1 In the periodic table, the elements are arranged in

- A alphabetical order
- B order of increasing atomic number
- O C order of increasing metallic properties
- D order of increasing neutron content
- E reverse alphabetical order

2 Elements _____ exhibit similar physical and chemical properties.

- A with similar chemical symbols
- B with similar atomic masses
- C in the same period of the periodic table
- O D on opposite sides of the periodic table
- E in the same group of the periodic table

The element _____ is the most similar to strontium in chemical and physical properties.

\bigcirc A	Li
В	At
O c	Ru
() D	Ca

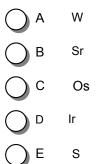
4 Which pair of elements would you expect to exhibit the greatest similarity in their physical and chemical properties?

\bigcirc A	H, Li
В	Cs, Ba
O c	Ca, Si
O D	Ga, Ge
\bigcirc \vdash	C O

Which pair of elements would you expect to exhibit the greatest similarity in their physical and chemical properties?

$A \bigcirc$	F, Br
В	C, N
O C	Li, Ca
D C	H, He
) E	Si, As

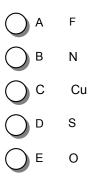
Which one of the following is a nonmetal?



7 Of the following,
____ contains the greatest number of electrons.

\bigcirc A	P ³⁺
В	Р
O c	P ²⁻
O D	P ³⁻
<u> </u>	D ²⁺

8 Which one of the following is most likely to lose electrons when forming an ion?



9 Which pair of elements below should be the most similar in chemical properties?

\bigcirc A	C and O
В	B and As
O c	Ar and Ne
O D	K and Kr

Cs and He

10 An element in the upper right corner of the periodic table _____.

- A is either a metal or metalloid
- B is definitely a metal
- C is either a metalloid or a non-metal
- D is definitely a non-metal
- E is definitely a metalloid

11 An element that appears in the lower left corner of the periodic table is

- A either a metal or metalloid
- B definitely a metal
- C either a metalloid or a non-metal
- D definitely a non-metal
- E definitely a metalloid

12 Elements in the same group of the periodic table typically have _____.

- A similar mass numbers
- B similar physical properties only
- C similar chemical properties only
- D similar atomic masses
- E similar physical and chemical properties

13 Potassium is a _____ and chlorine is a

- A metal, nonmetal
- B metal, metal
- C metal, metalloid
- D metalloid, nonmetal
- E nonmetal, metal

14 Lithium is a _____ and magnesium is a

- A nonmetal, metal
- B nonmetal, nonmetal
- C metal, metal
- D metal, metalloid
- E metalloid, metalloid

are found uncombined, as monatomic species in nature.

- A Noble gases
- B Chalcogens
- C Alkali metals
- D Alkaline earth metals
- () E Halogens

16	metals tend to	
	electrons and	d cations tend
	to	electrons.

- A gain, gain
- B lose, lose
- C gain, gain
- D gain, gain
- E neither, they keep their electrons

17	Anions tend to have a
	charge and
	cations tend to have a
	charge.

- A positive, positive
- B negative, negative
- C positive, negative
- O D negative, positive
- E neither, they are both neutral

18 Anions tend to be ____ and cations tend to be ____.

- A metals, metals
- B nonmetals, nonmetals
- C metals, nonmetals
- D nonmetals, metals
- E metalloids, metalloids

19 Which species below is the nitride ion?



- B NO³⁻
- \bigcirc C NO²⁻
- D NH⁴⁺
- () E N³⁻

20	When a metal and a
	nonmetal react, the
	tends to lose
	electrons and the
	tends to gain
	electrons.

- A metal, metal
- B nonmetal, nonmetal
- C metal, nonmetal
- D nonmetal, metal
- O E None of the above, these elements share electrons.

21 _____ typically form ions with a 2+ charge.

- A Alkaline earth metals
- B Halogens
- C Chalcogens
- D Alkali metals
- E Transition metals

22 Sodium forms an ion with a charge of _____.

- A 1+
- () B 1-
- C 2+
- D 2-
- () E (

23 Aluminum forms an ion with a charge of _____.

A 2+

B 1
C 3+

D 2-

24 Calcium forms an ion with a charge of _____.

- A 1-
-) B 2-
- () C 1+
- D 2+
- () E 0

25 Barium forms an ion with a charge of _____.

- A 1+
- B 2-
- C 3+
- D 3-
- () E 2+

26 Bromine forms an ion with a charge of _____.

- A 2+
- B 3-
- C 1+
- D 3+
- (E 1.

27 Fluorine forms an ion with a charge of _____.

- A 1-
- C 2+
- D 3+
- (E 3.

28 lodine forms an ion with a charge of _____.

