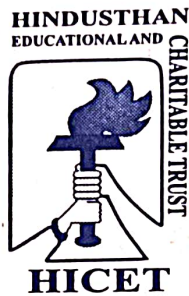


HINDUSTHAN COLLEGE OF ENGINEERING AND TECHNOLOGY

Approved by AICTE, New Delhi, Accredited with 'A' grade by NAAC
(An Autonomous Institution, Affiliated to Anna University, Chennai)
Coimbatore - 641 032.



Academic Year : 2023-2024

Semester: IV

Practical

: 22AG14001 -
operation and
Maintenance of farm
Machinery Lab

Class & Branch: II - year of
B. Tech

PRACTICAL RECORD (ATTENDANCE AND ASSESMENT RECORD)

FACULTY NAME : Mrs. K. Ramya

DEPARTMENT : Agricultural Engineering

NAME OF THE PRACTICAL : Operation and Maintenance of farm Machinery laboratory



Hindustan College of Engineering and Technology
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 (An Autonomous Institution, Affiliated to Anna University, Chennai)
 Coimbatore – 641 032



DEPARTMENT OF AGRICULTURE ENGINEERING

RUBRICS FOR OPERATION AND MAINTENANCE OF FARM MACHINERY AND EQUIPMENT (22AG4001) LABORATORY

CRITERIA/PARAMETERS	PERFORMANCE OF EVALUATION			
	EXCELLENT (> 90% & ≤ 100%)	GOOD (> 80% & ≤ 90%)	AVERAGE (> 70% & ≤ 80%)	SATISFACTORY (> 50% & ≤ 70%)
Aim	Able to know the proper aim of the experiment	Able to know the outline and not the exact aim	Not clear in aim and able to understand with the help	Not clear in aim and able to understand with the help and repetition
Principle And Procedure	Understands and explains clearly about the principle and procedure	Understands and explains the principle and procedure with doubt	Understands and explains about the principle and procedure with the help	Understands and explains about the principle and procedure with the help and repetition
Conduct of Experiment	Can do the experiment perfectly	Can do the experiment perfectly on repetition	Can do the experiment only with the help	Can do the experiment only when practically seen from others on repetition
Tabulation And Calculation	Well-versed in tabulations and calculations	Able to tabulate and calculate	Not clear in doing it independently	Able to do it with the assistance only
Result	Results are similar to the standard values	Results are approximately similar to the standard values	Results are in deviation to the standard values	Results are in error


LAB-IN-CHARGE


HOD

DEAN

Name : Mrs. K. Ramya

Designation : Assistant Professor

Department : Agricultural Engineering

Academic Year : 2023-2024

Semester [IV]

Branch : B.Tech Agri Engg

Practicals Title & Code : 22AG4001- operation and maintenance of farm machinery Lab.

