



SASURIE COLLEGE OF ENGINEERING

Approved by AICTE, New Delhi. Affiliated to Anna University, Chennai

Near NH544, Coimbatore Bypass, Near Vijayamangalam Tollgate, Tirupur 638056

NAAC DOCUMENTS

QUALITY INDICATOR FRAME WORK

CRITERION - 1

CURRICULAR ASPECTS

SUBMITTED BY

IQAC

INTERNAL QUALITY ASSURANCE CELL

SASURIE COLLEGE OF ENGINEERING



Criterion 1	Curricular Aspects	100
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Curricular Planning and Implementation (20)

The Institution ensures effective curriculum planning and delivery through a well-planned and documented process including Academic calendar and conduct of continuous internal Assessment

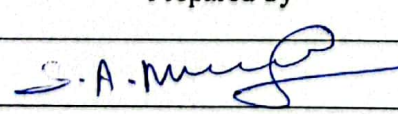
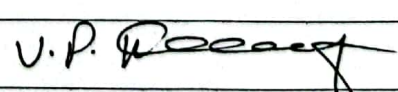
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S.No	Description
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Department : Mechanical Engineering
 Subject Code & Name: ME8391&ENGINEERINGTHERMODYNAMICS
 Class & Batch II
 Semester III

CONTENTS-COURSEFILE

S.NO	PARTICULARS	REMARKS
1	Student name list	
2	Subject Information Record	
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	Prepared by	Verified by
Sign		
Name	S. A. RAMGOBAL	V. P. KRISHNAMURTHY
	Faculty	HOD


Dr. M. VIJAYAKUMAR ME., Ph.D.
 PRINCIPAL

 **SASURIE COLLEGE OF ENGINEERING,**
 Vijayamangalam - 630 056, Tirupur (Dt).

TIME TABLE ODD SEM 2020-21

DATE	9.30AM -10.30AM	10.30AM-11.30AM	11.30AM-12.30PM	1.30PM-2.30PM	2.30PM-3.30PM
MON				ETD	
STAFF NAME				S A RAMESH	
TUE					ETD
STAFF NAME					S A RAMESH
WED				ETD	
STAFF NAME				S A RAMESH	
THU		ETD			
STAFF NAME		S A RAMESH			
FRI					ETD
STAFF NAME					S A RAMESH
SAT	ETD			ETD	
STAFF NAME	S A RAMESH			S A RAMESH	

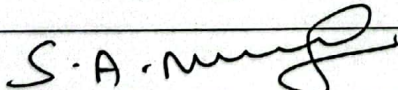


Dr.M.VIJAYARAJ M.E., Ph.D.
 HOD/IN-charge
 SASURIE COLLEGE OF ENGINEERING,
 Vijayarajpet - 633 053, Tirupur, TN

STUDENT NAME LIST

SUBJECT NAME: ENGINEERING THERMODYNAMICS

SUBJECT FACULTY : S.A.RAMESH AP/MECH

S.NO	REGISTERNUMBER	NAMEOFTHESTUDENT	REMARKS
1	732419114001	AmulrajP	
2	732419114002	ArunkumarB	
3	732419114003	Kavikrishnan P	
4	732419114004	KishoreB	
5	732419114006	PavendharS	
6	732419114007	Priyadharshan G	
7	732419114008	SelventhiranS	
8	732419114010	ThirunavukkarasuS	

	Prepared by	Verified by
Sign		
Name	S.A. Ramesh	V.P. Krishnamoorthy
	Faculty	HOD


Dr.M.VIJAYAKUMAR ME., Ph.D.,
PRINCIPAL



SASURIE COLLEGE OF ENGINEERING,
Vijayamangalam - 638 056, Tirupur (Dt).

SUBJECT INFORMATION RECORD

Department : MECHANICAL ENGINEERING

Subject : ENGINEERING THERMODYNAMICS

Year : II YEAR

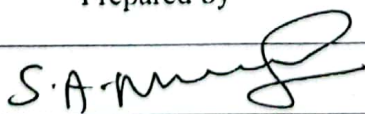
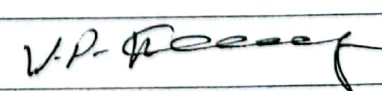
Semester : III

Last year handled by : S.A.RAMESH

Percentage of Result (last year) : 68%

Quality Objectives :

Reference Book :

	Prepared by	Verified by
Sign		
Name	S.A. Ramesh	V.P. Krishnamoorthy
	Faculty	HOD

Dr. M. VIJAYAKUMAR ME., Ph.D.,
PRINCIPAL

SASURIE COLLEGE OF ENGINEERING,
Vijayamangalam, Tiruppur.

