AMCT-18 REFRACTORIES- II

OBJECTIVE

To enable the students to have a sound knowledge about the various types of refractories used in the various applications.

OUTCOME

On completion of the course the students are expected to

- Have learnt the basics about refractories used in iron & steel industry.
- Have a sound knowledge about refractories used in non ferrous and non metallic industries.
- Have learnt about refractories used in glass and ceramic industry.
- Have learnt about the refractories used for insulation.
- Have a knowledge about special refractories used in space and atomic/nuclear energy.

UNIT I REFRACTORIES FOR IRON & STEEL INDUSTRY

Refractories used in - coke oven, blast furnace, open hearth furnace, LD converter, THF, EAF, IF, Ladle furnace, slide plate system, nozzle, shroud, continous casting, monolithics – gunning technique, refractory slag and metal interactions.

UNIT II REFRACTORIES FOR NON FERROUS & NON METALLIC INDUSTRIES

Refractories in non ferrous industries – copper, aluminum, lead - Refractories in non metal industries – hydrocarbon industry, fertilizer industry, cement industry.

UNIT III REFRACTORIES FOR GLASS AND CERAMIC INDUSTRY

Refractories for glass industry – refractory practices in sidewall, throat, forehearth and roof of glass tank, regenerator systems, refractories for ceramic industry – kiln design – LTM concept, kiln furniture's – types, properties, requirements – applications in different ceramic industry.

UNIT IV REFRACTORIES FOR INSULATION

Purpose of insulation – types of insulating materials and preparation of insulating refractories, ceramic fibre products – design and installation – ceramic coatings.

UNIT V REFRACTORIES FOR SPACE & NUCLEAR APPLICATIONS

Ceramics for space – materials used in space satellite, missiles, rockets nozzles, ceramics for nuclear reactors – types of reactors, structural ceramic materials, ceramic fuel elements, control rod elements.

TEXT BOOKS

1. D.N.Nandi, Handbook of Refractories, Tata McGraw Hill Publishing Co, New Delhi, 1991
2. Shaw K, Refractories & Their Uses, App. Science Publishers, UK,1972

REFERENCE

1. Chesters J.H, Steel Plant Refractories, 2nd Edn, United Steel Company Limited, UK, 1973