



DEPARTMENT OF MECHANICAL ENGINEERING

VISION

“To incorporate technical & professional skills in Mechanical Engineers to fulfill industrial & social needs”.

MISSION

- *To educate, guide, and mentor the students for academic excellence.*
- *To develop technical skills and discipline among the students as per the requirement of the industry.*
- *To impart ethics & social values by arranging social activity.*

Subject Name: Power Engineering and Refrigeration (22562)

Date :-

Assignment No: - 1

Course Outcome: 502.1

Topic Name :- Internal Combustion Engines

1. Define the terms ‘Swept Volume’ and ‘Clearance Volume’ for an I.C. Engine.
 2. State two advantages of supercharging
 3. Compare SI and CI engines on the basis of following points : (i) Method of ignition (ii) Fuel used (iii) Compression ratio (iv) Noise and Vibrations
 4. Represent Otto cycle and Diesel cycle on P-V and T-S diagrams.
 5. Draw the neat labelled valve timing diagram for four stroke petrol engine
 6. Draw the actual and theoretical indicator diagram for the 4 stroke engine. State the reasons for the change in diagram.
 7. In an otto cycle the temperature at the beginning and at the end of compression are 316 K and 590 K respectively .Calculate the air standard efficiency.
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Date of Submission :-

Assign By :- Mrs.Sarika Tushar Raut



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Subject Name: Power Engineering and Refrigeration (22562)

Date :-

Assignment No: - 2

Course Outcome: 502.2

Topic Name :- Testing of IC Engines and Emission Control

1. Define BSFC , MPFI ,MEP,BP,IP.
 2. Following observations are recorded during a trial on a four stroke diesel engine : Fuel supplied = 0.1 kg/min. Calorific value of fuel : 41,840 kJ/kg
Engine speed : 400 rpm Effective diameter of brake drum = 1 m Net load on the brake drum = 1000 N Mass flow rate of cooling water = 10 kg/min
Rise in cooling water temperature = 25 °C Air supplied : 6 kg/min
Exhaust gas temperature : 200 °C Specific heat of water : 4.186 kJ/kg °k
Specific heat of exhaust gas : 1 kJ/kg °k Room temperature = 30 °C
Prepare heat balance sheet on minute basis.
 3. A single cylinder four stroke diesel engine gave the following results :
Speed of the engine : 400 rpm Load on the brake : 370 N Diameter of the brake Drum : 1.2 m Fuel consumption : 2.8 kg/hr Calorific value of fuel : 41,800 kJ/kg
Cylinder diameter : 160 mm Piston stroke : 200 mm
Calculate : (i) Brake Power (ii) bsfc (iii) Brake thermal efficiency.
 4. Explain the effects of pollutants on the environment.
 5. Explain with neat sketch working of Infrared gas analyser.
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Subject Name: Fluid Mechanics and Machinery (313309)

Date :-

Assignment No :- 3

Course Outcome: 502.3

Topic Name :- Air Compressors

1. Give four classification of air compressors.
 2. A single stage air compressor delivers air at 5 bar. The suction temperature and pressure is 20C and 1 bar, respectively, and the volume of air entering the compressor is 2 m³/min. The index of compression is 1.2. Calculate Isothermal efficiency of the compressor.
 3. Differentiate between Centrifugal and Reciprocating compressor.
 4. Explain the working of a single stage single acting air compressor with a neat sketch.
 - 5.
 6. Explain the following terms : (i) Isothermal efficiency 2 (ii) Volumetric efficiency w.r.t. air compressor
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Subject Name: Fluid Mechanics and Machinery (313309)

Date :-

Assignment No :- 4

Course Outcome: 502.4

Topic Name :- Gas Turbine and Jet Propulsion

1. Explain the working of closed cycle gas turbines.
2. Represent Brayton cycle on P-V and T-S
3. Classify Gas turbines.
4. Differentiate between Closed cycle and open cycle gas turbine.
5. Explain with a neat sketch ,the working principle of a turbojet engine.
6. Draw schematic diagram of turbojet engine.

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Subject Name: Fluid Mechanics and Machinery (313309)

Date :-

Assignment No :- 5

Course Outcome: 502.5

Topic Name :- Refrigeration and Air conditioning

1. Explain the following terms used in refrigeration : (i) One tonne refrigeration (ii) COP
 2. In an electrically heated chamber, 300 m³ of moist air is heated to 313K. The initial conditions of the air are as follows : Dry bulb temperature = 303K Wet bulb temperature = 298K Pressure = 101.325 KPa Determine the (i) Amount of Sensible heat added (ii) Final relative humidity (iii) Final Wet bulb temperature (Use Psychrometric chart)
 3. Define SEER & EER.
 4. 400 kg of fruits are supplied to a cold storage at 19 C. The cold storage is maintained to the storage temperature of -5 C in 10
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hours. The latent heat of freezing is 105 kJ/kg and specific heat of fruit is 1.256 kJ/kg K. Find the refrigeration capacity of the plant.

5. Moist air at the rate of 30,000 m³/h (on a dry air basis) is blown through an adiabatic humidifier. Inlet conditions : DBT 40C & RH 15% Exit Conditions : DBT 25C & WBT 20C Determine the (i) Dew point (ii) Rate of moisture addition to air stream. (Use Psychrometric chart)

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