Date of Opening : 29.1.2024

Last Working Day : 03/06/2024

Total Classes Handled : 15 Hours

Date of Model Examination : 4/6/2024

LAB I: 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15

	Reg.No.	Name	Date	6	9	9	9	13	13	16	16	16	16	16	16	16	16	16		
			Month	2	2	2	2	2	2	2	2	2	2	3	3	3	3	3	3	3
			Hour	5	5	6	7	5	6	7	5	6	7	5	6	7	5	6	7	3
1	720722116001	Aarthika. J	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	
2	6002	Abiramy. C. R.	a	a	a	a	/	/	/	/	/	/	/	/	/	/	/	/	/	
3	6003	Aelred infantea Joelin. A	/	a	a	a	/	/	/	/	/	/	a	a	a	/	/	/	/	
4	6004	Akshaya. M	/	a	a	a	/	/	/	/	/	/	/	/	/	/	/	/	/	
5	6005	Aliif Ansil P. P	a	a	a	a	/	/	/	a	a	a	a	a	a	/	/	/	/	
6	6006	Anitha sri s. v	/	a	a	a	/	/	/	a	a	a	/	/	/	/	/	/	/	
7	6007	Arun Karthick A	a	a	a	a	a	a	a	a	a	a	a	a	a	a	a	a	a	
8	6008	Bharya. P	/	/	/	/	a	a	a	a	a	a	/	/	/	/	/	/	/	
9	6009	Bruno blenny	a	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	
10	6010	Cheran R	a	a	a	a	a	a	a	/	/	/	/	/	/	/	/	/	/	
11	6011	Dhileep Kumar R. s	a	o	o	o	o	o	o	a	a	/	/	/	/	/	/	/	/	
12	6012	Eshani bhas K	a	a	a	a	o	o	o	o	o	o	o	o	a	a	a	a	a	
13	6013	Gokul das M	a	/	/	/	a	a	a	/	/	/	/	/	/	/	/	/	/	
14	6014	Janagar s	a	/	/	/	a	a	a	a	a	a	a	a	/	/	/	/	/	
15	6015	Jegan. G	a	a	a	a	/	/	/	/	/	/	/	/	/	/	/	/	/	
16	6016	Kalimuthu G	a	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	
17	6017	Kamesh K	a	/	/	/	/	/	/	/	/	/	a	a	a	/	/	/	/	
18	6018	Kodipuli Jaya NM	a	a	a	a	a	a	a	a	a	a	/	/	/	/	/	/	/	
19	6019	Manikandan V	a	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	
20	6020	Manoj Kumar. R	a	a	a	a	a	a	a	a	a	a	a	a	a	/	/	/	/	
21	6021	Mithilesh KM	a	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	
22	6022	Mohit ray M H	a	/	/	/	a	a	a	/	/	/	a	a	a	/	/	/	/	
23	6023	Muganthan S	a	/	/	/	a	a	a	/	/	/	/	/	/	/	/	/	/	
24	6024	Navasakthi V	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	
25	6025	Naveen Kumar. R	a	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	

Marks Details

S.No.	Exp 1 25	Exp 2 25	Exp 3 25	Exp 4 25	Exp 5 25	Exp 6 25	Exp 7 25	Exp 8 25	Exp 9 25	Exp 10 25	Exp 11 25	Exp 12 25	25 Exp 13 25	25 Exp 14 25	25 Exp 15 25	Overall Total 25	Average Weightage 25	Model Exam 25	Internal Mark 50
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Total sheets: 54

LAB I: 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15

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1	6026 Nithish R. M	a	/	/	/	/	/	/	/	/	/	/	/	/	/	/	
2	6027 NIYA P	/	a	a	a	/	/	/	/	/	/	/	/	/	/	/	
3	6028 Pavithra G	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	
4	6029 Prasanna Devi R	a	/	/	/	/	/	/	/	/	/	/	/	/	/	/	
5	6030 Praveen kumar. R	a	/	/	/	/	/	/	/	/	/	/	/	/	op	op	
6	6031 Prithvika B	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	
7	6032 Poyadharshini. M	a	/	/	/	/	/	/	/	/	/	/	/	/	/	/	
8	6033 Labiya Dhoshini G	/	a	a	a	/	/	a	a	a	/	/	/	/	/	/	
9	6034 Patna A	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	
10	6035 Rishikesh T	/	a	a	a	a	a	a	a	a	a	a	a	a	/	/	
11	6036 Retha priya. M	/	a	a	a	/	/	a	a	a	/	/	/	/	/	/	
12	6037 Sabarathan P. A	a	/	/	/	/	/	/	/	/	/	/	/	/	/	/	
13	6038 Sanyu R	/	/	/	/	a	a	a	a	a	a	a	/	/	/	/	
14	6039 Sanmathi Sri D	/	a	a	a	a	a	/	/	/	/	/	/	/	/	/	
15	6040 Sehanya mol M	a	/	/	/	/	/	a	a	a	a	a	/	/	/	/	
16	6041 Sibin A	a	/	/	/	/	/	/	/	/	/	/	/	/	/	/	
17	6042 Siva prakash. S	a	/	/	/	/	/	/	/	/	/	/	/	/	/	/	
18	6043 Sri Kavi prayan S	a	a	a	a	a	a	/	/	/	/	/	/	/	/	/	
19	6044 Sri varsheni V	/	/	/	/	/	/	a	a	a	/	/	/	/	/	/	
20	6045 Shreuthi A	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	
21	6046 Tharanitharan S	a	a	a	a	a	a	a	a	a	a	a	/	/	/	/	
22	6047 udhyaboomi M	a	/	/	/	/	/	a	a	a	/	/	/	/	/	/	
23	6048 vandhini Ka S	/	a	a	a	/	/	/	/	/	/	/	/	/	/	/	
24	6049 varsheni B	/	a	a	a	/	/	a	a	a	a	a	/	/	/	/	
25	6050 vignesh. Y	a	/	/	/	a	a	a	/	/	/	/	/	/	/	/	

