GOVERNMENT POLYTECHNIC JAJPUR

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DEPARTMENT OF METALLURGICAL ENGINEERING

LESSON PLAN

Discipline Metallurgy	Semester: 5th	*Name of teaching faculty: Hari Shankar Dehuria P.T.G.I in metallurgy*
Subject H.T.F.F.M.F	No day/ week class: 4	No of week: 16 Session: winter 2022
Week	Class Day	Topic
1st	1st	Introduction to HTFFMF
	2nd	Discuss about Fluid Flow
	3rd	Discuss about types of Fluids (Ideal & Real)
	4th	Discuss the types of Flow (Streamline & Turbulent)
	5th	
2nd	1st	State & Explain Bernoullis Equation.
	2nd	Discuss the flow through Orifice.
	3rd	Continue about Orifice.
	4th	Flow through Pitot tube.
	5th	
3rd	1st	Continue. Pitot tube
	2nd	Discuss flow through Venturies (with Diagram)
	3rd	Calculation of Heat Loss of Heat in Straight Pipe.
	4th	Heat loss of Channel with Sudden Enlargement
	5th	
4th	1st	Discuss the Elementry Idea on different mode of Heat transfer Conduction, Convection, Radiation
	2nd	Define & derive the Fourier's law.
	3rd	
	4th	Explain Conduction through flat Surface/Wall
	5th	
5th	1st	Continue. Con Calculation the Steady state heat Conduction through flat wall.
	2nd	Continue Heat Conduction through flat Wall.
	3rd	Define Convection, with Example.
	4th	Different between Natural & Force Convection.
	5th	
	1st	Define Natural Convection & Force Convection with full Example.
	2nd	& Diagram.

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6th	3rd	Different between Natural Convection & Forca Convection.
	4th	State The Natural & force heat
	5th	
7th	1st	Equation of Convection, Numerical.
	2nd	Numerical & Question Answer.
	3rd	Define radiation with example.
	4th	State Stefan Boltzmann's Laws.
	5th	
8th	1st	Numericals on Boltzmann's law
	2nd	Numericals on Radiation, Conduction & Convection.
	3rd	Numerical on Conduction.
	4th	Define Emissivity of Black Body & Grey Body.
	5th	
9th	1st	Discuss about different Kind of Furnace.
	2nd	Classify the furnace based on use,
	3rd	heat source & material movements.
	4th	Soaking pit Furnace
	5th	
10th	1st	Reheating Furnace, full detail with Diagram
	2nd	with its different types.
	3rd	Discuss about Heat treatment Furnace
	4th	with full Diagram, Types, use, Application, Reversion.
	5th	
11th	1st	Define discuss about Melting furnace
	2nd	with diagram, labeling, Use, Application.
	3rd	Define & discuss about annealing furnace
	4th	with Diagram, labelling, use.
	5th	
12th	1st	Define Refining furnace, with full details.
	2nd	Write the principle of Heat
	3rd	Generation in Electric furnace
	4th	such as Arc, resistance & Induction.
	5th	
13th	1st	Full detail about Electric furnace
	2nd	with Diagram, Use & Application.
	3rd	Advantages & disadvantages.
	4th	Arc furnace application, Use, Diagram, Advantage & Disadvantage
	5th	
	1st	Resistance Furnace, Diagram, Application, Use.

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14th	2nd	Advantages & Disadvantages.
	3rd	Induction Furnace full detail with diagram. Application Advantage & Disadvantages.
	4th	
	5th	
15th	1st	Revision of Everything.
	2nd	Discuss of Heat loss with Equation.
	3rd	Discuss of Heat Balance with Equation.
	4th	Discuss of furnace Efficiency
	5th	
16th	1st	Explain the type of Waste Heat Recovery System.
	2nd	Full Detail about Regenerators
	3rd	Full Detail about Recuperators
	4th	Revision. Doubt Class.
	5th	

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