- A 7-
- () B 1+
- C 2-
- D 2+
- (E 1-

29 Oxygen forms an ion with a charge of _____.

- A 2-
- () B 2+
- C 3-
- D 3+
- E 6+

30 Sulfur forms an ion with a charge of _____.

- A 2+
- B 2-
- C 3+
- D 6-
- (E 6+

31 How many electrons does the Al³⁺ ion possess?



- B 10
- C 6
- (E 13

32 Predict the charge of the most stable ion of P?



- () B 3-
- () C 3+
- ① D 1-
- () E 2.

33 Predict the charge of the most stable ion of S?

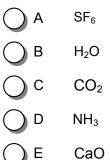


- B 1-
- C 6+
- D 2+
- () E 2-

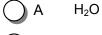
34 What group in the periodic table would the fictitious element χ be found?

- A Alkaline earth metals
- B Halogens
- C Chalcogens
- D Alkali metals
- E Transition metals

35 Which of the following compounds would you expect to be ionic?



36 Which of the following compounds would you expect to be ionic?



- B CO₂
- C SrCl₂
- \bigcirc D SO₂
- \bigcirc E H₂S

37 Which pair of elements is most likely to form an ionic compound with each other?

- A barium, chlorine
- B calcium, sodium
- C oxygen, fluorine
- D sulfur, carbon
- E nitrogen, hydrogen

38 Of the choices below, which one is not an ionic compound?

\bigcirc	Α	PCI ₅
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- B CrCl6
- C RbCl
- D PbCl₂
- () E NaCl

What is the formula of the compound formed between strontium ions and nitrogen ions?

A	SrN
В	Sr ₃ N ₂
O c	Sr ₂ N ₃
O D	SrN ₂
() E	SrN ₃

40 Magnesium reacts with a certain element to form a compound with the general formula MgX. What would the most likely formula be for the compound formed between Lithium and element X?

\bigcirc A	Li ₂ X
\bigcirc B	LiX_2
\bigcirc C	$L_{i2}X_3\\$
\bigcirc D	Li_2X_2
\bigcirc E	LiX

41 The charge on the manganese in the salt MnCl₃ is

\bigcirc A	1+
В	1-
O c	2+
O D	2-
<u></u> -	٥.

42 Aluminum reacts with a certain nonmetallic element to form a compound with the general formula AIX. Element X is a diatomic gas at room temperature. Element X must be

\bigcirc \land	ميافيية
\bigcirc A	sulfur
В	fluorine
O C	Bromine
O D	nitrogen
() E	oxygen

43 Predict the empirical formula of the ionic compound that forms from Calcium and fluorine.

A	CaF
В	Ca ₂ F
O c	CaF ₂
O D	Ca ₂ F ₃
() E	Ca ₃ F ₂

44 Predict the empirical formula of the ionic compound that forms from magnesium and fluorine.

A	Mg_2F_3
В	MgF
O c	Mg_2F
O D	Mg_3F_2
∩ E	MaF ₂

45 Predict the empirical formula of the ionic compound that forms from magnesium and oxygen.

A	Mg_2O
В	MgO
O c	MgO_2
O D	Mg_2O_2
∩ E	Ma ₃ O ₂

46 Predict the empirical formula of the ionic compound that forms from aluminum and oxygen.

\bigcirc A	AIO
В	AI_3O_2
O c	Al_2O_3
O D	AlO ₂
() E	Al ₂ O

47 The correct name for SrO is _____.

- A strontium oxide
- B strontium hydroxide
- C strontium peroxide
- D strontium monoxide
- E strontium dioxide

48 The correct name for K₂S is

- A potassium sulfate
- B potassium disulfide
- C potassium bisulfide
- D potassium sulfide
- E dipotassium sulfate

49 The correct name for Al_2O_3 is _____.

- A aluminum oxide
- B dialuminum oxide
- C dialuminum trioxide
- D aluminum hydroxide
- E aluminum trioxide

50 The correct name for CaH₂ is _____.

- A hydrocalcium
- B calcium dihydride
- C calcium hydroxide
- D calcium dihydroxide
- E calcium hydride

51 The correct name of the compound Na₃N is

- A sodium nitride
- B sodium azide
- C sodium trinitride
- D sodium(III) nitride
- E trisodium nitride

52 The ions Ca²⁺ and PO₄³⁻ form a salt with the formula

A CaPO₄

 \bigcirc B $Ca_2(PO_4)_3$

C Ca₂PO₄

 \bigcirc D Ca(PO₄)₂

 \bigcirc E $Ca_3(PO_4)_2$

53 The correct formula of iron (III) bromide is

- A FeBr₂
- B FeBr₃
- C FeBr
- \bigcirc D Fe₃Br₃
- () E Fe₃Br

54 Magnesium and oxygen form an ionic compound with the formula

A MgO
B Mg₂O

 \bigcirc C MgO₂

 \bigcirc D Mg₂O₂

 \bigcirc E Mg₂O₃

55 The formula of ammonium carbonate is _____.

- \bigcirc A $(NH_4)_2CO_3$
- B NH₄CO₂
- \bigcirc C $(NH_3)_2CO_4$
- \bigcirc D $(NH_3)_2CO_3$
- \bigcirc E $N_2(CO_3)_3$