Marks Details

S.No.	Exp 1 25	Exp 2 25	Exp 3 25	Exp 4 25	Exp 5 25	Exp 6 25	Exp 7 25	Exp 8 25	Exp 9 25	Exp 10 25	Exp 11 25	Exp 12 25	Exp 13 25	Exp 14 25	Exp 15 25	Overall Total	Average Weightage 25	Model Exam 25	Internal Mark 50
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2	25	25	25	25	25	25	25	25	25	25	25	25				25			90
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4	25	25	25	25	25	25	25	25	25	25	25	25				25			98
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6	25	25	25	25	25	25	25	25	25	25	25	25				25			96
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LAB I: 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15

Reg.No.	Name	Date	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
		Month	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8
		Hour	5-7	5	6	7	5	6	7	5	6	7	5	6	7	5	6	7
26	6051 Vijaya Kumar M		a	a	a	a	a	a	a	/	/	/	/	/	/	/	/	
27	6052 Vimala S		/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	
28	6053 Vishnu M		a	/	/	/	/	/	/	a	a	a	a	a	a	/	/	
29	6054 Yuva Vishnu G		a	a	a	a	a	a	/	/	/	/	a	a	a	/	/	
30																		
31	Absent		26	26	26	26	17	17	17	17	17	17	17	17	17	17	17	
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Marks Details

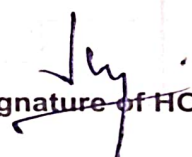
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INSTRUCTION CLASS

S.No.	Date Class Handled	Topic Covered	Period of Lecture	Remarks
1.	6.2.24	Introduction to farm implements and tractor		
EX: NO	5, 6, 7			
2.	6.2.24	Identification of Major systems of a tractor and general guidelines on preliminary check measures	Live demo field	
	(5, 6, 7)			
EX: NO				
3.	09.2.24	Identification of Components of Power tiller and general guidelines on Preliminary check measures	Live demo field	
	(5, 6, 7)			
EX: NO				
3.	13.2.24	Hitching of Agricultural implements and trailers	Lab / Live class	
	(5, 6, 7)			
EX: NO				
4.	16/2/24	Operation of tractor drawn cultivator - adjustments - determination of field capacity	field + Live practices	
	13/3/24			
EX: NO	5			
4.	13/3/24	operation of tractor drawn cultivator - adjustments - determination of field capacity	field demo + practice	
	3, 4, 5			
EX: NO	4			
5.	13/3/2024	Experiment on Calibration of Seed drills and Planter	Calibration and demonstration	

LIST OF EXPERIMENTS

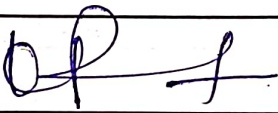
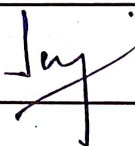
S.No.	Date Class Handled	Experiment	Period of Lab	Remarks
Ex: NO 6	05.3.24	Field testing of rocket air sprayer and battery sprayer and efficiency calculation	field demonstration	
Ex: NO 7	7/5/24	operation and evaluation of dryland, wetland weeder and power operated weeder and its efficiency	field demo + videos	
Ex: NO 8	10/5/24	Study on wetland preparation implements	videos	
Ex: NO 9	14/5/24	visit to farm machinery industry and its research center	field visit	
Ex: NO 10	17/5/24	Study of Reeder cum Reaper and fail mower	videos of youtube	
Ex: NO 11	21/5/24	Study of Evaluation of land preparation implement and machinery	youtube of videos	
Ex: NO 12	24/5/24	Determination of Operational cost of farm implements.	Chart and table	


 Signature of HOD

STUDENTS COUNCELLING RECORD

- (1) Students are asked to come field with formal / lab uniform on time.
- (2) Students are asked to take Calculator and observation note book.