OBJECTIVE:

- To familiarize the students to understand the fundamentals of thermodynamics and to perform thermal analysis on their behavior and performance.

(Use of Standard and approved Steam Table, Mollier Chart, Compressibility Chart and Psychrometric Chart permitted)

UNIT I BASIC CONCEPTS AND FIRST LAW**9+6**

Basic concepts - concept of continuum, comparison of microscopic and macroscopic approach. Path and point functions. Intensive and extensive, total and specific quantities. System and their types. Thermodynamic Equilibrium State, path and process. Quasi-static, reversible and irreversible processes. Heat and work transfer, definition and comparison, sign convention. Displacement work and other modes of work .P-V diagram. Zeroth law of thermodynamics – concept of temperature and thermal equilibrium- relationship between temperature scales -new temperature scales. First law of thermodynamics -application to closed and open systems – steady and unsteady flow processes.

UNIT II SECOND LAW AND AVAILABILITY ANALYSIS**9+6**

Heat Reservoir, source and sink. Heat Engine, Refrigerator, Heat pump. Statements of second law and its corollaries. Carnot cycle Reversed Carnot cycle, Performance. Clausius inequality. Concept of entropy, T-s diagram, Tds Equations, entropy change for - pure substance, ideal gases - different processes, principle of increase in entropy. Applications of II Law. High and low grade energy. Available and non-available energy of a source and finite body. Energy and irreversibility. Expressions for the energy of a closed system and open systems. Energy balance and entropy generation. Irreversibility. I and II law Efficiency.

UNIT III PROPERTIES OF PURE SUBSTANCE AND STEAM POWER CYCLE**9+6**

Formation of steam and its thermodynamic properties, p-v, p-T, T-v, T-s, h-s diagrams. p-v-T surface. Use of Steam Table and Mollier Chart. Determination of dryness fraction. Application of I and II law for pure substances. Ideal and actual Rankine cycles, Cycle Improvement Methods - Reheat and Regenerative cycles, Economiser, preheater, Binary and Combined cycles.

UNIT IV IDEAL AND REAL GASES, THERMODYNAMIC RELATIONS**9+6**

Properties of Ideal gas- Ideal and real gas comparison- Equations of state for ideal and real gases- Reduced properties. Compressibility factor-.Principle of Corresponding states. -Generalised Compressibility Chart and its use-. Maxwell relations, Tds Equations, Difference and ratio of heat capacities, Energy equation, Joule-Thomson Coefficient, Clausius Clapeyron equation, Phase Change Processes. Simple Calculations.

UNIT V GAS MIXTURES AND PSYCHROMETRY**9+6**

Mole and Mass fraction, Dalton's and Amagat's Law. Properties of gas mixture – Molar mass, gas constant, density, change in internal energy, enthalpy, entropy and Gibbs function. Psychrometric properties, Psychrometric charts. Property calculations of air vapour mixtures by using chart and expressions. Psychrometric process – adiabatic saturation, sensible heating and cooling, humidification, dehumidification, evaporative cooling and adiabatic mixing. Simple Applications

TOTAL : 75 PERIODS**OUTCOMES:**

Upon the completion of this course the students will be able to

- CO1 Apply the first law of thermodynamics for simple open and closed systems under steady and unsteady conditions.
- CO2 Apply second law of thermodynamics to open and closed systems and calculate entropy and availability.
- CO3 Apply Rankine cycle to steam power plant and compare few cycle improvement methods
- CO4 Derive simple thermodynamic relations of ideal and real gases
- CO5 Calculate the properties of gas mixtures and moist air and its use in psychrometric processes

TEXT BOOKS :

- R.K.Rajput, "A Text Book Of Engineering Thermodynamics ",Fifth Edition,2017.
- Yunus a. Cengel & michael a. Boles, "Thermodynamics", 8th edition 2015.

