| LESSON PLAN:-3RD SEMESTER(2020) | | | | |
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| SUBJECT:-FUEL AND REFRACTORIES | | | | |
| NAME OF THE FACULTY:-ARABINDA NAYAK | | | | |
| **MONTH** | **MODULE/UNIT** | **COURSE TO BE COVERED** | **CLASSES REQUIRED** | **REMARK** |
| AUG | 1 | **FUELS** | **4** | |
| | | Define the fuel | 1 | |
| | | Classify the types of fuel | 2 | |
| | | State the importance of Solid, Liquid and Gaseous fuels | 2 | |
| | 2 | **SOLID FUELS** | 12 | |
| | | COAL :<br>I. Explain the origin of coal<br>II. State the composition of coal<br>III. Discuss the characteristics and significance of constituents<br>IV. Distinguish between proximate and ultimate analysis<br>V. Define the calorific value of coal | 5 | |
| SEPT | | COKE :<br>II. Discuss the scope and objectives of carbonization of coal<br>III. Explain the carbonization of coal<br>IV. Differentiate between high temperature carbonization and low temperature carbonization<br>V. State the merits and demerits of H.T.C and L.T.C<br>VI. Discuss the criteria of selection of metallurgical coal | 5 | |
| | | Coke Testing<br>I. Define and explain shatter and mecum index | 2 | |
| | | **LIQUID FUELS** | 10 | |
| | | Explain origin and constitution | 1 | |

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| | | of petroleum | | |
| OCT | | Discuss the properties of petroleum products | 1 | |
| | | Discuss the distillation process of crude petroleum | 1 | |
| | | Explain the production and uses of coal tar | 1 | |
| | | Testing of liquid Fuels:<br>I. Define specific gravity, viscosity, flash point, cloud point & pour point, aniline point, octane number and cetane number. | 3 | |
| | | II. Discuss the methods of testing of following properties: Specific gravity, viscosity, flash point, cloud point and pour point | 3 | |
| | | **GASEOUS FUEL** | 10 | |
| | | Explain the production and utilization of following gaseous fuels:<br>Methane, water gas, producer gas | 5 | |
| | | Explain the production and utilization of following gaseous fuels: carbureted water gas, coke oven gas, blast furnace gas, natural gas, mixed gas. | 5 | |
| NOV | | **COMBUSTION** | 8 | |
| | | I. Discuss the elementary principle of combustion, Hess's law of constant heat summation, Kirchoff's law. | 4 | |
| | | II. Work out simple combustion calculation. | 4 | |
| | | **REFRACTORIES** | 8 | |
| | | I. Classify different types of | 2 | |

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| | | Refractories basing on acid, base and neutral | | |
| | | II. Explain the desirable properties of Refractories in details | 2 | |
| | | III. Discuss the raw – materials, methods of manufacturing and properties of silica, fire clay, magnesia, dolomite, chrome magnesite, graphite and magnesia carbon bricks. | 4 | |
| DEC | | **SPECIAL REFACTORIES** | 3 | |
| | | Discuss about the special refractories like high alumina, mullite, SIC, Zirconia | 3 | |
| | | **SELECTION OF REFRACTORIES** | 5 | |
| | | Give criteria for selection and types of refractories selected for blast furnace, L.D., open hearth, arc furnace, ladle, soaking pit, coke oven, reheating furnaces, copper smelting flash and reverberatory furnaces. | 5 | |