RECORD OF INSPECTION

S.No.	Date Of Inspection	Signature of Faculty	Signature HOD
1.	29.2.24		


Signature of Dean

Programme	Course Code	Name of the Course	L	T	P	C
B.Tech.	22AG4001	OPERATION AND MAINTENANCE OF FARM MACHINERY LABORATORY	0	0	4	2

Course Objective

The students will be introduced to the practice of different farm machinery in the field on

1. Tillage, sowing, plant protection, harvesting and threshing
2. Care and maintenance; lubrication
3. Fits and tolerances and replacements
4. Adjustments of farm machines
5. Dismantling and reassembling of a disc harrow, seed-cum fertilizer drill, and sprayer and engine pumps.

S.no	List of experiments	Instructional hours
1	Identification of major systems of a tractor and general guidelines on preliminary check measures.	2
2	Identification of components of power tiller and general guidelines on preliminary check measures	2
3	Hitching of agricultural implements and trailers	2
4	Operation of Primary tillage implements – adjustments and determination of field capacity	2
5	Experiment on Calibration of seed drills and planter	2
6	Field-testing of rocker arm sprayer, power sprayer and battery sprayer and their efficiency calculation	2
7	Operation and evaluation of <u>dry land</u> , <u>wetland weeder</u> and <u>power operated weeder</u>	2
8	Evaluation of land preparation implements and machinery	
9	Study on wetland preparation implements and machineries	2
10	Visit to farm machinery industry and its research center	2
11	Study of reaper cum binder and flail mowers	2
12	Determination of operational cost of farm implement	2

Course Outcome

- During this course, students have an ability
- CO1: To identify farm equipment
- CO2: To calculate and predict the actual field problem during the operation.
- CO3: To trained to do adjustments of farm implements and Hitching of agricultural implements and trailers.
- CO4: To give care and maintenance to the farm machinery implements.
- CO5: To dismantle and assemble various machineries used in agriculture.

TEXT BOOKS:

- T1 Jagdishwar Sahay. Elements of Agricultural Engineering. Standard Publishers Distributors
- T2 Jain S. C. and Grace Philip. 2012. Farm Machinery – An Approach. Standard Publishers Distributors., New Delhi
- T3 Ojha, T. P. and Michael, A. M. 2011. Principles of Agricultural Engineering Vol. I. Jain Brothers, New Delhi
- T4 Yadav, R., and Solanki, H. B. 2009. Numericals and Short Questions in Farm Machinery, Power and Energy in Agriculture. New India Publishing Agency, New Delhi
- T5 Liljedahl, J. B., Turnquist, P. K., Smith, D. W., and Hokey, M. 2004. Tractors and Their Power Units. CBS Publishers and Distributors Pvt. Ltd, New Delhi

REFERENCE BOOKS:

- R1 Jain, S.C. and C.R. Rai. Farm Tractor Maintenance and Repair. Standard publishers and Distributors, New Delhi, 1999.
- R2 Herbert L. Nichols Sr., Moving the Earth, D. Van Nostrand company Inc. Princeton, 1959.
- R3 John A Havers and Frank W Stubbs, Hand book of Heavy Construction, McGraw – Hill book Company, New York, 1971.
- R4 Barger, E.L., J.B. Liljedahl and E.C. McKibben, Tractors and their Power Units. Wiley Eastern Pvt. Ltd., New Delhi, 1997.
- R5 Kepner, R.A., et al. Principles of farm machinery. CBS Publishers and Distributors, Delhi. 99, 1997.

