 300 grams of water at 50°C

115g in 100g H_2O so...345g in 300g H_2O

12. What is the vapor pressure of ethanol at standard temperature?

3kPa

13. What would the temperature have to be if the vapor pressure of water was 100kPa?

100°C

14. Which substance has the highest boiling point at standard pressure?

Why? Ethanoic acid... read curve at 101.3 kPa

15. How many combustion reactions are listed on table I?

6

16. Is the following reaction endo or exothermic: $\text{C}_{(s)} + \text{O}_{2(g)} \longrightarrow \text{CO}_{2(g)}$

exothermic

17. Is the following reaction spontaneous? $2\text{Li}^+ + \text{Ca} \longrightarrow 2\text{Li} + \text{Ca}^{2+}$
No Lithium the more active metal table J

18. What is the molecular formula of phosphoric acid?

H₃PO₄

19. What is the name for the following molecule NaOH? _____
sodium hydroxide

20. According to your answer to question 19, what ions would be produced when the molecule is placed in water? Na⁺ OH⁻

21. Will the pH be greater than, less than, or equal (circle one) to 7?

22. If methyl orange is added to a solution with a pH of 3, what color will the methyl orange be? red

23. If a rock is found to be 4.5×10^9 years old, how many half lives of uranium - 238 have occurred? 1 half life

24. How many radioactive elements experience:

25. Beta decay? 12

26. Alpha decay? 8

27. Positron decay? 4

28. What is particle X in the following equation: $^{235}_{92}\text{U} \longrightarrow ^4_2\text{He} + ^{231}\text{Th}$

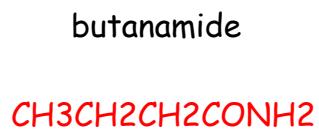
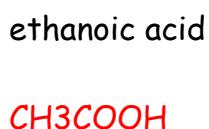
29. What type of radiation does this represent? alpha

30. How many carbons are present in decane? 10

31. Draw the structural formula for ethyne in the space below



32. Write the condensed structural formula for the following organic compounds:



33. Which period 2 element has the most oxidation states?

Nitrogen

34. How many protons are present in one atom of argon? 18

35. Hydrogen has 3 different isotopes ^1H , ^2H , and ^3H . Which of these isotopes is the most abundant? ^1H

36. How does the atomic mass for hydrogen show this?
1.00794

37. How are the isotopes of hydrogen different from each other?

Different atomic masses/number of neutrons. Same number of protons

38. If cesium loses an electron, it will have the same electron configuration as which noble gas? xenon

39. What is the name for the following groups?

40. Group 1: alkaline metals

41. Group 2: alkaline earth metals

42. Group 17: halogens

43. Group 18: nobel gases

44. What are the group numbers of the transition metals?

3-12

45. How many valence electrons does each of the following groups have?

Group 1: _____ 1 _____

Group 2: _____ 2 _____

Group 13: _____ 3 _____

Group 14: _____ 4 _____

Group 15: _____ 5 _____

Group 16: _____ 6 _____

Group 17: _____ 7 _____

Group 18: _____ 8 _____

46. Which happens to the electronegativity as you go down group 17?

_____ decreases _____

47. What happens to the electronegativity as you go left to right for period 2?

_____ increases _____

48. What happens to the first ionization energy as you go down group 17?

_____ decreases _____

49. What happens to the first ionization energy as you go left to right for period 2?

_____ increases _____

50. What is the relationship between electronegativity and first ionization energy?

_____ direct. Increase IE, increase EN _____

51. Why does mercury exist as a liquid at STP? low melting point _____

52. What happens to the atomic radius as you go from left to right in period 3?

_____ decrease _____

53. What causes this to happen? _____

_____ larger nuclear charge pulls electrons in closer _____

54. As you go down group 16, what happens to the atomic radius?

_____ increases _____

55. Why does this happen? more shells/energy levels _____

56. Would oxygen exist as a solid, liquid, or gas at - 32°C? _____
_____gas MP 54 K, BP 90K_____

57. What is the mass of a 34cm³ sample of lead (note: see table S for its density).
Show all work

$$D=m/v \quad 387.6g$$

58. How many grams of oxygen are present in a 3.2 mol sample?

$$Mol=g/gfm \quad 102.4g$$

59. A student measures the density of iron to be 8 g/cm³. What is the student's percent error? (hint: find the density on table S).

2%

60. What is the percent composition of oxygen in a sulfate ion?

66.7%

61. How many moles of sulfuric acid are in 2.7 liters of a 3 M solution?

$$M = \text{mol/L} \quad 8.1 \text{ mol}$$

62. What volume will a 300.0 mL sample of a gas at STP occupy when the pressure is doubled at constant temperature?

Combined gas law P₁V₁=P₂V₂ 150mL

63. To neutralize 1 M sulfuric acid, a 2 M concentration of sodium hydroxide is required. How many liters of sodium hydroxide must be used to completely neutralize 1 L of the sulfuric acid?

M_aV_a = M_bV_b

0.5 L