GOVT. POLYTECHNIC MAYURBHANJ

LESSON PLAN OF FUELS & REFRACTORIES

WINTER (2023-2024)

Discipline: Metallurgy Engineering		Semester: 3rd		Name of the Teaching Faculty: ARABINDA NAYAK
Subject: Fuels and Refractories (FR) Course code: TH-3		No. of Days / per week class allotted: 04		Semester From date: 01.08.2023 To Date : 08.12.2023
MONTH	**Week**	**Day**	**Unit**	**Topics**
AUGUST	1st	1st	UNIT-1	Define fuel and definition of fuel
		2nd		Classify the types of fuel
		3rd		Importants of solid
		4th		Importants of Liquid and gaseous fuel
	2nd	1st		Different fuels and resources of india
		2nd		Importance and uses of different types of fuels
		3rd	UNIT-2	Coal and Properties of coal
		4th		Origin of coal
	3rd	1st		State the composition of coal
		2nd		Discuss characteristics of coal
		3rd		Holiday (Muharram)
		4th		Discuss the significance of constituents of coal
	4th	1st		Surprise Test
		2nd		Discussion about proximate analysis
		3rd		Discuss about Ultimate analysis

		4th		Distinguish between proximate and ultimate analysis
	5th	1st		Surprise test
		2nd		Doubt clear class
SEPTEMBER	1st	3rd		Define the calorific value of coal
		4th		Motivational Seminar
	2nd	1st		Describe coking properties of coal
		2nd		Describe swelling index of coal
		3rd		Holiday (Nuakhai)
		4th		Discuss the criteria of selection of metallurgical coal
	3rd	1st		Discuss the scope and objectives of carbonization of coal
		2nd		Surprise Test
		3rd		Explain carbonization of coal
		4th		Independenceday

	4th	1st		Jhulana Purnima (Holiday)
		2nd		Discuss High temperature carbonization process
		3rd		Discuss Low temperature carbonization process
	5th	1st		Janmastami (Holiday)
		2nd		Differentiate between high temperature carbonization and low temperature carbonization process
		3rd		State the merits and demerits of H.T.C and L.T.C
		4th		Discuss different test carried out for coke – Shatter test
				Discuss micum index test for coke
OCTOBER	1st	1st		Explain origin of petroleum
		2nd		Explain constituents of pertoleum
		4th		Discuss the properties of petroleum product
	2nd	1st		Discuss the distillation process of crude petroleum
		2nd		With diagram discuss the distillation of petroleum
		3rd		Explain the production of coal tar and uses of coal tar
		4th	**UNIT-3**	Define specific gravity
	3rd	1st		Birthday of Mohammed (Holiday)
		2nd		Discuss viscosity,flash point,
		3rd		Internal Assessment
		4th		Internal Assessment
	4th	1st		Define cloud point and pour point
		2nd		Define aniline point ,octane number ,cetane number
		3rd		Discuss the methods of testing of following properties: Specific gravity, viscosity, flash point, cloud point and pour point.
		4th	**UNIT-4**	Explain the production and utilization of following gaseous fuels: Methane, Water gas, Producer gas.

	5th	1st		Explain the production and utilization of following gaseous fuels: Carbureted water gas, Coke oven gas, blast furnace gas, natural gas, mixed gas
		2nd	UNIT-5	Discuss the elementary principle of combustion , Hess's law of constant heat summation.
NOVEMBER	1st	2nd		Kirchoff's law , Workout simple combustion calculation.
		3rd		Workout simple combustion calculation.
	2nd	4th		Durga puja Holiday
		3rd		Durga puja Holiday
		2nd		Durga puja holiday
		1st		Surprise test
	3rd	1st	UNIT-6	Define and classify refractories, Explain the desirable properties of refractories in datails.
		2nd		Discuss the materials, methods of manufacturing and properties of silica , fire clay , magnesia, dolomite, chrome magnesite, graphite, magnesia carbon bricks.
		3rd		Discuss the materials, methods of manufacturing and properties of , chrome magnesite, graphite, magnesia carbon bricks.
		4th		Discuss about the special refractories like high alumina , mullite, SIC, Zirconia.
	4th	1st		Give criteria selection and types of refractories selected for blast furnace, open hearth, arc furnace.
		2nd		Give criteria selection and types of refractories selected for ladle furnace, soaking pit, coke oven.
		3rd		Cyclone Holiday
DECEMBER	1st	2nd		Give criteria selection and types of refractories selected for copper smelting flash , reverberatory .
		3rd		Revision on unit 1-5
		4th		Second Parents Meeting
	2nd	2nd		Revision on unit 6-10
		3rd		Revision on unit 6-10
		4th		Previous year question discussion

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