S.NO	LIST OF EQUIPMENTS	REQUIRED QUANTITY
1	Tractor	1
2	Power tiller	1
3	Disc plough	1
4	Disc harrow	1
5	Multi tyne cultivator	1
6	Seed drill	1
7	Sprayer	1
8	Weeder	1
9	Seed drill cum fertilizer	1
10	Rocker arm sprayer	1

Course Outcome

- During this course, students have an ability
- CO1: To identify farm equipment
 - CO2: To calculate and predict the actual field problem during the operation.
 - CO3: To trained to do adjustments of farm implements and Hitching of agricultural implements and trailers.
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- T3 Ojha, T. P. and Michael, A. M. 2011. Principles of Agricultural Engineering Vol. I. Jain Brothers, New Delhi
- T4 Yadav, R., and Solanki, H. B. 2009. Numericals and Short Questions in Farm Machinery, Power and Energy in Agriculture. New India Publishing Agency, New Delhi
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- R2 Herbert L. Nichols Sr., Moving the Earth, D. Van Nostrand company Inc. Princeton, 1959.
- R3 John A Havers and Frank W Stubbs, Hand book of Heavy Construction, McGraw – Hill book Company, New York, 1971.
- R4 Barger, E.L., J.B. Liljedahl and E.C. McKibben, Tractors and their Power Units. Wiley Eastern Pvt. Ltd., New Delhi, 1997.
- R5 Kepner, R.A., et al. Principles of farm machinery. CBS Publishers and Distributors, Delhi. 99, 1997.

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5	Multi tyne cultivator	1
6	Seed drill	1
7	Sprayer	1
8	Weeder	1
9	Seed drill cum fertilizer	1
10	Rocker arm sprayer	1

PO & PSO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PS
CO1	2	3	1	2	-	-	1	-	-	-	-	-	-	-
CO2	2	3	1	2	-	-	1	-	-	-	-	-	-	-
CO3	3	3	1	2	-	-	2	-	-	-	-	-	-	-
CO4	1	3	1	-	2	-	2	-	-	-	-	2	-	-
CO5	3	3	1	-	1	-	3	-	-	-	-	1	0	0
Avg	2	3	1	2	1	0	2	0	0	0	0	1	0	0

Chairman - BoS
AGRI - HICET



Dean (Academics)
HICET

CLASS TIME TABLE

Day								
	1	2	3	4	5	6	7	8
Monday				21AG16302				21AG16207
Tuesday	21AG16302	LIB			← 21AG14001 →			21AG16207
Wednesday		21AG16302						
Thursday					← 19AG8901 →			
Friday	21AG16302				← 22AG14001 →			
Saturday	21AG16207	21AG16207					TMW	

FACULTY TIME TABLE

Day								
	1	2	3	4	5	6	7	8
Monday								
Tuesday					← 22AG14001 →			
Wednesday								
Thursday								
Friday					← 22AG14001 →			
Saturday								

Signature of Dean

HINDUSTHAN

COLLEGE OF ENGINEERING AND TECHNOLOGY

Approved by AICTE, New Delhi, Accredited with 'A' grade by NAAC
(An Autonomous Institution, Affiliated to Anna University, Chennai)
Coimbatore - 641 032.



Academic Year : 2023-24

Semester: V

Practical ; 21AVS001: Engine performance and Emission Testing Lab
Class & Branch: III yr V semester

PRACTICAL RECORD

(ATTENDANCE AND ASSESMENT RECORD)