TESTPLANFORSUBJECT

Subject :ENGINEERINGTHERMODYNAMICS

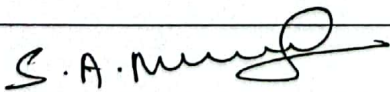
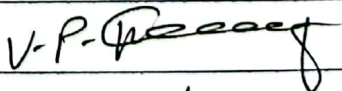
Faculty:S.A.RAMESH

Semester : III

Year:II

Department: MECHANICAL

S. No.	Description	Planned Date/Month	Actual Conducted Date/Month	Remarks
1	INTERNALTEST -I	16.09.2020	16.09.2020	
2	INTERNALTEST -II	17.10.2020	17.10.2020	
3	MODEL EXAM	03.11.2020	03.11.2020	

	Prepared by	Verified by
Sign		
Name	S. A. RAMESH	V. P. Krishnamoorthy
	Faculty	HOD


Dr.M.VIJAYAKUMAR ME., Ph.D.,
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Vijayamangalam - 638 056, Tiruppur (TN)

LESSON PLAN

Faculty Name : S.A.RAMESH
 Department : MECH
 Subject : ENGINEERING THERMODYNAMICS
 Academic Year : 2020-2021

Designation: Assistant Professor
 Semester/ Year: III / II

S.No.	Proposed		Details of Topic Covered	TA	Ref.	Actual		Remarks
	Date	Period				Date	Period	
UNIT I GAS AND STEAM POWER CYCLES								
1	30.09.2020	4	Air Standard Cycles	1	2	30.09.2020	4	
2	30.09.2020	4	Otto Cycle	1	2	30.09.2020	4	
3	01.10.2020	2	Diesel Cycle	1	2	01.10.2020	2	
4	01.10.2020	2	Dual cycle	1	2	01.10.2020	2	
5	03.10.2020	1	Brayton cycle	1	2	03.10.2020	1	
6	03.10.2020	4	Air Standard Cycles analysis	1	2	03.10.2020	4	
7	5.10.2020	4	Performance and Comparison	1	2	5.10.2020	4	
8	06.10.2020	5	Rankine cycle	1	2	06.10.2020	5	
9	07.10.2020	4	Reheat rankine cycle	1	2	07.10.2020	4	
UNIT II RECIPROCATING AIR COMPRESSOR								
10	08.10.2020	2	Classification of reciprocating air compressor	1	2	08.10.2020	2	
11	09.10.2020	5	Comparison of reciprocating air compressor	1	2	09.10.2020	5	
12	10.10.2020	1	working principle,	1	2	10.10.2020	1	
13	10.10.2020	4	with and without clearance of reciprocating air	1	2	10.10.2020	4	
14	12.10.2020	4	Volumetric efficiency,	1	2	12.10.2020	4	
15	13.10.2020	5	Isothermal efficiency	1	2	13.10.2020	5	
16	14.10.2020	4	Isentropic efficiency	1	2	14.10.2020	4	
17	15.10.2020	2	Multistage air compressor with Intercooling	1	2	15.10.2020	2	
18	16.10.2020	5	Working principle of Rotary compressors with	1	2	16.10.2020	5	
19	17.10.2020	1	comparison of Rotary compressors with	1	2	17.10.2020	1	
UNIT III INTERNAL COMBUSTION ENGINES AND COMBUSTION								
20	17.10.2020	4	IC engine – Classification, working,	1,3	1,2	17.10.2020	4	
21	19.10.2020	4	IC engine -components and their functions.	1,3	1,2	19.10.2020	4	
22	20.10.2020	5	Ideal and actual : Valve and port timing diagrams	1,3	1,2	20.10.2020	5	
23	21.10.2020	4	p-v diagrams- two stroke & four stroke,	1,3	1,2	21.10.2020	4	
24	22.10.2020	2	SI & CI engines – comparison	1,3	1,2	22.10.2020	2	
25	23.10.2020	5	SI & CI engines – comparison	1,3	1,2	23.10.2020	5	
26	24.10.2020	1	performance comparison of SI and CI engines	1,3	1,2	24.10.2020	1	
27	24.10.2020	4	Desirable properties and qualities of fuels	1,3	1,2	24.10.2020	4	
28	26.10.2020	4	Air-fuel ratio calculation – lean and rich mixtures	1,3	1,2	26.10.2020	4	
29	27.10.2020	5	Combustion in SI & CI Engines	1,3	1,2	27.10.2020	5	
30	28.10.2020	4	Knocking – phenomena and control.	1,3	1,2	28.10.2020	4	
UNIT IV INTERNAL COMBUSTION ENGINE PERFORMANCE AND SYSTEMS								
31	29.10.2020	2	Performance parameters and calculations	1	2	29.10.2020	2	
32	30.10.2020	5	Morse and Heat Balance tests	1	2	30.10.2020	5	
33	31.10.2020	1	Multipoint Fuel Injection system	1,3	2	31.10.2020	1	
34	31.10.2020	4	Common Rail Direct Injection systems	1,3	2	31.10.2020	4	
35	02.11.2020	4	Ignition systems – Magneto	1,3	2	02.11.2020	4	
36	03.11.2020	5	Ignition systems – Battery	1,3	2	03.11.2020	5	