56 The correct name for Mg(CIO₃)₂ is _____.

- A magnesium chlorate
- B manganese chlorate
- C magnesium chloroxide
- O D magnesium perchlorate
- E manganese perchlorate

57 What is the correct formula for ammonium sulfide?



- \bigcirc B $(NH_4)_2SO_4$
- \bigcirc C $(NH_4)_2S$
- D NH₃S
- \bigcirc E N_2S_3

58 Which formula/name pair is incorrect?

\bigcirc A	$Mn(NO_2)_2$	manganese(II) nitrite

 \bigcirc B Mg(NO₃)₂ magnesium nitrate

 \bigcirc C Mn(NO₃)₂ manganese(II) nitrate

 \bigcirc D Mg₃N₂ magnesium nitrite

 \bigcirc E Mg(MnO₄)₂ magnesium permanganate

59 Which formula/name pair is incorrect?

\bigcirc A	$FeSO_4$	iron(II) sulfate
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 \bigcirc B Fe₂(SO₃)₃ iron(III) sulfite

C FeS iron(II) sulfide

 \bigcirc D FeSO₃ iron(II) sulfite

 \bigcirc E Fe₂(SO₄)₃ iron(III) sulfide

60 Which one of the following compounds is chromium (III) oxide?



- O B CrO₃
- \bigcirc C Cr_3O_2
- \bigcirc D Cr_3O
- \bigcirc E Cr_2O_4

61 Which one of the following compounds is copper(I) chloride?



- \bigcirc B CuCl₂
- \bigcirc C Cu₂Cl
- \bigcirc D Cu_2Cl_3
- \bigcirc E Cu_3Cl_2

62 The correct name for MgF₂ is _____.

- A manganese difluoride
- B magnesium difluoride
- C monomagnesium difluoride
- O D manganese bifluoride
- E magnesium fluoride

63 Element M reacts with fluorine to form an ionic compound with the formula MF₃. The M-ion has 18 electrons. Element M is

O A	Р
В	Sc
O c	Ar
O D	Ca
() E	Cr

64 When calcium reacts with sulfur the compound formed is _____.

- \bigcirc A Ca_2S_2
- \bigcirc B Ca_3S_2
- C CaS
- \bigcirc D CaS₂
- \bigcirc E Ca_2S_3

65 Chromium and chlorine form an ionic compound whose formula is CrCl₃. The name of this compound is

- A chromium chlorine
- B chromium(III) chloride
- C monochromium trichloride
- D chromium(III) trichloride
- E chromic trichloride

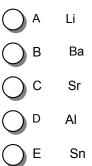
66 The formula for aluminum hydroxide is _____.

- A AIOH
- B Al₃OH
- \bigcirc C Al₂(OH)₃
- \bigcirc D Al(OH)₃
- \bigcirc E Al₂O₃

67 The name of the ionic compound (NH₄)₃PO₄ is

- A ammonium phosphate
- B tetrammonium phosphate
- C nitrogen hydrogen phosphate
- D ammonia phosphide
- E triammonium phosphate

68 Which metal is capable of forming more than one cation?



69 The correct name for Cu(CN)₂ is _____.

- A Copper (I) cyanide
- B Copper cyanate
- C Copper carbonate
- D Copper(II) cyanide
- E Copper (I) nitride

70 The correct name for Na₂O₂ is _____.

- A sodium oxide
- B sodium dioxide
- C disodium oxide
- O D sodium peroxide
- E disodium dioxide

71 Barium reacts with a polyatomic ion to form a compound with the general formula Ba₃(X)₂. What would be the most likely formula for the compound formed between sodium and the polyatomic ion X?

\bigcirc A	NaX
В	Na₂X
O c	Na ₂ X ₂
O D	Na ₃ X
() E	N_3X_2

72 Aluminum reacts with a certain nonmetallic element to form a compound with the general formula Al₂X₃. Element X must be from Group _____ of the Periodic Table of Elements.

\bigcirc	Α	3A	(13)
$\setminus J$		٠, ١	(. ~)

B 4A (14)

C 5A (15)

D 6A (16)

E 7A (17)

73 The formula for a salt is XBr. The X-ion in this salt has 46 electrons. The metal X is ____.

$\bigcirc A$	Ag
В	Pd
O c	Cd
O D	Cu
○ E	Cs

74 The charge on the iron ion in the salt Fe₂O₃ is

(A +1

C +3

D -5

() E -6

75 Which metal is not required to have its charge specified in the names of ionic compounds it forms?