FACULTY NAME : J. Yosaraja

DEPARTMENT : Automobile Engineering

NAME OF THE PRACTICAL : Engine performance & Emission Testing Lab

NAME OF THE LABORATORY: 21AU5001 ENGINE PERFORMANCE AND EMISSION TESTING LABORATORY

REGISTER NO

NAME OF THE STUDENT

YEAR, BRANCH AND SEMESTER III YEAR V SEMESTER AUTOMOBILE ENGINEERING

NAME OF THE FACULTY MEMBER Mr. J. YOGARAJA

RUBRICS MUST BE PASTED HERE

Sl. No.	Criteria	Marks	Excellent 91% - 100%	Good 71% - 90%	Average 50% - 70%	Poor <50%	Ex.No. 1	Ex.No. 2	Ex.No. 3	Ex.No. 4	Ex.No. 5	Ex.No. 6	Ex.No. 7	Ex.No. 8	Ex.No. 9	Ex.No. 10	
1	Objective of the Experiments	5	Clear understanding of the objectives with all details and explain very well. (4.5 - 5)	Clear understanding of the objectives but not able to give clear explanation (3.5 - 4.5)	Moderate understanding of the objectives with less details and unable to explain (2.5 - 3.5)	Not clear about the objectives and explanation (<2.5)											
2	List of Components	5	Able to list all the components and give relevant explanation to them (4.5 - 5)	Able to list most of the components and give explanation to some extent (3.5 - 4.5)	Able to list popular components and explain partially (2.5 - 3.5)	Not able to list any components and no explanation (<2.5)											
3	Procedure	20	Followed all the instructions given in the procedure without any help from faculty member (19 - 20)	Followed all the instructions given in the procedure with minor help from faculty member (15 - 18)	Followed some of the instructions given in the procedure and seek help from faculty member (11 - 14)	Difficult to follow the instructions given in the procedure and always need assistance from faculty member (<10)											
4	Experimental work (Equipment, Tables and Data)	30	Handled equipments carefully and followed correct procedure and numerical data are reported in table (29 - 30)	Handled equipments carefully and followed procedure with less difficulty and numerical data are reported (26 - 28)	Handled equipments carefully and followed procedure with more difficulty and numerical data are reported (21 - 25)	Handled equipments carelessly and not followed procedure and numerical data are not reported (<20)											
5	Results (Findings and Graphs)	15	All calculations are shown and finding is accurate and graphs are labelled and titled (15)	All calculations are shown and finding is slightly deviated and graphs are labelled and titled (13 - 14)	Some calculations are shown and finding is deviated and graphs are not labelled and titled (11 - 12)	No calculation is shown and finding is not accurate and graphs are not drawn (<10)											
6	Record	25	Documentation fully completed (21 - 25)	Documentation mostly completed (16 - 20)	Documentation completed partially (11 - 15)	No Documentation (<10)											
Total (100)																	
Signature of the faculty member																	
Signature of the HoD																	

Name	: J. Yogaraja
Designation	: Asst's Lect Professor HINDUSTHAN
Department	: Automobile Engineering
Academic Year	: 2023-24
Semester	: V
Branch	: Automobile Engineering
Practicals Title & Code	: 21AU5001 - Engine Performance and Emission Testing Lab
Date of Opening	: 07.08.2023
Last Working Day	: 25.11.23
Total Classes Handled	: 45
Date of Model Examination	: 24.11.23

INSTRUCTION CLASS

S.No.	Date Class Handled	Topic Covered (Batch - I)	Period of Lecture	Remarks
1	9.8.23	Introduction (Verno & mission) (Self instruction)	5-7	
2	16.8.23	Study of hydraulic, electric & eddy current valve timing & Port timing diagram	5-7	
3	23.8.23	Performance & Emission test on two stroke SI Engine	5-7	
4	30.8.23	Performance & Emission test on Automotive multi cylinder SI Engine	5-7	
5	13.9.23	Performance & Emission test on Automotive multi cylinder CI Engine	5-7	
6	20.9.23	Rehearsation test on IC Engine	5-7	
7	27.9.23	Heat balance test on Automotive multi cylinder SI Engine	5-7	
8	4.10.23	Heat balance test on Automotive multi cylinder CI Engine	5-7	
9	18.10.23	Heat balance test on Automotive multi cylinder CI Engine	5-7	
10	25.10.23	Morse test on multi cylinder SI Engine	5-7	
11	1.11.23	P-Q & P-V diagrams for IC Engine with Pico Electric	5-7	
12	8.11.23	Pickup charge amplifier, Decoder and Encoder	5-7	
13	10.11.23	Revision	5-7	
14	13.11.23	Revision	5-7	
15	24.11.23	Model Examination	1-3	

LIST OF EXPERIMENTS

S.No.	Date Class Handled	Experiment (Batch - II)	Period of Lab	Remarks
1	10.8.23	Introduction (Verno & mission) (Self instruction)	5-7	
2	17.8.23	Study of hydraulic, electrical & eddy current dynamometers	5-7	
3	24.8.23	Valve timing & Port timing diagram	5-7	
4	31.8.23	Performance & Emission test on two wheeler SI Engine	5-7	
5	14.9.23	Performance & Emission test on Automotive multi cylinder SI Engine	5-7	
6	21.9.23	Performance & Emission test on Automotive multi cylinder CI Engine	5-7	
7	19.10.23	Rehearsation test on IC Engine	5-7	
8	26.10.23	Heat balance test on Automotive multi cylinder CI Engine	5-7	
9	2.11.23	Heat balance test on Automotive multi cylinder SI Engine	5-7	
10	9.11.23	Morse test on multi cylinder SI Engine	5-7	
11	10.11.23	Revision (P-Q & P-V diagrams)	5-7	
12	10.11.23	Revision	5-7	
13	13.11.23	Revision	5-7	
14	24.11.23	Revision	1-3	
15	24.11.23	Model Examination	5-7	