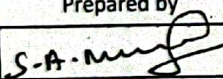
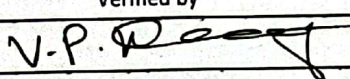
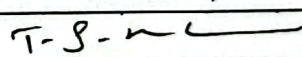
37	04.11.2020	4	Ignition systems – Electronic.	1,3	2	04.11.2020	4	
38	05.11.2020	2	Lubrication and Cooling systems	1,3	2	05.11.2020	2	
39	06.11.2020	5	Concepts of Supercharging	1,3	2	06.11.2020	5	
40	07.11.2020	1	Turbocharging	1,3	2	07.11.2020	1	✓
41	07.11.2020	4	Emission Norms	1,3	2	07.11.2020	4	✓
UNIT V GAS TURBINES								
42	09.11.2020	4	Gas turbine cycle analysis	1	2	09.11.2020	4	
43	10.11.2020	5	open cycle	1	2	10.11.2020	5	
44	11.11.2020	4	closed cycle	1	2	11.11.2020	4	
45	12.11.2020	2	Performance analysis	1	2	12.11.2020	2	
46	13.11.2020	5	Performance and its improvement	1	2	13.11.2020	5	
47	14.11.2020	1	Regenerative cycles	1	2	14.11.2020	1	
48	14.11.2020	4	Intercooled cycles	1	2	14.11.2020	4	
49	16.11.2020	4	Reheated cycles	1	2	16.11.2020	4	
50	17.11.2020	5	combinations of cycles	1	2	17.11.2020	5	
51	18.11.2020	4	Materials for Turbines.	1	2	18.11.2020	4	
52	19.11.2020	2	Tutorial	1	2	19.11.2020	2	✓
53	20.11.2020	5	Over view	1	2	20.11.2020	5	✓

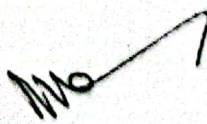
Reference books (Ref):

1. Kothandaraman.C.P., Domkundwar. S, Domkundwar. A.V., "A course in thermal Engineering", Fifth Edition, "Dhanpat Rai &
2. Rajput. R. K., "Thermal Engineering" S.Chand Publishers, 2017.

Teaching Aids (TA):

1. Black Board with Chalk
2. Overhead Projector
3. LCD Projector
4. Others (Field visits, Charts, Cutset Models)

	Prepared by	Verified by	Authorized by
Sign:			
Name:	S.A.Ramesh	Mr.V.P.Krishnamurthy	Dr.T.S.Sivakumaran
	Faculty	HD	Principal


Dr.M.VIJAYAKUMAR ME., Ph.D.,
 PRINCIPAL
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 Vijayamangalam - 638 056, Tirupur (Dt).



Internal Assessment Test Answer Book

Name	ANMUL RAJ P			Year/ Semester/Section	IT/ITT
Register number	2219115001	Date/Session	11/9/2020	Department	IT/C4
Course code	M68391	Course Title	Engineering Thermodynamics		
Internal Assessment Test	IAT 1 <input checked="" type="checkbox"/>	IAT 2 <input type="checkbox"/>	IAT 3 <input type="checkbox"/>	Model	<input type="checkbox"/>
Name and Signature of the Invigilator with date	S.A. Ramesh				

