Review for Exam #2 (Module 2 -Matter and Module 3-Elements)

Solve all the Questions and then check Answers from Ans key provided at the end.
Feel as if you are taking the Real Exam.
Note- Print out Periodic table provided under Study materials in module 3 and use it for rest of the reviews and assignments. If you want to use Periodic table for exam, don't write anything on front and back of it.

Ques. 1. Which of these is an *intensive* property?

a) melting point
b) mass
c) length
d) volume

Ques. 2. Which of the following is an extensive property?

a) melting point
b) volume
c) boiling point
d) density

Ques. 3. Write the correct Symbol in front of the names of Elements

a) Nitrogen
b) Iron
c) Chlorine
d) Strontium

Ques. 4. Fill in the missing chemical symbol or element name for each of the following pairs.

S. No.	Elements	Chemical symbol
a)	Silver	
b)		Co
c)		Be
d)	Rubidium	
e)	Tungsten	

Ques. 5. Indicate whether each of the following statements represents a *chemical change*, a *physical change*, or *no change*.

a) Sodium metal is cut with a knife……
b) Hydrochloric acid was added to baking soda resulting in the evolution of carbon dioxide gas…….
c) A red piece of copper wire is added to a beaker containing hydrochloric acid (a clear, colorless solution). After an hour a red wire is observed in a clear, colorless solution……
d) A chunk of cheddar cheese is grated……..
e) Candle wax is melted……..
f) Candle wax is burned. ……..

Ques. 6. In which of the following compounds does one molecule of the compound contain 3 elements and 8 atoms?

a) $NaHCO3$
b) C_2H_7N
c) $H3AsO_4$
d) $POCl3$

Ques 7: Atoms of different elements that have the same mass number, but different atomic numbers are: Circle the correct option.

a) Isotopes
b) Isobars
c) Both
d) None

Ques.8. $^{16}_{8}0$ **and** $^{17}_{8}O$ are example of

a) Isotopes
b) Isobars
c) Both
d) None

Ques 9: Identify each of the following elements by name

a) period 3 alkali metal
b) period 4 noble gas
c) period 3 alkaline earth metal
d) period 5 halogen

Ques. 10. Indicate True and False

a) Protons and neutrons are together known as nucleons.

b) Neutrons always have positive charge on it.

c) Mass number is the sum of the protons and neutrons

d) Atomic Number is always equal to number of protons or number of electrons

e) Nucleus contains protons and electrons

f) Atom has neutral charge as positive charge of protons in nucleus are always balanced by the negative charge of electrons outside the nucleus of an atom.

g) s-orbital can accommodate 2 electrons.

Ques. 11. Write 2 examples of elements name with their Symbols which belongs to following group:

a) Representative Elements-
b) Transition Elements-
c) Inner Transition Elements-

Ques. 12. Using the periodic table, indicate which member of each of the following pairs of elements has larger atomic radius.

a) $_{15}P$ or $_{17}Cl$ [ ]

b) $_{20}Ca$ or $_{4}Be$ [ ]

Ques. 13. Using the periodic table, indicate which member of each of the following pairs of elements has higher electronegativity.

a) $_{6}C$ or $_{8}O$ [ ]
b) $_{16}S$ or $_{52}Te$ [ ]

Ques. 14. Using the periodic table, indicate which member of each of the following pairs of elements has larger metallic character.

a) $_{3}Li$ or $_{5}B$ [ ]
b) $_{11}Na$ or $_{55}Cs$ [ ]

Ques. 15. How many orbitals are present in each of these?

a) s [ ]
b) p [ ]
c) d [ ]
d) f [ ]

Ques. 16. How many electrons 'p' orbitals can accommodate? Circle the correct option.

a) 2
b) 6
c) 14
d) 10

Ques. 17. Shell electron capacity is calculated by which equation? Circle the correct option.

a) $4n^2$ where n=shell number
b) $2n^2$ where n=shell number
c) Both
d) None

Ques. 18. Fill in the blanks with correct option:

a) Atoms where all electron orbitals are occupied by pairs of electrons are called **……**
b) Atoms where all electron orbitals are **NOT** occupied by pairs of electrons are called ……

Ques. 19. Show whether the following are properties of metal or nonmetal:

a) Non-Ductile [ ]
b) High thermal conductivity [ ]