STUDENTS COUNCELLING RECORD

Ask the students to attend the Laboratory classes regularly. Run the engine with appropriate readings and calculations with calculator. Also practice the graph in all experiments.

RECORD OF INSPECTION

S.No.	Date Of Inspection	Signature of Faculty	Signature HOD
1	28.12.23	Ravi	[Signature]

[Signature]
Signature of Dean

CLASS TIME TABLE

	9.15-10.05	10.05-10.55	11.10-12	12-12.50	2-2.50	2.50-3.40	3.40-4.30
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Department of Automobile Engineering | Hindusthan College of Engineering and Technology | Curriculum & Syllabus R 2019(R)

21AU5001 ENGINE PERFORMANCE AND EMISSION TESTING LABORATORY **L T P C**
0 0 4 2

Course Objectives

1. To acquire the basic knowledge of different dynamometers, valve and port timing diagram.
2. To Conduct the Performance and emission Test on the multi cylinder CI and SI engines.
3. To conduct retardation test on IC engine.
4. To conduct heat balance and Morse test on multi cylinder petrol and diesel engines.
5. To Learn the P-θ and P-V Diagrams.

LIST OF EXPERIMENTS

1. Study of Hydraulic, Electrical and Eddy Current Dynamometers
2. Valve Timing and Port Timing Diagram
3. Performance and Emission Test on Two-Wheeler SI Engine
4. Performance and Emission Test on Automotive Multi-Cylinder SI Engine
5. Performance and Emission Test on Automotive Multi-Cylinder CI Engine
6. Retardation Test on I.C. Engines.
7. Heat Balance Test on Automotive Multi-Cylinder SI Engine
8. Heat Balance Test on Automotive Multi-Cylinder CI Engine
9. Morse Test on Multi-Cylinder SI Engine
10. P-θ and P-V Diagrams for IC Engine with Piezo-Electric Pick Up, Charge Amplifier, Angle Encoder and PC

TOTAL: 45 PERIODS

Course Outcomes

At the end of this course students will be able to:

- CO1: Perform tests using different dynamometers, valve and port timing diagram.
- CO2: Experiment with the Performance and emission Test on the multi cylinder CI and SI engines
- CO3: Interpret the retardation test on IC engines
- CO4: Perform heat balance and Morse test on multi cylinder petrol and diesel engines
- CO5: Plot and summarize the P-θ and P-V Diagrams.

Signature of Dean

CLASS TIME TABLE

Day	9.15-10.05	10.05-10.55	11.10-12	12-12.50	2-2.50	2.50-3.40	3.40-4.30	
	1	2	3	4	5	6	7	8
Monday	21AUS251	21AUS252	21AUS202	SEM/ 21AUS601	LIB/ 21AUS601	PE-I	21AUS202	
Tuesday	21AUS251	21AUS252	21AUS202	21AUS202	21AUS201	21AUS252	21AUS203	
Wednesday	21AUS202	21AUS203	21AUS201	PE-I	←	21AUS001/ 21AUS002	→	
Thursday	21AUS252	21AUS251	SEM	PE-I	←	21AUS001/ 21AUS002	→	
Friday	PE-I	21AUS201	21AUS203	21AUS202	21AUS203	21AUS251	21AUS201	
Saturday	21AUS203	PE-I	21AUS202	21AUS201	21AUS252	21AUS251	TWM	

FACULTY TIME TABLE

Day	1	2	3	4	5	6	7	8
	Monday							
Tuesday								
Wednesday					←	EPET Lab	→	
Thursday					←	EPET Lab	→	
Friday								
Saturday								

HP
14/4

Signature of Dean

HINDUSTHAN

COLLEGE OF ENGINEERING AND TECHNOLOGY

Approved by AICTE, New Delhi, Accredited with 'A' grade by NAAC
(An Autonomous Institution, Affiliated to Anna University, Chennai)
Coimbatore - 641 032.



