

CHEMISTRY ASSIGNMENT JOHN SHIMFE SS 3 DIAMOND

- i. Write about the mineral?
- ii. Where it is found in Nasarawa State?
- iii. State volume quantity present?
- iv. Methods of extraction/exploration?
- v. How the mineral is processed?
- vi. Identify at least 6 (v)?

Solution

- i. About the Mineral Quartz:

Quartz is one of the most abundant minerals on Earth and comes in various forms. Chemically, it is silicon dioxide (SiO_2). Quartz crystals have a hexagonal structure, and they exhibit piezoelectric properties, meaning they can generate an electric charge when mechanical stress is applied. Due to its hardness and resistance to chemical weathering, quartz has various industrial applications, including in electronics, optics, and the production of glass.

- ii. Location in Nasarawa:

Quartz is found in various regions of Nasarawa State, Nigeria. The mineral is often associated with other minerals and is found in veins, pegmatites, and as part of mineralized zones in different parts of the state.

- iii. Volume Quantity Present:

Specific volume quantities of quartz in Nasarawa can vary based on ongoing exploration and mining activities. However, Nasarawa State, like many parts of Nigeria, has significant deposits of quartz. Accurate volume or quantity figures would require up-to-date geological surveys or mining reports specific to the region.

- iv. Methods of Extraction/Exploration:

The extraction or exploration of quartz in Nasarawa typically involves various methods, including:

- Surface Mining: This method involves removing the overlying material to access the quartz deposits present closer to the surface.

- Open-pit Mining: In areas where quartz deposits are located near the surface but cover a more extensive area, open-pit mining might be employed.
- Drilling and Blasting: For deeper quartz deposits, exploration may involve drilling boreholes and using explosives for extraction.
- Manual and Mechanized Mining: Depending on the scale of operations, both manual (artisanal) and mechanized mining techniques may be used.

v. Processing of Quartz:

Once extracted, quartz undergoes processing to meet specific industrial requirements:

- Crushing and Grinding: The extracted quartz is crushed and ground into various sizes using crushers and mills.
- Purification: Depending on the intended use, quartz may undergo purification processes to remove impurities and achieve a high level of purity.
- Shaping and Finishing: Quartz can be shaped into various forms, including blocks, slabs, or specific shapes based on industrial requirements.
- Further Refinement: In some cases, quartz might undergo further treatment or refinement processes, especially for specialized applications such as electronics and optics.

vi. Identification of 6 Quartz Processing/Exploration Companies:

While specific companies might have operations related to quartz in Nigeria, including Nasarawa, here are six entities that might be involved in mining or processing activities related to quartz or other minerals:

1. Multiverse Mining and Exploration Plc
2. Dangote Group: Known for involvement in various mining activities.
3. Nigeria Baryte Mining and Processing Company Limited (NBPMC)
4. Segilola Resources Operating Limited
5. Tongyi Allied Mining Limited
6. Benedict Mining Company Limited