

Matter & Qualitative Practice Test

** This test is 3 foolscap pages front and back = 5 total pages **

Section	Assessment	Time (min)	Mark
A, B, C	Scan-tron	40	/ 50
D	Short Answer	35	/ 25
TOTAL	SUMMATIVE	75	/ 75

Part A: True/False [/10]

Indicate whether the sentence or statement is true (a) or false (b). The underlined word or term will make the statement either correct or incorrect ** Choose the best answer and transfer it to your scan-tron card**

- | | |
|--|---|
| <ol style="list-style-type: none"> 1. Qualitative observations are made using your <u>five senses</u>. 2. X-rays have <u>higher frequency</u> than radio waves. 3. The dot diagram shows <u>all</u> e^- of an element. 4. The spectra patterns of an incandescent light bulb and a fluorescent light are the <u>same</u>. 5. Ionic compounds <u>conduct electricity</u> when dissolved in water. 6. The nitrate ion (NO_3^-) is soluble with <u>most</u> positive ions. 7. The name of $\text{Fe}(\text{NO}_3)_3$ is <u>iron(III)nitrate</u>. 8. A <u>spectator ion</u> is an ion that is present in the solution, but does not form a precipitate. 9. A precipitation reaction is usually a <u>double displacement</u> reaction. 10. The prefix for four is <u>penta</u>. | <ol style="list-style-type: none"> 12. Electrons are <ol style="list-style-type: none"> a. found in the nucleus b. negatively charged c. similar in mass to p^+ d. similar in mass to n^0 13. $\text{CO}_2(g)$ attached to raisins causing them to rise is an: <ol style="list-style-type: none"> a. observation b. inference c. error d. estimate 14. The "raisin bun" model of the atom was proposed by <ol style="list-style-type: none"> a. John Dalton b. J.J. Thomson c. Ernest Rutherford d. Niels Bohr 15. Emission spectra can be used as a technique for qualitative analysis because <ol style="list-style-type: none"> a. each element gives off a distinct spectral pattern b. a continuous spectrum is produced c. an absorption spectrum is produced d. all patterns are the same 16. In a flame test, potassium will produce the colour <ol style="list-style-type: none"> a. green b. red c. violet d. pink 17. In a flame test, lithium will produce the colour <ol style="list-style-type: none"> a. green b. red c. violet d. pink 18. The subscript (s) following a compound indicates that the physical state of the material is <ol style="list-style-type: none"> a. solid b. liquid c. gas d. dissolved in water |
|--|---|

Part B: Multiple Choice. Select the best choice that answers the question [/35]

11. Energy levels were discovered by
- | | |
|------------|---------------|
| a. Thomson | c. Rutherford |
| b. Dalton | d. Bohr |

19. **Melting is a**
 a. physical property c. both a and b
 b. chemical property d. none of the above
20. **A compound that is able to conduct a current when placed in water to form a solution is**
 a. a nonelectrolyte c. a conductor
 b. an electrolyte d. an insulator
21. **A compound that has a low melting point and is a poor conductor of electricity is**
 a. ionic c. elastomer
 b. covalent d. alkane
22. **When an atom gains valence electrons,**
 a. a cation is formed c. an ion is formed
 b. an anion is formed d. a polyatomic ion is formed
23. **Carbon dioxide is an example of**
 a. an ionic compound c. a salt
 b. an electrolyte d. a covalent compound
24. **Alkali metals in their outer shell have**
 a. 1 valence e^- c. 7 valence e^-
 b. 2 valence e^- d. 8 valence e^-
25. **If an atom loses two extra electrons, it has a charge of**
 a. $2+$ c. 1^-
 b. 2^- d. none of the above
26. **In order for the halogens to become stable they must**
 a. gain 1 electron c. gain 2 electrons
 b. lose 2 electrons d. lose 1 electron
27. **In order for the alkali metals to become stable they must**
 a. gain 1 electron c. gain 2 electrons
 b. lose 2 electrons d. lose 1 electron
28. **Calcium is in period**
 a. one c. three
 b. two d. four
29. **Neon is in group**
 a. 1 c. 17
 b. 2 d. 18
30. **When using Lewis symbols, the number of dots represents**
 a. total # of e^- c. only the non-valence e^-
 b. only valence e^- d. # of e^- needed
31. **The Lewis symbols of elements down a group of the periodic table have**
 a. the same number of dots c. a decreased number of dots
 b. an increased number of dots d. an unrelated number of dots
32. **The correct Lewis symbol for carbon is**
 a. $:\overset{\cdot}{\underset{\cdot}{C}}:$ c. $\overset{\cdot}{\underset{\cdot}{C}}$
 b. $:\overset{\cdot}{C}:$ d. none of the above
33. **The correct Lewis symbol for phosphorus is**
 a. $:\overset{\cdot}{\underset{\cdot}{P}}:$ c. $:\overset{\cdot}{P}:$
 b. $:\overset{\cdot}{P}$ d. all of the above
34. **An ion with a -1 charge has**
 a. one extra e^- c. one missing p^+
 b. one missing e^- d. one extra p^+
35. **An ion with a +3 charge has**
 a. three extra e^- c. one missing p^+ proton, two extra e^-
 b. three missing e^- d. one extra proton, two missing e^-
36. **A single covalent bond is formed when**
 a. two atoms share two e^-
 b. two atoms both lose e^-
 c. one atom gains e^- from the other atom
 d. the e^- are passed back and forth between the two atoms
37. **Water is**
 a. a polar molecule c. an ionic compound
 b. a nonpolar molecule d. a polyatomic ion
38. **The molecule methane, CH_4 , is an example of a**
 a. polar molecule with nonpolar bonds c. polar molecule with polar bonds
 b. nonpolar molecule d. none of the above with polar bonds
39. **A solid that is formed as a result of the chemical reaction of two aqueous solutions is called a**
 a. residue c. solidification
 b. precipitate d. solute

40. For the double displacement reaction that occurs when lead(II) nitrate is mixed with potassium iodide, which of the following is the correct net ionic equation?

