

GOVERNMENT POLYTECHNIC JAJPUR

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DEPARTMENT OF METALLURGICAL ENGINEERING

LESSON PLAN

Discipline Metallurgy	Semester 3rd	Name of teaching faculty: Biren Kumar Samal P.T.G.F in metallurgy
Subject F&R(Theo- ry)	No day/ week class: 4	No of week: 16 Session: Winter 2022
Week	Class Day	Topic
1st	1st	Fundamental concept of fuel with different example
	2nd	Write the definition of fuel and its chemical reaction
	3rd	Classify the fuel with examples
	4th	Detail discussion about importance of Solid, Liquid and Gaseous fuels
2nd	1st	Describe different fuels and resources of india
	2nd	Discuss the Solid fuel and different solid fuel
	3rd	Explain the origin of coal
	4th	Discuss the Composition of coal and calorific value
3rd	1st	Discuss the characteristics and significance of constituents
	2nd	Distinguish between proximate and ultimate analysis
	3rd	Discuss the proximate analysis with formula
	4th	Define the calorific value of coal
4th	1st	Low and High calorific value
	2nd	Describe coking properties and swelling index of coal
	3rd	Discuss the criteria of selection of metallurgical coal.
	4th	Explain the carbonization of coal
5th	1st	Differentiate between high temperature carbonization and low temperature carbonization
	2nd	Detail discussion about high temp carbonization
	3rd	State the merits and demerits of H.T.C and L.T.C
	4th	Discuss different tests carried out for coke(Shatter and Micum index)
6th	1st	Discussion of previous years semester question
	2nd	M.C.Q question test
	3rd	Revision of solid fuel and oral test of student

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	4th	Class test-1
7th	1st	Fundamental of liquid fuel with example
	2nd	Explain different Origin of petroleum with reaction
	3rd	Discuss the properties of petroleum products
	4th	Discuss the distillation process of crude petroleum
8th	1st	Draw the sketch of fractional distillation
	2nd	Explain the production of coal tar
	3rd	Discuss the Uses of coal tar
	4th	Introduction of Testing of liquid Fuels
9th	1st	Discuss the viscosity of liquid fuel
	2nd	Discuss the flash and fire point of liquid fuel with diagram
	3rd	Discuss the cloud and pour point with diagram
	4th	Compare between octane and cetane number
10th	1st	State the gaseous fuel
	2nd	Explain the water gas with diagram
	3rd	Explain the producer gas with diagram
	4th	Compare between water and producer gas
11th	1st	Short description of coke oven gas with uses
	2nd	Short description of B/F gas with their uses
	3rd	Compare between coke oven gas and blast furnace gas
	4th	Compare between solid, liquid and gaseous.
12th	1st	M.C.Q question test
	2nd	Oral test question liquid and gaseous fuel
	3rd	Revision and doubt clearing class
	4th	Class test-2
13th	1st	Discuss the elementary principle of combustion
	2nd	Hess's law of constant heat summation, Kirchoff's law.
	3rd	Basic concept of Refractories
	4th	Define and Classify Refractories
14th	1st	Explain the desirable properties of Refractories in details
	2nd	Discuss the methods of manufacturing and properties of silica
	3rd	Discuss the methods of manufacturing and properties of fire clay
	4th	Discuss the methods of manufacturing and properties of magnesia
15th	1st	Discuss the methods of manufacturing and properties of chrome magnesite
	2nd	Discuss the methods of manufacturing and properties of magnesia carbon bricks
	3rd	Discuss the methods of manufacturing and properties of graphite

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16th	4th	Discuss about the special refractories like high alumina
	1st	Discuss about the special refractories like mullite, SiC.
	2nd	Discuss about the special refractories like Zirconia
	3rd	Question discussion short previous semester question Selection question given in exam point view
	4th	Internal Assessment

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