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SECOND TERM E-LEARNING NOTE

SUBJECT: CHEMISTRY **CLASS: SSS 3**

SCHEME OF WORK

WEEK	**TOPIC**
1.	Revision/Nuclear Chemistry, Types and Nature of Radiations, Half-life as a Measure of the Stability of the nucleus.
2.	Nuclear Reactions i.e Nuclear Fussion and Nuclear Fission with examples, Effect and applications of Radioactivity Comparison of Nuclear Reaction and Ordinary chemical reaction.
3.	Simple molecules and their shapes, covalent molecules e.g methane, ammonia, crystalline solids – their network structure e.g diamond.
4.	Metallic bonding – properties, factors affecting the formation of metals, intermolecular bonding Van-der-waals forces and hydrogen bonds, comparison of all bond styles.
5-6.	Metals and their compound, extraction of metals (e.g aluminium, copper, tin and iron) their properties and their reaction, their uses, alloys, composition and uses.
7.	Introduction to qualitative analysis, test for cation using H_2S, NaOH and HN_4OH, confirmatory test for the cations
8.	Test for amono, identification or gases. E.g CO_2,SO_2 and O_2. Characteristics test for anions e,g SO_4^{2-}, SO_3^{2-}, CO_3^{2}-, NO_3.
9-10.	Volumetric Analysis, calculation based on percentage purity and impurity of substances, percentage amount of the acid, or base, solubility of substances, volume of gases, mole ration of acid to base.
11.	Revision
12-13	Examinations

REFERENCE BOOK

- New School Chemistry for Senior Secondary Schools by Osei Yaw Ababio.
- Practical Chemistry for Senior Secondary Schools by Godwin Ojokuku
- Outline Chemistry for Schools & Colleges by Ojiodu C. C.
- Chemistry Pass Questions for S.S.C.E and UTME.

WEEK ONE

TOPIC: Nuclear Chemistry

CONTENT

- Types and Nature of Radiation
- Half-life as a measure of the stability of the nucleus.

Nuclear Chemistry is an aspect of chemistry that deal with nuclei of atoms.

Radioactivity

This is the spontaneous emission of radiation by radioactive element such as Thorium, Uranium etc.

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Characteristics

1. Spontaneously and continually emitting of radiation by radioactive element
2. Temperature and pressure have no effect on radioactivity
3. The radiation can pass through opaque objects
4. It affects photographic plates
5. It causes ionization of gases through which it passes.
6. It causes fluorescence of certain substance
7. It releases large amount of energy.

Types of Radiation

There are three (3) types of radiation

1. Alpha
2. Beta
3. Gamma

Characteristics of Alpha-Rays

1. they are helium in nature $^{4}_{2}He$ with 4 atomic mass and 2 atomic number
2. alpha rays are fast moving streams of positively charges
3. they are deflected toward the negative plate in an electrostatic field
4. they have very low penetrating power
5. they can be absorbed/stopped by a thin sheet of paper on aluminium foil
6. they cause fluorescence of some materials e.g zinc sulphide

Characteristics of Beta-rays

1. they are electron in nature with a mass number of zero and charge of -1 (^{0}e)
2. they are fast moving stream of electrons
3. they can penetrate than alpha rays

Effects of Electrostatic Field on the Three Radiation

EVALUATION

1. State two (2) properties of á, β, and Y rays each.
2. What do you know about radioactivity.

Detection of Radiation

The radiation can be detected by using the following devices.

a. Geiger Miller Counts
b. Scintillation counter
c. Diffusion cloud chamber

HALF LIFE

The half-life of a radioactive element is the time taken for half of the actual number of atoms in a given substance or radioactive element to decay.

NUCLEAR STABILITY

The spontaneous disintegration/decay of nucleus of an element is due to its instability.
The neutron-proton ration determines the stability of an element.

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This varies between unity for the lighter elements and a value of about 1.5 for the heavier element with atomic numbers around eighty.

N.B. Atoms with a…