- a. $K^+_{(aq)} + I^-_{(aq)} \rightarrow KI_{(s)}$ c. $K^+_{(aq)} + NO_3^-_{(aq)} \rightarrow KNO_{3(s)}$
 b. $Pb^{2+}_{(aq)} + 2 I^-_{(aq)} \rightarrow PbI_{2(s)}$ d. $Pb^{2+}_{(aq)} + 2 NO_3^-_{(aq)} \rightarrow Pb(NO_3)_2_{(s)}$

41. Using the solubility rules, will a precipitate form when aqueous potassium chloride is mixed with aqueous lead(II) nitrate?

- a. yes
 b. no
 c. depends on how they are mixed
 d. impossible to determine with solubility rules

42. For the single displacement reaction that occurs when $Br_{2(aq)}$ is mixed with sodium iodide, which of the following are the products

- a. $NaBr_{(aq)} + Br_{2(aq)}$ c. $NaI_{(aq)} + I_{2(aq)}$
 b. $NaBr_{(aq)} + I_{2(aq)}$ d. $NaBr_{(aq)} + Br^-_{(aq)}$

43. Which of the following does NOT indicate that a double displacement reaction has occurred?

- a. gas is formed c. water is made
 b. a precipitate formed d. light is produced

44. The name of the ions not involved in forming the precipitate is called

- a. inert ions c. cations
 b. spectator ions d. anions

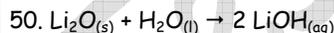
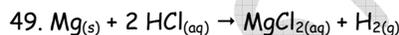
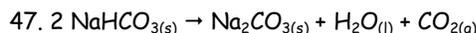
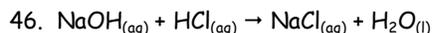
45. Which of the following compounds is most likely to conduct electricity?

- a. CO_2 c. $NaCl$
 b. NO_2 d. CCl_4

Part C: Matching. Select the best choice that answers the question [/5]

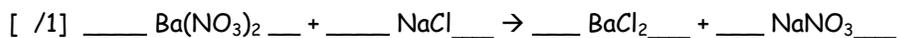
Select the statement that best describes each of the following words or phrases, and place the corresponding letter in the space provided next to the statement.

a.	Synthesis reaction
b.	Decomposition reaction
c.	Single displacement reaction
d.	Double displacement reaction
e.	Neutralization reaction



PART D: Short Answer. Answer the following questions in the space provided [/25]

51. Complete the following double displacement reaction equation by **balancing** it and adding **states** (s, l, g, aq). Write the **total ionic equation** and **net ionic equation** and identify the **spectator ions**.



Total Ionic Equation [/2]

Net Ionic Equation [/1]

Spectator Ions [/1]

52. Complete the following table by filling in the blanks [/5]

Name	Formula	Ionic or Covalent
	Al_2O_3	
diphosphorus pentoxide		
	$\text{F}_{2(g)}$	
iron(III)nitrate		
	$\text{CO}_{(g)}$	

53. A forensic chemist is given samples of four unidentified solutions. The identities of these solutions could affect the outcome of a court case involving an electrocution. The chemist has **potassium iodide**, $KI_{(aq)}$, **methanol**, $CH_3OH_{(aq)}$, **sulphuric acid**, $H_2SO_{4(aq)}$, and **sodium hydroxide** (a base), $NaOH_{(aq)}$. The chemist designs an experiment to identify the chemicals. The chemist dissolves each sample in water and tests the solution with a conductivity apparatus and litmus paper. (Acidic solutions turn blue litmus paper red. Basic solutions turn red litmus paper blue.)

Solution	Electrical Conductivity	Litmus
1	high	No change
2	high	Blue to red
3	none	No change
4	high	Red to blue

(a) What are the identities of the four substances? [/4]

SOLUTION 1 = _____

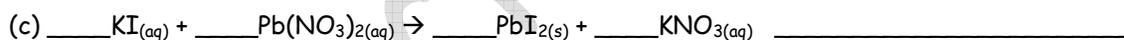
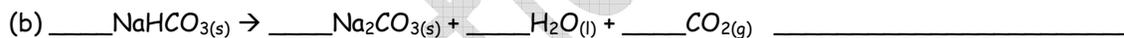
SOLUTION 2 = _____

SOLUTION 3 = _____

SOLUTION 4 = _____

(b) Which of the solutions could not have been used in the electrocution? [/1]

54. BALANCE and then CLASSIFY each of the following reactions as a synthesis, decomposition, single displacement, or double displacement reaction: [/6]



55. Complete the following chart. [/4]

Compound	ΔEN	Lewis Diagram	3-D Structural Formula (show partial charges if present)	Molecular Shape (name)
CH_4				