**DISCPLINE- METALLURGY**

**Name of the teacher- Sadashiba Patra**

Semester-3rd

Session-2024-25

Subject-Theory-4(Ferrous Metallurgy-1)

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| **Wk no** | **Day** | **Units to be covered** | **Remark** |
| **Wk-1****01/07/24 to 06/07/2024** | Day-1 | Introduction to Iron Making History of iron making difference between P.I, steel, cast iron etc. |  |
| Day-2 | Different raw materials required for pig iron making & their functions. |
| Day-3 | Discussion regarding deposits of iron ore, flux, coal in India with particular reference to Odisha. |
| Day-4 | Discussion regarding deposits of iron ore, flux, coal in India with particular reference to Odisha. |
| **Wk-2 08/07/2024 to 13/07/2024** | Day-1 | 2.1. Different types of ron ore |  |
| Day-2 | 2.2 composition and characteristics of raw materials.  |
| Day-3 | 2.3 composition and characteristics of raw materials. |
| Day-4 | Evaluation of iron ore. |
| **Wk-3 15/07/2024 to 20/07/2024** | Day-1 | Metallurgical coal difference between coal & Coke. |  |
| Day-2 | Required properties of coke for making iron. |
| Day-3 | Flux, it’s function & it’s type. |
| Day-4 | Flux, it’s type (Repeat) Evaluation of Flux. |
| **Wk-4 22/07/24 to 27/07/24** | Day-1 | Quality of Burgen (Physical quality & Chemical quality) |  |
| Day-2 | Introduction to Agglomeration of iron ore (Briquetting, Nodulising, Vaccum extrusion) |
| Day-3 | Agglomeration (sintering) |
| Day-4 | Agglomeration pettetising |
| **Wk-5 29/7/24 to 03/08/24** | Day-1 | Blast F/C Fuel- Coke- Functions of coke & quality requirements. |  |
| Day-2 | Preparation of blast F/C fual in India. |
| Day-3 | Auxilliary fuels & Fuel injections. |
| Day-4 | Factors affecting fuel consumption in B.F. |
| **Wk-6 05/08/24 to 10/08/24** | Day-1 | Review of the topics covered till now and class test-1 |  |
| Day-2 | Charging methods & processes. |
| Day-3 | Blowing in operation(Drying, filling, lighting operation unit routite  |
| Day-4 | Blowing out, Blowing down and banking of F/C |
| **Wk-7 12/8/24** **to 17/08/24** | Day-1 | Taping of liquid products Fanning of furnace. |  |
| Day-2 | Disposal of slaySlay granulation & their utilization. |
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| Day-3 | Blast furnace Accessories Blast Furnace Refractories for 1. Stack
2. Hearth Walls
3. Hearth Lining
4. Bosh Lining
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| Day-4 | Blast furnace cooling arrangement1. Shaft coolers
2. Hearth & bosh coolers.
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| **Wk-8 19/08/24 to 24 08/24** | Day-1 | Tap holes, tap hole drilling cast house |  |
| Day-2 | Tuyelrs Assembly |
| Day-3 | Charge hoasting appliances top charging system  |
| Day-4 | Blowers, boilers, pumps, gas cleaning plant. |
| **Wk-9 26/08/24 to 31/08/24** | Day-1 | Blast F/C stoves |  |
| Day-2 | Review on blast f/c operation & Accessories and class test-2. |
| Day-3 | Blast F/C irregularities 1. Handing
2. Seaftolding
 |
| Day-4 | 1. Slip
2. Chilled Hearth
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| **Wk-10 02/09/2024 to 07/09/24** | Day-1 | 1. Pillaring
2. Break out
 |  |
| Day-2 | 1. Chocking of gas off takes
2. Fowding & coke ejection through tap hole.
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| Day-3 | 1. Leaking tuyers, tapholes & coolers.
2. Channeling
 |
| Day-4 | Review of blast F/C irregulities. |
| **Wk-11 09/09/24 to 14/09/24** | Day-1 | Blast furnace profile  |  |
| Day-2 | Thermal, physical, chemical, profile |
| Day-3 | Thermal, physical, chemical, profile |
| Day-4 | Physical chemistry of B.F. |
| **Wk-12 16/09/24 to 21/09/24** | Day-1 | Reaction in Tuyelrs Zone |  |
| Day-2 | Reaction in Tuyelrs Zone |
| Day-3 | Reaction in Stack |
| Day-4 | Reaction in Stack |
| **Wk-13 23/09/24 to 28/09/24** | Day-1 | Reaction in Bosh |  |
| Day-2 | Reaction in Hearth |
| Day-3 | Review of reaction at different zones. |
| Day-4 | Efficiency of B.F process. |
| **Wk-14 30/09/24 to 05/10/24** | Day-1 | Direct and indirect reaction |  |
| Day-2 | Silicon reaction  |
| Day-3 | Sulphur Reaction  |
| Day-4 | Burden calcium for B.F. operation |  |
| **Wk-15 07/10/24 to 12/10/24** |  | PUJA HOLIDAYS |  |
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| **Wk-16 14/10/24 to 19/10/24** | Day-1 | Review of Blast F/C Reactions |  |
| Day-2 | Test on Blast F/C Reactions |
| Day-3 | Introduction to Modern developments in B.F. |
| **Wk-17 21/10/24 to 26/10/24** | Day-1 | Bell less charging |  |
| Day-2 | High Top pressure. |
| Day-3 | High Top pressure. |
| Day-4 | Humidification & oxygen enrichment of blast. |
| **Wk-18 28/10/24 to 02/11/24** | Day-1 | External Desiliconisation |  |
| Day-2 | External  |
| Day-3 | Review of moder developments in B.f. |
| Day-4 | Class Test |
| **Wk-19****04/11/24 to 08/11/2024** | Day-1 | Discussion of Preview questions |  |
| Day-2 | Discussion of Preview questions |
| Day-3 | Very similar test. |