GOVERNMENT POLYTECHNIC JAJPUR

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DEPARTMENT OF METALLURGICAL ENGINEERING

LESSON PLAN

Discipline	Semester 5th	Name of teaching faculty: Smruti Sangita Sahu P.T.G.F in metallurgy
Subject HTFFnF	No day/ week class: 4	No of week: 16 Session: Winter 2024 Semester from Date:- 1/7/24 to Date :- 8/11/24
Week	**Class Day**	**Topic**
1st	1st	Discuss about heat transfer,fluid flow and furnace
	2nd	Discuss about fluid flow
	3rd	Discuss about types of fluid
	4th	Discuss about properties of fluid
2nd	1st	State and explain Bernoulli's equation based on law of mass conservation
	2nd	Derived Bernoulli's equation from Euler's equation of motion
	3rd	Discuss the flow through Orific with diagram
	4th	Discuss the flow through Pitot tube with diagram
3rd	1st	Discuss the flow through Venturies with diagram
	2nd	Calculation of effect loss of Heat in straight pipe
	3rd	Heat loss of channel with sudden Enlargement
	4th	Heat loss of channel with sudden contraction
4th	1st	Discuss the elementary Ideas on different mode of heat transfer
	2nd	conduction, convection, radiation
	3rd	Define and derive the Fourier's law
	4th	Explain conduction through flat suface/wall
5th	1st	Explain conduction through composite suface/wall
	2nd	Define convection with examples
	3rd	Difference between Natural and Forced convection
	4th	Define natural and forced convection with example
6th	1st	State the natural and forced heat co-efficient
	2nd	Assignment and Quiz Test
	3rd	Define radiation with examples
	4th	State Stefan Boltzmann's law
	1st	Numerical on radiation, conduction, convection

7th	2nd	Define emissivity of Black body and Grey body
	3rd	Oral test in conduction,convection and radiation
	4th	Discussion previous years semester questions
8th	1st	Discuss about different kind of furnace
	2nd	Classify the furnace based on use
	3rd	Heat source and materials movement
	4th	Soaking pit furnace
9th	1st	Reheating furnace, full details with diagram
	2nd	It's different types,uses and application
	3rd	Heat treatment furnace with diagram
	4th	It's different types,uses and application
10th	1st	Discuss about melting furnace
	2nd	with diagram, uses and application
	3rd	Discuss about smelting furnace
	4th	with diagram, uses and application
11th	1st	Discuss about refining furnace
	2nd	with diagram, uses and application
	3rd	State the principle of heat generation in electric furnace
	4th	Arc furnace and resistance furnace
12th	1st	Full details on electric furnace
	2nd	Advantages and disadvantages
	3rd	Discuss about arc furnace with diagram
	4th	Advantages and disadvantages ,uses and applications
13th	1st	Discuss about Resistance furnace with diagram
	2nd	Advantages and disadvantages ,uses and applications
	3rd	Discuss on induction furnace
	4th	Advantages and disadvantages ,uses and applications
14th	1st	Discuss of heat loss with equation
	2nd	Discuss of heat balance with equation
	3rd	Discuss about furnace efficiency
	4th	Explain the types of waste heat recovery
15th	1st	Full details about regenerators
	2nd	Full details about recuperators
	3rd	Revision on Heat transfer fluid flow and furnace
	4th	continue the Revision
16th	1st	Doubt clearing
	2nd	Discussion previous years semester questions
	3rd	Selection question in exam point of view
	4th	Internal Assessment

SSSahu
1/7/24
Signature of faculty