ARYAN SCHOOL OF ENGINEERING & TECHNOLOGY

Dicipline: Mechanical	Semester: 3rd.	Name of the Teaching Faculty: Dipti Ranjan Pattnayak	
Subject: Thermal Engineering - 1	No of Days/Week Class Allotted: 4	Semester From date: 15/9/22 To date	No.of Weeks:

WEEK	Class Day	Theory Topics
1st week 15.9.22 to 17.9.22	15.09.22 1st Thursday	1. Thermodynamic Concept and terminology :-
		1.1 Thermodynamic System closed, Isolated, open.
	16.09.22 2nd Friday.	1.2. Thermodynamic properties of a system. [Pressure Volume, temp. entropy.
	17.09.22 3rd Saturday.	1.2. Continuing thermodynamic properties. Enthalpy, Internal energy and units of measurement.
	4th	
	5th	
2nd week 19.9.22 to 24.9.22	19.09.22 1st Monday	1.3. Intensive and Extensive properties.
		1.6. Quasi Static process.
	20.09.22 2nd Tuesday.	1.4. Thermodynamic Process, path, cycle, State, path Function, point function.
	21.09.22 3rd Wednesday	1.5. Thermodynamic equilibrium.
	23.09.22 4th Friday	1.7. Conceptual explanation of energy and its Sources.
	5th	
3rd week 26.9.22 to 1.10.22	26.09.22 1st Monday	1.8. Work, heat and Comparision betn the two.
	27.09.22 2nd Tuesday.	1.9. Mechanical equivalent of Heat.
	28.09.22 3rd Wednesday	1.10. Work transfer, (1) Displacement Work.
	30.09.22 4th Friday.	class test - 1, Assignment - 1
	5th	

WEEK	Class Day	Theory Topics
4th week 10.10.22 to 15.10.22	10.10.22 1st Monday.	2. Laws of thermodynamics. —
	11.10.22 2nd Tuesday.	2.1 State and explain zeroth law of thermodynamics.
	12.10.22 3rd Wednesday.	2.2. State and explain 1st law of thermodynamics.
	14.10.22 4th Friday.	2.2. Continuing Explain 1st law of thermodynamics.
	5th	2.3. Limitation of first law of thermodynamics.
5th week 17.10.22 to 22.10.22	17.10.22 1st Monday.	2.4. Application of 1st law of thermodynamics. Steady flow energy equation.
	18.10.22 2nd Tuesday.	2.4. Application of turbine.
	19.10.22 3rd Wednesday.	2.4. Application of Compressors.
	21.10.22 4th Friday	2.5. Second law of thermodynamic. Clausious statement.
	5th	
6th week 24.10.22 to 29.10.22	24.10.22 1st Monday.	2. . Second law of thermodynamics. - kelvin planck statement.
	25.10.22 2nd Tuesday.	Diwali Holiday.
	26.10.22 3rd Wednesday.	2.5. Application of 2nd law in heat pump and heat engine determine efficiency and COP.
	28.10.22 4th Friday.	2.5. Application of 2nd law in refrigerators and determine efficiency and COP. Assignment - 2.
	5th	

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WEEK	Class Day	
7th week 31.10.22 to 5.11.22	31.10.22 1st Monday.	3. Properties Processes of perfect gas:—
		3.1 Laws of perfect gas: i) Boyles law ii) Charles law. iii) Avogadros law.
	1.11.22 2nd Tuesday	3.1. Daltons law of partial pressure. i) Characteristic Gas Constant -Guy lussac's law, General gas equation iv) Universal gas Constant.
	2.11.22 3rd Wednesday	3.2. Explain Specific heat of gas Cp and Cv.
		3.3. Relation betn Cp and Cv.
	4.11.22 4th Friday.	3.4. Enthalpy of a gas.
	5th	
8th week 7.11.22 to 12.11.22	7.11.22 1st Monday.	3.5. Work done during a non-flow Process.
	8.11.22 2nd Tuesday.	Karthika Pournima Holiday.
	9.11.22 3rd Wednesday	3.6. Application of 1st law on — i) Isothermal process ii) Isobaric process. iii) Isentropic process iv) polytropic process.
	11.11.22 4th Friday.	3.7. Free expansion and throttling process.
	5th	
9th week 14.11.22 to 19.11.22	14.11.22 1st Monday.	3.8. Numerical Solve and Assignment -3.
	15.11.22 2nd Tuesday.	Class test - II. [Module 2&3]
	16.11.22 3rd Wednesday.	4. Internal Combustion Engine:—
		4.1 Introduction and classification of IC engine.
	18.11.22 4th Friday.	4.2. Terms used in I.C engine such as bore, dead Centre, Stroke Volm. piston speed & RPM.
	5th	

WEEK	Class Day	Theory Topics
10th week 21.11.22 to 25.11.22	21.11.22 1st Monday.	4.3. Explain the working principle of 2-Stroke CI engine.
	22.11.22 2nd Tuesday.	4.3. Explain the working principle of 4-Stroke CI engine.
	23.11.22 3rd Wednesday	4.3. Explain the working principle of 2 Stroke SI engine.
	25.11.22 4th Friday.	4.3. Explain the working principle of 4-Stroke SI engine.
	5th	
11th week 28.11.22 to 3.12.22	28.11.22 1st Monday.	4.4. ① Differentiate betn 2 Stroke - 4 Strook engine. CI & SI engine.
	29.11.22 2nd Tuesday.	① Doubt clearing class and Assignment - 4.
	30.11.22 3rd Wednesday.	5. Gas Power cycle :— Introduction of Various Power cycle.
	02.12.22 4th Friday.	5.1. Explain Carnot cycle with P-V & T-S diagram.
	5th	
12th week 5.12.22 to 10.12.22	5.12.22 1st Monday.	5.5. Solve numericals on Carnot cycle.
	6.12.22 2nd Tuesday.	5.2. Explain otto cycle with P-V and T-S diagram.
	7.12.22 3rd Wednesday.	5.5 Solve numericals on otto cycle.
	9.12.22 4th Friday.	5.3. Explain ① Diesel cycle with P-V and T-S diagram.
	5th	

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15th week 12.12.22 to 17.12.22	12.12.22 1st Monday	5.5. Solve numerical on diesel cycle.
	13.12.22 2nd Tuesday	5.4. Explain dual Comburestion cycle.
	14.12.22 3rd Wednesday	5.5. Solve Numerical on dual Combustion cycle.
	16.12.22 4th Friday.	(1) Doubt clearing class. Assignment-5
	5th	
14th week 19.12.22 to 24.12.22	19.12.22 1st Monday.	6. Fuels and Combustion :— 6.1 Define Fuel. 6.2. Types of Fuel.
	20.12.22 2nd Tuesday.	6.3. Application of differcent types of Fuel.
	21.12.22 3rd Wednesday	6.3. Continuing differcent types of Fuel.
	23.12.22 4th Friday.	6.4. Heating Values of Fuel.
	5th	
Extra Classes.	1st	6.5. Quality of IC engine Fuels octane numbers, Cetane numbers.
	2nd	Assignment-6. (1) Doubt clearing class.
	3rd	Class test - III. [Module. 4,5.6]
	4th	Important question of previous Semesters discussion.
	5th	