KIIT POLYTECHNIC Department of Metallurgical Engineering

LESSON PLAN

Session	::	Winter – 2022
Course Type	::	Theory
Semester/Branch	::	3 rd Semester, Metallurgical Engineering
Subject (with code)	::	Fuels and Refractories (Th-03)
Contact hours/week	::	4
Name of Faculty	::	Manas Ranjan Behera

SL. No.	CLASS ID	COURSE CONTENT	MODE OF DELIVERY	EXHIBIT/ REFERENCE
1	1	Definition of fuel.	Lecture (Explanation)	Study material
2	2	Classification of fuel.	Lecture (Explanation)	Study material
3	3	Importance of solid, liquid and gaseous fuels.	Lecture (Explanation)	Study material
4	4	Different fuels and resources of India.	Lecture (Explanation)	Elements of fuels, furnaces &refractories by O.P.Gupta
5	5	Class Test/Assignment Evaluation		
6	6	Origin of coal.	Lecture (Explanation)	Study material
7	7	Composition of coal.	Lecture (Explanation)	Study material
8	8	Characteristics and significance of constituents.	Lecture (Explanation)	Study material
9	9	Difference between proximate and ultimate analysis.	Lecture (Explanation)	Study material
10	10	Calorific value of coal.	Flipped class	Study material
11	11	Coking properties and swelling index of coal. Studio based		Study material
12	12	Criteria for selection of metallurgical coal.	Lecture (Explanation)	Elements of fuels, furnaces &refractories by O.P.Gupta
13	13	Scope and objectives of carbonization of coal.	Lecture (Explanation)	Study material
14	14	Carbonization of coal.	Lecture (Explanation)	Study material
15	15	Difference between high temperature carbonization and low temperature carbonization.	Studio based	Study material
16	16	Merits and demerits of HTC and	Lecture	Study material

		LTC.	(Explanation)	
17	17	Different tests carried out for coke.	Lecture (Explanation)	Study material
18	18	Class Test/Assignment Evaluation		
19	19	Origin and constitution of petroleum.	Studio based	Study material
20	20	Properties of petroleum products.	Lecture	Study material
			(Explanation)	
21	21	Distillation process of crude	Lecture	Study material
		petroleum.	(Explanation)	
23	23	Production and uses of coal tar.	Lecture	Study material
			(Explanation)	
24	24	Definition of specific gravity, flash	Lecture	
		point, cloud point and pour point.	(Explanation)	Elements of fuels,
				furnaces & refractories
				by O.P.Gupta
25	25	Definition of aniline point octane	Lecture	Study material
20	20	number and cetane number.	(Explanation)	Study material
26	26	Methods of testing of specific gravity,	Lecture	Study material
-		viscosity and flash point.	(Explanation)	5
27	27	Methods of testing of cloud point and	Lecture	Study material
		pour point.	(Explanation)	
28	28	Class Test/Assignment Evaluation		
29	29	Production and utilization of of	Lecture	Study material
		methane gas.	(Explanation)	
30	30	Production and utilization of of water	Lecture	Study material
		gas.	(Explanation)	
31	31	Production and utilization of of produce	er gas.	
32	32	Production and utilization of of	Lecture	Study material
22	22	carbureted water gas.	(Explanation)	0, 1, , 1
33	33	oven gas.	Flipped class	Study material
34	34	Production and utilization of of blast	Lecture	Study material
		furnace gas.	(Explanation)	
35	35	Production and utilization of of	Lecture	Fuels and combustion
		natural gas.	(Explanation)	by Samir sarkar
36	36	Production and utilization of of mixed	Lecture	Study material
27	27	gas.	(Explanation)	
37	37	Class Test/Assignment Evaluation		
38	38	Elementary principle of combustion.	Lecture	Study material
		Hess's law of constant heat	(Explanation)	
		summation, Kirchoff's law.		
39	39	Simple combustion calculation.	Lecture	Study material
			(Explanation)	
40	40	Class Test/Assignment Evaluation		
41	41	Definition and classification of	Lecture	Study material
42	40	retractories.	(Explanation)	
42	42	Desirable properties of refractories	Lecture	Study material
42	42	Derre metericality with the first	(Explanation)	
42	42	Kaw materials, methods of	(Evaluation)	furnação furnationa
		silica, fireclay and magnesis briefs	(Explanation)	hy $\cap \mathbb{P}$ Gunta
		sinca, meetay and magnesia bricks.		by O.I.Oupia

43	43	Raw materials, methods of	Lecture	Study material
		manufacturing and properties of	(Explanation)	
		dolomite, chrome magnesite, graphite		
		and magnesia carbon bricks.		
44	44	Ladder diagram for DOL starter,	Lecture	Study material
		Stair case lighting,	(Explanation)	
45	45	Class Test/Assignment Evaluation		
46	46	Special refractories like high alumina,	Lecture	Study material
		mullite, SIC, zirconia.	(Explanation)	
47	47	Criteria for selection and types of	Lecture	Study material
		refractories selected for blast furnace,	(Explanation)	
		LD, open hearth,arc		
		furnace, ladle, soaking pit, coke oven,		
		reheating furnaces, copper smelting		
		flash and reverberatory furnaces.		
48	48	Class Test/Assignment Evaluation		

Manas Ranjan Behera Signature of Concern Teacher