Provincial Department of Education -Sabaragamuwa - Week

Science

Week: February I

Grade 10

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Structure of Matter

1. Things around us can be classified as matter and energy.

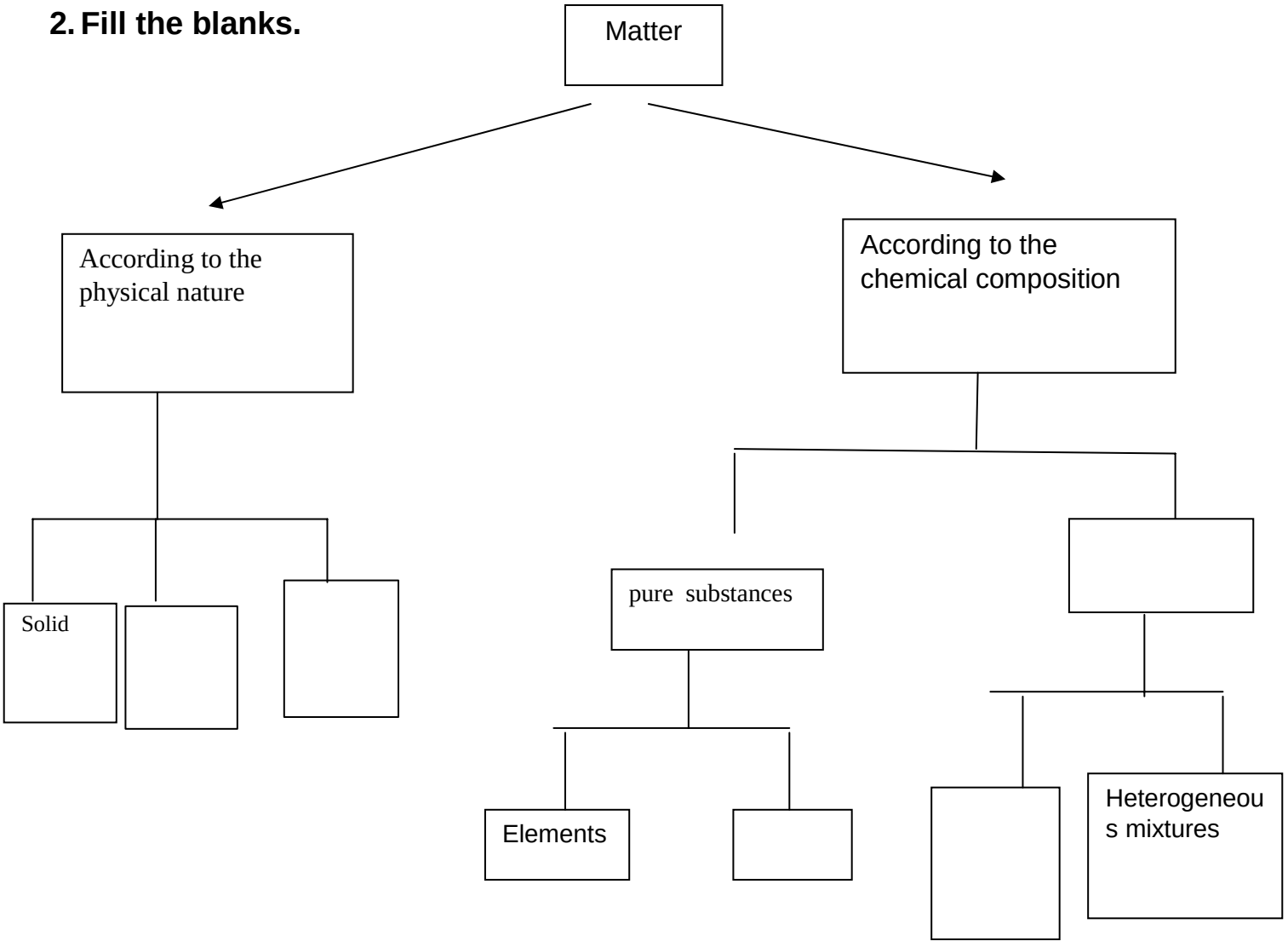
i. Define the term matter.

ii. Write few examples for matter.

iii. Define the term energy.

iv. Write few examples for energy.

2. Fill the blanks.



3. What is the building unit of matter?
4. Name the subatomic Particles of an atom.
5. Describe briefly the below mentioned atomic structures.
   i. Planetary model of atom
   ii. Nuclear model

6. Complete the table given below.

	Electron	proton	Neutron
location		In the nucleus	
charge	negative		
mass			

7. Electrons are in electron shells and they revolve around nucleus.

   i. Write another name for electron shells.

   ii. Write the maximum number of electrons that is available in each shell.

8. Define atomic number and mass number.

9. **Complete the table with the knowledge of atomic number and mass number**.

	Atomic number	Mass number	Number of protons	Number of electrons	Number of neutrons
$^{23}_{11}Na$	11		11		12
$^{12}_{6}C$		12		6	
$^{40}_{18}Ar$		40	18		
$^{11}_{5}B$				5	6

10. Complete the below table

Element	Atomic number	Electronic configuration
B	5	2,3
O	8	
Mg		2,8,2
Si	14	
Cl	17	

11. Periodic table is constructed as a result of classifying elements in various categories.

   i. Who introduced the first periodic table?
   ii. Write the periodic table with 20 elements.
   iii. What are periods and groups?
   iv. Explain how we can determine the group number and periodic number of an element.

12. Complete the table.

Element	Atomic number	Electronic configuration	Group Number	Periodic Number
Li	3		i	2
F	9	2,7		2
Si	14	2,8,4		
S	16		vi	
K	19			

13. What are isotopes? Write 3 examples for isotopes.

14. The first ionization energy of an element is the minimum energy that should be supplied to an atom in the gaseous state to remove an electron to form a unipositive gaseous ion.

i. Illustrate in a graph the first ionization energy pattern of second and third periods in periodic table.

ii. Using the graph answer the below questions.

a. What is the group with highest first ionization energy?

b. What is the group with lowest first ionization energy?

c. How the first ionization varies left to right in a period?

d. How the ionization energy varies from top to bottom in a group?

15.

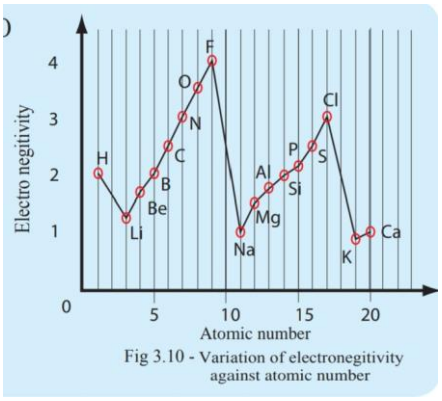


Fig 3.10 - Variation of electronegitivity against atomic number

I. Define the term electronegativity.

II. What is the scale used to measure electronegativity?

III. Which group has the highest electronegativity?

IV. Explain how electronegativity varies from left to right in a period and top to bottom in a group.