Ques. 20. In this configuration $1s^2\ 2s^2\ 2p^6\ 3s^2\ 3p^6\ 4s^2\ 3d^{10}\ 4p^4$ indicate the outermost valence electrons and whether the configuration is paramagnetic or diamagnetic ?

a) 4 valence electrons, diamagnetic
b) 2 valence electrons, paramagnetic
c) 6 valence electrons, paramagnetic
d) 4 valence electrons, paramagnetic

Ques. 21. Fill in the blanks.

a) ……. can be separated by physical process but ……. can be separated only by chemical process.
b) ……. have single phase while ……. have more than one visible phase

Ques. 22. Indicate whether these are Physical Change or Chemical Change

a	Rusting of iron	
b	Dissolving salt in water	
c	The baking of a potato	
d	Evaporation of gasoline	
e	The explosion of nitroglycerin	
f	Burning of sugar	
g	Cutting a copper wire into two pieces	

Ques. 23. Fill in the Blanks:

a) Molten iron metal has a(n) …….. volume and a(n) ……shape.

b) Nitrogen gas has a(n) ……..volume and a(n) …… shape.

c) Solids have …….. Shape and……volume.

d) Both elements and compounds are …….. substance

Ques. 24. What is Intensive and Extensive Properties? Explain with 2 examples for each

Ques. 25. Fill in the Tab

S. No.	Symbolic Representation	Atomic No.	Mass. No.	No. of Neutrons	No. of Protons	No. of Electrons
a	$^{9}_{4}Be$					
b			24		12	

c	$^{27}_{13}Al$					
d				8	8	

Ques. 26. Indicate whether these are Pure or Homogeneous or Heterogeneous Mixture

a	lime water	
b	Calcium carbonate (s)	
c	Oil in water	
d	Cumin-pepper in glass	
e	Wax in water	
f	Coke	

Ques. 27. Write Electron configuration for the following in the space provided below, using Aufbau Principle rule and also indicate the outermost valence electrons and magnetic property.

Hint: Learn Aufbau Principle and magnetic properties (from Lecture video / PPT Notes on Electronic structure and chemical periodicity) to do Electron configuration of Elements.

a) Al(Z=13)
b) Ne (Z=10)
c) I (Z=53)
d) Se (Z=34)

Answer Key for Review #2

1. Ans. a
2. Ans. b
3. a) N b) Fe c) Cl d) Sr
4. a) Ag b) cobalt c) beryllium d) Rb e) W f) cesium
5. a) physical change b) chemical change c) no change d) physical change e) physical change f) chemical change
6. c
7. b
8. a
9. a) Na b) Kr c) Mg d) I
10. a) T b) F c) T d) T e) F f) T g) T
11. a) Na, Cl b) Cu, Mn c) U, Th
12. a) $_{15}P$ b) $_{20}Ca$
13. a) $_{8}O$ b) $_{16}S$
14. a) $_{3}Li$ b) $_{55}Cs$
15. a) 1 b) 3 c) 5 d) 7
16. b
17. b
18. a) dia-magnetic b) para-magnetic
19. a) nonmetal b) metal
20. c
21. a) mixtures, compounds b) homogeneous mixture, heterogeneous mixture
22. a) Chemical b) Physical c) Chemical d) Physical e) Chemical f) Chemical g) Physical
23. a) definite, indefinite b) indefinite, indefinite c) definite, definite d) Pure
24. **Intensive property** is independent of the amount of substance present. Examples: Density, Melting Points

    Extensive property depends on amount of substance present. Example: mass, length
25. a) 4, 9, 5, 4, 4 b) $^{24}_{12}Mg$, 12, 12, 12 c) 13, 27, 14, 13, 13 d) $^{16}_{8}O$, 8, 16, 8

26. a) homo mix b) Pure substance c) hetero mix d) hetero mix e) hetero mix f) homo mix

27. a) $1s^2\ 2s^2\ 2p^6\ 3s^2\ 3p^1$;3 valence electrons, paramagnetic

b) $1s^2\ 2s^2\ 2p^6$;8 valence electrons, diamagnetic

c) $1s^2\ 2s^2\ 2p^6\ 3s^2\ 3p^6\ 4s^2\ 3d^{10}\ 4p^6\ 5s^2\ 4d^{10}\ 5p^5$; 7 valence electrons, paramagnetic

d) $1s^2\ 2s^2\ 2p^6\ 3s^2\ 3p^6\ 4s^2\ 3d^{10}\ 4p^4$; 6 valence electrons, paramagnetic