



VISION

"To excelling the field of technology by creating technocrats with value-based "professionalism."

MISSION

- To provide technical expertise to fulfill the need to the industry.
- To impact ethical values & professional responsibilities.
- To achieve excellence in academics.

SYAE

Subject Name: Heat Power Engineering (22441)

Assignment No: 1

Course Outcome: CO404.1

Questions.

1. Differentiate between open and close system.
2. State Zeroth Law of thermodynamics.
3. Draw P-V and T-S Diagram for Isobaric process and Isentropic process.
4. Write equation for i) Change in internal energy ii) Work done for polytropic process.
5. Draw dual cycle on P-V and T-S diagram and write the process involved in it.
6. Draw P-V and T-S diagram of Otto cycle and write its equation for thermal efficiency with its significance.
7. An engine working on Otto cycle has volume of 0.5m^3 , pressure of 1 bar and temperature of 27°C at the beginning of compression. If at the end of compression, pressure is 10 bar. Find:-
 - Mass of air
 - Volume and temperature at the end of compression.
8. Two kg of gas at 50°C is heated at constant volume until pressure is double. Determine i) Final temperature ii) Change in internal energy, Take $C_v = 0.70\text{kJ/kgK}$
9. Draw P-V diagram of Diesel Cycle.
10. Explain the following terms with examples.
 - i) Conduction
 - ii) Convection
 - iii) Radiation

Course co-ordinator :-Mrs. Pushpa Patil

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Subject Name: Heat Power Engineering (22441)

Assignment No: 2

Course Outcome: CO404.2

Questions.

1. Define LCV of fuel and write its unit.
2. Explain the combustion chemistry of carbon with incomplete combustion and complete combustion.
3. Describe with neat sketch construction and working of Bomb Calorimeter. Write Dulong's formula and state its use.
4. A coal has following composition by mass:
82% C, H₂ = 5%, S = 1.5%, O₂ = 2.4, N₂ = 1% and remaining is ash. Find HCV and LCV of fuel.
5. Estimate higher and lower calorific value of a coal having following composition by mass carbon 81%, Hydrogen. 7%, Oxygen 8%, Nitrogen 2.5%, Sulphur 1.5% and remaining is ash.
6. A sample of coal has the following composition on the mass basis : carbon 82 %, hydrogen 8 %, sulphur 2 %, oxygen 4% and ash 4%. Calculate using Dulong's formula higher and lower calorific value of fuel.

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Subject Name: Heat Power Engineering (22441)

Assignment No: 3

Course Outcome: CO404.3

Questions.

1. Define:-
 - i. Dryness Fraction
 - ii. Degree of superheat
2. Describe working of two pass surface condenser with a neat sketch.
3. A steam engine obtains steam from a boiler at a pressure of 15 bars and 0.98dry. It was observed that the steam lost 21 kJ of heat per kg as it flows through the pipeline, pressure remains constant. Calculate dryness fraction of steam, at the engine end of the pipeline. (Take $h_f=844.6$ kJ/kg and $h_g=1945.3$ kJ/kg at 15 bar pressure).
4. Sketch energy flow diagram for steam boiler.
5. Distinguish between fire tube boiler and water tube boiler.(any 4 points)
6. Draw a neat sketch of two pass down flow type surface condenser. Describe its construction and working.
7. Write classification of steam turbine.

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Subject Name: Heat Power Engineering (22441)

Assignment No: 4

Course Outcome: CO404.4

Questions.

1. Define following terms related to air compressor;
 - i) I.P.
 - ii) B.P
 - iii) Volumetric efficiency
 - iv) Compressor efficiency
 - v) Isothermal efficiency
 - vi) Capacity of compressor.
2. Write uses of compressed air. (Any four)
3. Suggest energy conservation techniques used in air compressor.
4. State various factors affecting volumetric efficiency of air compressor.
5. Describe with neat sketch working of two stage reciprocating air compressor with P-V diagram.
6. Compare centrifugal and axial compressor on the basis of
 - i) Working principle
 - ii) Capacity
 - iii) Application
 - iv) Maintenance
 - v) Delivery pressure range
 - vi) Nature of flow

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Subject Name: Heat Power Engineering (22441)

Assignment No: 5

Course Outcome: CO404.5

Questions.

1. Write advantages and limitations of wind power plant in relation to human aspects of the environment.
2. Write the strength and limitation of biomass power plant.
3. Explain the use of solar energy to generate electricity with neat sketch. Write the two places where solar energy power plants are based.
4. Explain the construction and working of electricity generation through photovoltaic system.
5. List different renewable energy sources and state the advantages of solar energy and explain how the power is saved due to solar water heating.
6. State the advantages of tidal energy Describe government policy (MNRE) for harnessing the potential power of renewable energy sources.
7. State two strengths and two limitations of following power plants in relation to human aspects of environment (i) Solar power plant (ii) Geo-thermal power plant (iii) Biomass power plant.

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Subject Name: Heat Power Engineering (22441)

Assignment No: 6

Course Outcome: CO404.6

Questions.

1. Explain cogeneration system on the basis of sequence of energy use.
2. Describe the need of analysis of coal. Explain ultimate analysis and proximate analysis of coal.
3. Write advantages and limitations of wind power plant in relation to human aspects of the environment.
4. Define energy audit and explain different types of energy audits.
5. Explain the importance of energy conservation. Also state its impact on environment and economy.
6. State the factors governing the selection of cogeneration system write the advantages of cogeneration.
7. Describe the energy audit procedure and instruments that are use in energy audit.

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TYME

Subject Name: RAC (22660)

Assignment No: 6

Course Outcome: CO605.6

Questions.

1. Design the layout of "summer air conditioning system" for Delhi city
2. Enlist insulating materials used in Refrigeration field.
3. Sketch and explain extended plenum duct system.
4. List different pressure losses in ducts.
5. Explain the working of window air conditioner with neat sketch.
6. Enlist different types of fans used in air-conditioning system. Explain anyone with a sketch.
7. Explain with neat sketch the working of Automobile Air conditioning.
8. Explain with neat sketch the working of 'Direct central Air conditioning system'

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