GOVERNMENT POLYTECHNIC JAJPUR
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DEPARTMENT OF METALLURGICAL ENGINEERING

LESSON PLAN

Discipline: Metallurgy	Semester: 5th	Name of teaching faculty: Smruti Sangita Sahu (P.T.G.F)
Subject: H.T.F.F & F	No day/ week class: 04	No of week: 15 Session: Winter 2023 Dt: 1/08/23 to 30/11/23

Week	Class Day	Topic
1st	1st	Introduction to HTFF & F
	2nd	Discuss about Fluid Flow
	3rd	Discuss about types of Fluid
	4th	State & Explain Bernoullis Equation.
2nd	1st	Discuss the Flow through Orific
	2nd	Flow through pitot tube.
	3rd	Flow through Venturies (with Diagram)
	4th	Calculation of effect loss of Heat in straight pipe.
3rd	1st	Heat loss of channel with Sudden Enlargement.
	2nd	Discuss the Elementary Idea on different mode of HeT.
	3rd	Conduction, Convection, Radiation.
	4th	Define & derive the Fourier's law.
4th	1st	Explain Conduction through Flat surface/wall.
	2nd	Continue Conduction and Numerical
	3rd	continue Heat conduction
	4th	Define convection with Example.
5th	1st	Different between Natural and Forced convection.
	2nd	Define Natural Convection & forced convection with Full example and diagram.
	3rd	Difference between Natural convection and forced.
	4th	State the natural & force heat co-effiient.
6th	1st	Equation of convection, Numerical.
	2nd	Numerical & Question Answer.
	3rd	Define radiation with example.
	4th	State Stefan Boltzmann's law.
7th	1st	Numericals on Boltxmann's law.
	2nd	Numericals on Radiation, Conduction & Convection.
	3rd	Numericals on Conduction.
	4th	Define Emissivity of Black body & Grey body.
8th	1st	Discuss about different Kind of Furnace.
	2nd	Classify the Furnace based on use.
	3rd	Heat Source & material movements.
	4th	Soaking pit Furnace.

9th	1st	Reheating Furnace, full details with Diagram.
	2nd	It's different types.
	3rd	Discuss about Heat treatment Furnace with Diagram.
	4th	It's types, Uses and Applications.
10th	1st	Define discuss about Melting Furnaces.
	2nd	with diagrams uses and applications
	3rd	Define & discuss about smelting Furnaces.
	4th	with diagram, uses and applications.
11th	1st	Define & discuss about rebining furnaces
	2nd	with full details.
	3rd	State the principle of Heat
	4th	Generation in Electric furnace. Such as Arc, resistance & Induction)
12th	1st	Full details on Electric Furnace.
	2nd	Advantages and Disadvantages.
	3rd	Arc furnace application and uses. diagram
	4th	Advantages and disadvantages.
13th	1st	Resistance Furnace with diagram, uses and Application.
	2nd	Advantages and disadvantages.
	3rd	Induction furnaces with details.
	4th	Advantages and disadvantages.
14th	1st	Discuss of Heat loss with Equation.
	2nd	Discuss of Heat Balance with Equation.
	3rd	Discuss of furnance efficieney.
	4th	Explain the type of waste.
15th	1st	Heat Recovery.
	2nd	Full details about Regenerators.
	3rd	Full details about Recuperators.
	4th	Discussion Previous year Questions.

Smruti S. Sahu

Signature of faculty