

[ Turn over

**Bachelor of Metallurgical Engg. Examination, 2023**  
**2<sup>nd</sup> Year, 1<sup>st</sup> Semester, Supplementary**  
**GEOLOGY AND MINERALS BENEFICIATION**

Time: Three Hours

Full Marks: 100

(50 marks for each part)

## Part-II

Use Separate Answer scripts for each part.

**Answer Question No.1 and any THREE from the rest**

1. a) Why streak rather than colour of a mineral is considered as a diagnostic property?  
What is lustre? On which factors does the lustre of a mineral depend? **10**
- b) Arrange the following in (i) Acid (ii) Basic & (iii) ultrabasic igneous rocks: **05**  
Granite, Rhyolite, Andesite, Basalt, Gabbro, Peridotite & Dunite.
- c) Arrange the following rocks according to decreasing SiO<sub>2</sub> content: **05**  
Gabbro, Granulite, Peridotite
  
2. Write a short notes on (any two): **2X5 =10**
  - a. Bowen's reaction series
  - b. Bauxite and its Indian resources
  - c. Lead-Zinc ores and its Indian resources
  - d. Classification of igneous rocks in relation to mineralogy
  
3. a) Mention the type of feldspar that is recorded in each of the following rocks: **5**  
Granite, Diorite, Pegmatite, Basalt
- b) Describe textural characters of Conglomerate, Gneiss and Phyllite. **5**
  
4. Define mineral. Is pearl a mineral? Arrange the following minerals in order of decreasing hardness-Apatite, Diamond, Fluorite and Gypsum. **10**
  
5. What is Mohs' Scale of hardness? Why the hardness of minerals is considered as a vector property? Distinguish between Ilmenite and Tourmaline on the basis of their physical properties. **10**
  
6. a) Group the following minerals under the classes-  
i) Oxides ii) Sulfides iii) Silicates and iv) Carbonates: **10**  
Amphibole, Magnetite, Pyroxene, Calcite, Galena, Ilmenite, Pyrite, Garnet, Biotite, Pyrolusite
- b) Is continental crust thinner than oceanic crust? What is the bulk composition of oceanic crust?