Name: ANSWERS Date: _____

BCI SCIENCE

SNC 2D

Chemistry Review

A. **Fill in the blanks** (use the following list)

catalyst	chemical	coefficient	combustion	endothermic
negative	polyatomic	rate	reactants	synthesis

1. A chemical property is one that involves the production of a new substance.
2. The starting materials in chemical reactions are called reactants
3. The electron is a subatomic particle that has a negative charge.
4. An ion that contains more than one atom is called a polyatomic ion.
5. The number written in front of a chemical compound is called a coefficient.
6. The burning of a substance is called combustion.
7. A reaction between elements is a synthesis reaction.
8. The speed at which a reaction occurs is the rate of reaction.
9. A reaction that absorbs heat is called endothermic
10. A substance that speeds up chemical reactions is called a catalyst.

B. **True or False** (If the statement is false, rewrite the statement to make it true)

11. Compounds that contain carbon and hydrogen are called ~~ionic compounds~~. F covalent compounds
12. Another term for bonding capacity is oxidation number. T
13. An ~~alkaline earth~~ metal element forms an ion with a 1- ionic charge. F alkali 1+
14. A skeleton equation describes only the names of the reactants and products. T
15. The Law of Conservation of Mass states that the numbers of atoms of reactants and products must be the same. T
16. The reaction of barium nitrate and sodium sulphide would be a double displacement reaction. T
17. Grinding a solid into a dust increases its surface area. T

C. **Similarities/Differences** (describe similarities/differences between each pair)

18. physical property, chemical property
- physical property observed using 5 senses with NO chemical change
- chemical property observed during chemical change

19. proton, neutron
→ both p^+ & n^0 found in nucleus
→ p^+ has +ve charge
→ n^0 has no charge

20. atom, ion
→ both are representations of elements
→ atom does not have a charge
→ ions do have a charge

21. ionic compound, covalent compound
→ both represent combining of elements
→ ionic is between a metal & non-met
→ covalent is between 2 non-metals

22. single displacement, double displacement
→ both involve displacements of elements
→ single displacement has an element as a reactant.
→ double displacement has compounds as reactants.

23. synthesis, decomposition
synthesis = 2 or more little bits MA 1 BIG bit
decomposition = 1 BIG bit breaks down into 2 or more little bits.

24. cation, ion
→ both are charged particles
→ cation = +ve
→ anion = -ve

25. endothermic, exothermic
→ both are reactions involving energ
→ endo absorbs energy
→ exo releases energy

D. Multiple choice (Choose the best answer)

26. What is the formula for the compound sodium sulphate?
    a) SSO_4
    b) Na_2S
    c) NaS_2
    d) Na_2SO_4

27. What is the name of the compound PCl_3?
    a) phosphorus chloride
    b) potassium carbide
    c) phosphate chloride
    d) phosphorus trichloride

28. What type of reaction occurs between magnesium and hydrogen chloride?
    a) synthesis
    b) decomposition
    c) single displacement
    d) double displacement

29. What type of reaction occurs between sodium and chlorine?
    a) synthesis
    b) decomposition
    c) single displacement
    d) double displacement

30. What type of reaction occurs between magnesium carbonate and ammonium nitrate?
    a) synthesis
    b) decomposition
    c) single displacement
    d) double displacement

31. When Alkaseltzer is ground into a powder, it reacts more quickly in water. This is an example of the effect of:
    a) concentration
    b) surface area
    c) temperature
    d) a catalyst

32. Cake batter rises when the cake is baked. This is an example of the effect of:
    a) concentration
    b) surface area
    c) temperature
    d) a catalyst

33. The sum of the coefficients from the following balanced equation is

$$4K_{(s)} + O_{2(g)} \rightarrow 2K_2O_{(s)}$$

    a) 11
    b) 6
    c) 7
    d) 8

E. **Naming** (fill in the following chart)

Name	Formula
sodium bromide	NaBr
lithium phosphate	lithium phosphate Li_3PO_4
magnesium iodide	MgI_2
calcium carbonate	$CaCO_3$
calcium nitrate	$Ca(NO_3)_2$
silver iodide	AgI
iron(III) chloride	$FeCl_3$
aluminum bromide	$AlBr_3$
potassium sulphate	K_2SO_4
phosphorus trichloride	PCl_3
carbon tetrabromide	CBr_4
dinitrogen pentoxide	N_2O_5
sulphur tetrachloride	SCl_4
lead(II)oxide	PbO

F. **Balancing** (balance the following equations and identify the type of reaction)

___ $Br_{2(g)}$ + 2 $KI_{(aq)}$ → 2 $KBr_{(aq)}$ + ___ $I_{2(g)}$ Type: single displacement

35. 4 $K_{(s)}$ + ___ $O_{2(g)}$ → 2 $K_2O_{(s)}$ Type: synthesis / combustion

36. 4 $Na_{(s)}$ + ___ $O_{2(g)}$ → 2 $Na_2O_{(s)}$ Type: synthesis / combustion

37. 3 $Sr_{(s)}$ + ___ $N_{2(g)}$ → ___ $Sr_3N_{2(s)}$ Type: synthesis

38. 6 $Na_{(s)}$ + ___ $N_{2(g)}$ → 2 $Na_3N_{(s)}$ Type: synthesis

39. zinc + iron(III)nitrate → iron + zinc nitrate

$3Zn + 2Fe(NO_3)_3 \rightarrow 2Fe + 3Zn(NO_3)_2$ Type: single displacement

40. magnesium carbonate → magnesium oxide + carbon dioxide

$MgCO_3 \rightarrow MgO + CO_2$ Type: decomposition

41. silver nitrate + calcium iodide → silver iodide + calcium nitrate

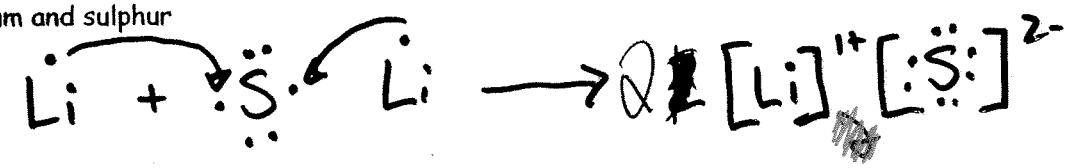
$2AgNO_3 + CaI_2 \rightarrow 2AgI + Ca(NO_3)_2$ Type: double displacement

42. potassium + oxygen → potassium oxide

$4K + O_2 \rightarrow 2K_2O$ Type: combustion / synthesis

G. **Bonding** (Using electron dot diagrams, show how the following molecules are formed)

43. lithium and sulphur



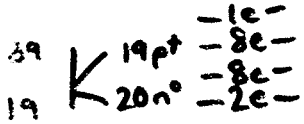
Bond type	Chemical formula	Chemical name
IONIC	Li_2S	lithium sulphide

44. carbon and oxygen

Bond type	Chemical formula	Chemical name
COVALENT	CO_2	carbon dioxide

H. **Diagrams** (Draw Bohr-Rutherford Diagrams for the following)

45. ~~Cesium, Cs~~ potassium, K



46. Aluminum ion, Al^{3+}