

**PMI6J002 IRON & STEEL MAKING (4-0)**  
**(Professional Elective Paper)**

**Module – I**

**(14 hours)**

Introduction to the subject: Blast Furnace Route for Iron Making, The Blast Furnace and its accessories, The burden and its preparation, Physical – Thermal and Chemical process in a Blast Furnace, Blast Furnace slag and its control, Control of hot metal composition, Blast Furnace plant and Accessories, Modern trends in Blast Furnace practice, Control of irregularities in the blast furnace, Performance of Blast Furnace over the years.

**Module – II**

**(10 hours)**

Alternative Methods: Need for alternative Methods, Sponge Iron production by using solid and gaseous reductants, Smelting Reduction Processes.

**Module – III**

**(08 hours)**

Modern Steel Making: Different routes of steelmaking. Oxygen Steelmaking: Top and Bottom blown converter processes, Hybrid processes. Electric Steel making: Electric Arc furnaces, Induction furnaces.

**Module – IV**

**(08 hours)**

Secondary Steel making, Casting of liquid steel: Ingot Casting of Steel, Continuous Casting of Steel ; Iron and Steel Scenario in India in the last decade.

**Test Books:**

1. A.Ghosh and A.Chatterjee: Ironmaking and Steelmaking Theory and Practice, Prentice-Hall of India Private Limited, 2008.
2. G. R. Bashforth, The Manufacture of Iron and Steel, vol.I, Chapman, London, 1962.
3. C. Bodsworth: Physical Chemistry of Iron & Steel Manufacture, Longman Green & Co.

**Reference Books:**

1. A.K. Biswas: Principles of Blast Furnace Iron making, SBA Publication, 1999
2. D.H. Wakelin (ed.): The Making, Shaping and Treating of Steel (Iron making Volume), The AISE Steel Foundation, 2004.
3. R.J. Fruehan (ed.): The Making, Shaping and Treating of Steel (Steel making Volume), The AISE Steel Foundation, 2004.