AMCT09 CERAMIC RAW MATERIALS

UNIT-1 GENERAL GEOLOGY AND MINEROLOGY

1.1 Rocks- formation, characteristics,
1.2 Classification into igneous,
1.3 Sedimentary and metamorphic.
1.4 Minerals- formation, relation of mineral deposit to igneous activity,
1.5 Chemical and physical properties like composition, colour, streak, luster, fracture, cleavage, hardness, density and tenacity, elements of optical mineralogy.

UNIT-2 PLASTIC MATERIALS

2.1 Clay minerals. Clay structures- kaolinite and montmorillonite groups.
2.2 Geology of clay deposits.
2.3 Classification of clays- china clay, ball clay, fire clay, building clay etc.
2.4 Beneficiation of clays.
2.5 Clay properties- charged nature, cation exchange capacity,
2.6 Flow behaviour, plasticity, and effect of heating.
2.7 Mica, talc, pyrophyllite and wollastonite group- physical and chemical properties.

UNIT-3 FLUXES

3.1 Occurrence, properties and uses of natural fluxes
3.2 Feldspar group, nepheline syenite,
3.3 Cornish stone, lithium containing minerals.
3.4 Bone ash- preparation, properties and uses.

UNIT-4 SILICA AND SILICATE MATERIALS

4.1 Silica- occurrence, structure, polymorphic transformation,
4.2 Physical and chemical properties.
4.3 Silicate minerals
4.4 Quartz, sillimanite, kyanite, and alusite- properties and uses.

UNIT-5 SOTHER RAW MATERIALS

5.1 Bauxite, magnesite, dolomite, chromite, limestone, rutile,
5.2 Zircon, beryllia minerals, alumina, slag and ashes,
5.3 Cullet – occurrence, properties and uses.

References Books:

1. Norton F.H, Fine Ceramics: Technology and Applications, McGraw-Hill Co., NY, 1978.
2. Wilson M.J, Clay Mineralogy, Chapman and Hall, 1955.
3. Deer W.A, Howie R.A and Zussman J, Rock Forming Minerals, Longmans, London, 1967.