Instruction to the Student: Put tick mark to the question attended in the column against question.								
Part A			Part B/ Part C				Total Marks	
Q. No.	✓	Marks	Q. NO.	✓	a Marks	✓		b Marks
1	✓	1	11	✓	13			13
2	✓	1	12	✓	14			17
3	✓	1	13					
4	✓	1	14					
5	✓	1	15					
6	✓	1	16					
7	✓	1	Grand Total					27
8	✓	1	<div style="border: 1px solid black; border-radius: 50%; padding: 10px; display: inline-block;"> 37 50 </div>				S.A. Ramesh 11/09/20 Name and Signature of the Examiner with date	
9	✓	1						
10	✓	1						
Total		10	Grand Total					

To be filled by the examiner							
Course Outcomes	1	2	3	4	5	6	Total
Marks allotted	24	26	-	-	-	-	50
Marks Obtained	17	20	✓	✓	✓	✓	37
IQAC Audit - Remarks						V.P. Ramesh 11/9/20 Name and Signature of the IQAC member	

Dr.M.VIJAYAKUMAR ME., Ph.D.,
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Vijayamangalam - 638 055, Tirupur (Dt).



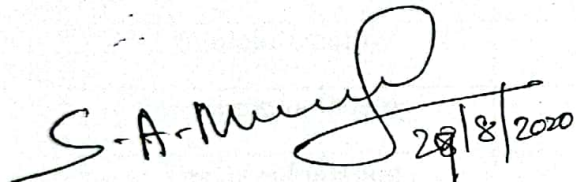
SASURIE
College of Engineering
Vijayamangalam, Tiruppur.

DEPARTMENT OF MECHANICAL ENGINEERING

Assignment Question Paper

Assignment - 01		Date of Issue:	29.08.2020	Marks	10
Course code	ME8391	Course Title	Engineering Thermodynamics		
Year	II YEAR	Semester/Section	03	Date of Submission:	05.09.2020

Q.No	Questions	CO
1	Explain the Process of thermodynamics.	CO1


Name and Signature of the Faculty Incharge

S.A. Ramaswamy.


HoD/MECH


Dr.M.VIJAYAKUMAR ME., Ph.D.,
PRINCIPAL
SASURIE COLLEGE OF ENGINEERING,
Vijayamangalam - 638 056, Tirupur (Dt).

DEPARTMENT OF MECHANICAL ENGINEERING

Assignment Answer Sheet

Name of the Student : Priyadharsan-G

AU Register Number: 732419114007

Assignment - 01			Date of Issue:	29.08.2020	Marks	10
Course code	ME8391	Course Title	Engineering Thermodynamics			
Year	II YEAR	Semester/Section	03	Date of Submission:	05.09.2020	

Q.No	Questions	CO
	Explain the Process of thermodynamics.	CO1

Mark Allocation

Rubrics	Marks Allocated	Marks obtained
Content Quality	6	5
Presentation Quality	2	2
Timely submission	2	2
Total marks	10	9

S-A-Ramgobal
6/9/2020
Name and Signature of the Faculty Incharge

S A - RAMGOBAL

V.P. Ramgobal
6/9/20
HoD/MECH

M.V. Jayakumar
Dr.M.VIJAYAKUMAR ME., Ph.D.,
PRINCIPAL
SASURIE COLLEGE OF ENGINEERING,
Vijayamangalam - 638 056, Tirupur (Dt).



Stream Classwork People Grades

Sortbylastname	Nov3,2020 MODELEXAM	Oct17,2020IN TERNALTE ST-II	Oct17,2020 Thermodynamic Relation	Sep16,2020INTER NALEXAM I	Sep 5 2020ASSIGNM ENTI
	outof100	outof100	outof100	outof100	outof100
Class average	85.33	84.17	86.75	72.67	68
AMUL RAJ	70	84	70	74	90
Arunkumar B	90	84	89	70	98
KAVIKRISHNAN P	74	50	84	50	94
Kishore Rana	70	87	90	75	90
pavendhar saraboji	96	96	78	79	80
Priyadarshan G	89	98	99	92	90
Selventhiran .S	80	70	88	70	72
thiru arasu	79	90	80	70	80

Dr.M.VIJAYAKUMAR ME., Ph.D.,
 PRINCIPAL
 SASURIE COLLEGE OF ENGINEERING,
 Vijayamangalam - 638 066, Thanjavur (TN)