

LESSON PLAN-4th SEMESTER (AY2021-22)

Subject- **THERMAL ENGINEERING-II (TH-4)**

Name of the Faculty- HADU BANDHU DAKUA

| MONTH | CHAPTER/UNIT | COURSE TO BE COVERED | CLASSES REQUIRED | REMARKS (IF ANY) |
|-------|------------------|--|------------------|------------------|
| | Chapter-1 | Performance of I.C engine | 08 | |
| | 1.1 | Define mechanical efficiency, Indicated thermal efficiency, Relative Efficiency, brake thermal efficiency | 2 | |
| | 1.1 | Overall efficiency ,Mean effective pressure & specific fuel consumption. | 2 | |
| | 1.2 | Define air-fuel ratio & calorific value of fuel. | 1 | |
| | 1.3 | Work out problems to determine efficiencies & specific fuel consumption. | 3 | |
| | Chapter-2 | Air Compressor | 12 | |
| | 2.1 | Explain functions of compressor & industrial use of compressor air | 1 | |
| | 2.2 | Classify air compressor & principle of operation. | 1 | |
| | 2.3 | Describe the parts and working principle of reciprocating Air compressor | 2 | |
| | 2.4 | Explain the terminology of reciprocating compressor such as bore, stroke, pressure ratio free air delivered & Volumetric efficiency. | 2 | |
| | 2.5 | Derive the work done of single stage & two stage compressor with and without clearance. | 3 | |
| | 2.6 | Solve simple problems (without clearance only) | 3 | |
| | Chapter-3 | Properties of Steam | 12 | |
| | 3.1 | Difference between gas & vapours. | 1 | |
| | 3.2 | Formation of steam. | 1 | |
| | 3.3 | Representation on P-V, T-S, H-S, & T-H diagram. | 1 | |
| | 3.4 | Definition & Properties of Steam. | 1 | |
| | 3.5 | Use of steam table & mollier chart for finding unknown properties. | 2 | |
| | 3.6. | Non flow & flow process of vapour | 2 | |
| | 3.7. | P-V, T-S & H-S, diagram | 1 | |
| | 3.8 | Determine the changes in properties & solve simple numerical | 3 | |
| | Chapter-4 | Steam Generator | 12 | |
| | 4.1 | Classification & types of Boiler. | 1 | |
| | 4.2 | Important terms for Boiler. | 1 | |
| | 4.3. | Comparison between fire tube & Water | 2 | |

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| | | tube Boiler | | |
| | 4.4 | Description & working of common boilers (Cochran, Lancashire, Babcock & Wilcox Boiler) | 4 | |
| | 4.5 | Boiler Draught (Forced, induced & balanced) | 2 | |
| | 4.6 | Boiler mountings & accessories | 2 | |
| | Chapter-5 | Steam Power Cycles | 08 | |
| | 5.1, 5.2 | Carnot cycle with vapour. Derive work & efficiency of the cycle. | 1 | |
| | 5.3, 5.3.1 | Rankine cycle. Representation in P-V, T-S & h-s diagram. | 1 | |
| | 5.3.2 | Derive Work & Efficiency. | 1 | |
| | 5.3.3 | Effect of Various end conditions in Rankine cycle. | 1 | |
| | 5.3.4. | Reheat cycle & regenerative Cycle | 2 | |
| | 5.4 | Solve simple numerical on Carnot vapour Cycle & Rankine Cycle. | 2 | |
| | Chapter-6 | Heat Transfer | 08 | |
| | 6.1 | Modes of Heat Transfer (Conduction, Convection, Radiation). | 2 | |
| | 6.2 | Fourier law of heat conduction and thermal conductivity (k). | 1 | |
| | 6.3 | Newton's laws of cooling. | 1 | |
| | 6.4 | Radiation heat transfer (Stefan, Boltzmann & Kirchoff's law) only statement, no derivation & no numerical problem. | 2 | |
| | 6.5 | Black body Radiation, Definition of Emissivity, absorptivity, & transmissibility | 2 | |