| Govt. Polytechnic, Sonepur<br>Session: 2024-25 | | | |
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| Discipline:<br>**Metallurgy Engineering** | Semester:**5th** | Name of the TeachingFaculty: **Amulya kumar Sahoo** | |
| Subject:-<br>**HTFFF(TH2)** | No. of days/per week class allotted:**4** | Semester from Date: **01. 07. 2024** to Date: **8.11.2024**<br>No. of weeks: 15 | |
| **Week** | **Class Day** | **Module** | **Lecture Topics** |
| 1 | 1 | Chapter -1: Fluid Flow | Discuss types of fluid |
| | 2 | | Explain details ideal and real fluid. |
| | 3 | | Discuss the type of flow. |
| | 4 | Chapter -1: Fluid flow | Explain details stream line and turbulent flow. |
| 2 | 5 | | Explain detalis steady and unsteady flow. |
| | 6 | | State and explain Bernoullis equations. |
| | 7 | | Discuss the flow through orifices,Pitot tube and venturies meter. |
| | 8 | | Define and calculate loss of head(friction head) in staright pipes. |
| 3 | 9 | | Define various channel with sudden enlargement and sudden contraction. |
| | 10 | | -do- |
| | 11 | Chapter-2 : Heat Flow | Discuss the elementary idea of different mode of heat transfer. |
| | 12 | | -do- |
| 4 | 13 | | Define and derive fouries law. |
| | 14 | | Explain and calculate the steady state heat conduction through flat walls. |

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| | 15 | | -do- |
| | 16 | | Difine convection |
| 5 | 17 | | -do- |
| | 18 | Chapter-2: Heat Flow | Explain details various heat transfer mode. |
| | 19 | | Difine natural convection.. |
| | 20 | | Discuss about natural convection. |
| 6 | 21 | | Discuss about forced convection. |
| | 22 | | Explain details forced convection. |
| | 23 | | -do- |
| | 24 | | Tutorial Class |
| 7 | 25 | Chapter-2:Heat flow | Differentiate btween natural and forced convection. |
| | 26 | | Explain details radiations |
| | 27 | | State the stefan Boltzmann"s law |
| | 28 | | Discuss about emissivity of black bodies and grey bodies. |
| 8 | 29 | Chapter-3:Furnaces | Classify the furances based on uses. |
| | 30 | | Explains details Heat source and material movements. |
| | 31 | | -do- |
| | 32 | | Discuss about the following Metallurgical furances. |
| 9 | 33 | | Explain details soking pits, reheating furance. |
| | 34 | | Explains details heat tratement,smelting, and refining furnces. |
| | 35 | | Explains details Electric furances as arc,resistance,induction furances. |
| | 36 | | -do- |

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| 10 | 37 | Chapter-4: Furnaces | State principle of heat generation Electric arc furances etc. |
| | 38 | | Explains details Resistances furances. |
| | 39 | | -do- |
| | 40 | | Discuss about the induction furances. |
| 11 | 41 | | -do- |
| | 42 | Chapter-5: Furnaces | Discuss about on heat losses. |
| | 43 | | -do- |
| | 44 | | Explain details about heat balance and furance efficiency. |
| 12 | 45 | | -do- |
| | 46 | | Again explains details heat balance furance. |
| | 47 | | Reaction in different parts of blast furnace |
| | 48 | | -do- |
| 13 | 49 | | Tutorial classes |
| | 50 | | Tutorial classes |
| | 51 | Chapter-6:Furnaces | Explains details the type of heat recovery system.. |
| | 52 | | Discuss about the waste heat recovery system. |
| 14 | 53 | | -do- |
| | 54 | | Explain details the regeneration heat recovery system and recuperates. |
| | 55 | | Revision Class for Chapter 1,and 2 |
| | 56 | | Revision Class for Chapter 3&4 |
| 15 | 57 | | Revision Class for Chapter 5&6 |
| | 58 | | Class test |
| | 59 | | Important question discussion |
| | 60 | | Important question discussion |

| Learning Resources: | | | |
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| **Sl.No** | **Title of the Book** | **Name of Authors** | **Name of Publisher** |
| 1. | Elements of Fluid Mechanics | V.C .Sheshadri& U.Patankar. | Harcourt,Brace&World |
| 2. | Heat Transfer | Isa Chenkov& Sukomel. | Mir Publishers MOSCOW |
| 3. | Principles of Extractive Metallurgy | A.Ghosh&H.S.Ray | New Age |
| 4. | Metallurgical Furnaces | Krivandrim& Markov | Mir Publishers MOSCOW |
| 5. | Heat and Mass transfer | R.K.RAJPUT | S.CHAND |

Ameeya Kumar Sahoo
Date- 28/08/2024

Prepared By
Coordinator (A.K.Sahoo, Lect. Metallurgy)

28/08/24

HOD
Metallurgical Engg.

Academic – 28/8/24