BANDED FERRUGINOUS QUARTZITE

12.01 This rock is banded; brownish or steel grey coloured layers alternate with dull white layers. These layers vary in mineral composition. The brown or grey layers contain iron oxides and fine grained garnets whereas the white layers are rich in quartz with few garnets. Due to differential weathering, the rock often shows a ribbed appearance.

12.02 The main constituents are opaque iron oxides, quartz and garnet and occasional biotite and sphene. The following is a description of the constituent minerals:

Opaque iron oxides

12.03 The opaque oxides constitute a maximum of 60% of the total bulk and rarely form massive ores. They occur as large xenomorphic crystals; automorphic to subautomorphic, and include mainly magnetite, frequent goethite and a few hematite crystals. Octahedral crystals of magnetite also develop in large amount at places and are identifiable in hand specimens. Magnetite is often martitised along octahedral cleavage cracks.

12.04 Study of the opaque minerals in reflected light under the ore-microscope gives the following results.
Magnetite is pale brown in colour, takes good polish without polishing scratches; it is hard, its reflectivity is moderately low. It is isotropic under crossed nicols. Martitisation along the octahedral cleavage directions is noted.

Martite is bright white in colour, takes good polish without polishing scratches; it is hard and with moderate reflectivity; distinctly anisotropic under the crossed nicols.

Goethite is pale grey to grey (with bluish tint) in colour, takes good polish without polishing scratches; it is hard and with low reflectivity. It is distinctly anisotropic with greyish yellow to brownish greenish grey polarisation colour. Characteristic colloform texture is seen.

Hematite is bright white in colour and generally occurs as veins in magnetites. It has moderate reflectivity.

Quartz

12.05 Quartz (maximum 60% of the total bulk) occurs as medium to coarse, xenomorphic crystals; lensoidal crystals or crystal aggregates define a schistosity (S2) by their parallel overlapping orientation at places. Dusty inclusions
(iron oxide probably) are common in quartz. Ferruginous materials (brown coloured) also occur along the cracks in quartz.

**Garnet**

12.06 Garnet forms a maximum of 20% of the total bulk and occurs as fine, xenomorphic crystals with frequent inclusions of dusty opaques and very fine grained quartz. This mineral usually occurs closely associated with opaques and are frequently limonitised.

**Biotite**

12.07 Biotite is a rare constituent of the rock and is brown coloured with inclusions of the fine opaques.

**Sphene**

12.08 Sphene occurs in a very low amount and is fine to medium grained, subautomorphic (lozenge- to wedge-shaped) in habit and is highly limonitised.

**Texture**

12.09 A banded structure is seen with alternating layers rich in iron minerals and quartz respectively.

12.10 The quartz crystals (or crystal aggregates) are often lensoidal in shape and arrange in parallel fashion
to define a schistosity ($S_2$). Otherwise, a granoblastic texture is shown by the quartz aggregates where the crystals are xenomorphic, equigranular and equidimensional.

12.11 The opaque minerals are irregular, inequidimensional and inequigranular but are highly interlocked.