Academic Year : 2023-24

Semester: III

Practical : MECHANICAL
OPERATIONS
LAB

Class & Branch: II / CHEMICAL
ENGRG.

PRACTICAL RECORD

(ATTENDANCE AND ASSESMENT RECORD)

FACULTY NAME : Mr. S. NAGUDEV

DEPARTMENT : CHEMICAL ENGINEERING

NAME OF THE PRACTICAL : MECHANICAL OPERATIONS LAB



Hindusthan College of Engineering and Technology
Approved by AICTE, New Delhi, Accredited with 'A' Grade by NAAC
(An Autonomous Institution, Affiliated to Anna University, Chennai)
Coimbatore – 641 032



DEPARTMENT OF CHEMICAL ENGINEERING
RUBICS FOR MECHANICAL OPERATIONS LABORATORY

CRITERIA/PARAMETERS	PERFORMANCE OF EVALUATION			
	EXCELLENT (> 90% & ≤ 100%)	GOOD (> 80% & ≤ 90%)	AVERAGE (> 70% & ≤ 80%)	SATISFACTORY (> 50% & ≤ 70%)
Aim	Able to know the proper aim of the experiment	Able to know the outline and not the exact aim	Not clear in aim and able to understand with the help	Not clear in aim and able to understand with the help and repetition
Principle And Procedure	Understands and explains clearly about the principle and procedure	Understands and explains the principle and procedure with doubt	Understands and explains about the principle and procedure with the help	Understands and explains about the principle and procedure with the help and repetition
Conduct Of Experiment	Can do the experiment perfectly	Can do the experiment perfectly on repetition	Can do the experiment only with the help	Can do the experiment only when practically seen from others on repetition
Tabulation And Calculation	Well-versed in tabulations and calculations	Able to tabulate and calculate	Not clear in doing it independently	Able to do it with the assistance only
Result	Results are similar to the standard values	Results are approximately similar to the standard values	Results are in deviation to the standard values	Results are in error

Name : S. NAGUL DEV

Designation : AP

Department : CHEMICAL ENGG.

Academic Year : 2023-24 Semester : III

Branch : CHEMICAL ENGG.

Practicals Title & Code : MECHANICAL OPERATIONS LAB

22CH3251

Date of Opening : 30/8/23

Last Working Day : 22/12/23

Total Classes Handled : 15 hrs.

Date of Model Examination : 14/12/23

LAB I :

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15

Reg.No.	Name	Date	30	30	30	31	4	11	18	25	8	15						
		Month	8	8	9	9	10	10	10	10	11	11						
		Hour	6	7	6	7	6	7	6	7	6	7						
1	720722114001 Abdul Aziz. K		a	a	/	a	a	a	a	a								
2	02 Abinesh. R		a	a	/	/	/	/	/	/	/	/						
3	03 Abishekprabhu. P		a	a	/	a	/	/	/	/	a							
4	04 Aikshav. M		a	a	/	a	/	a	a	/	/							
5	05 Allen Rey. V		a	a	/	a	/	a	/	a	a							
6	06 Anbarasan. K		a	a	/	a	/	a	a	/	/							
7	07 Anbuselvan K.		a	a	/	a	/	a	a	/	a							
8	08 Anetta Das T		a	a	/	a	/	a	/	a	/							
9	09 Anoop. S		a	a	a	/	/	a	/	/	/							
10	10 Anton Vibin. G		a	a	/	a	/	a	a	a								
11	11 Balaji D		a	a	/	/	/	/	/	/	a							
12	12 Bellwin Kai. P		a	a	/	a	/	a	a	/								
13	13 Deepak. P		a	a	/	a	/	a	/	a	/							
14	14 Dharshini A. Y		a	a	/	/	/	a	a	a	/	a						
15	15 Fadl Faisal Mohammed		a	a	/	a	/	a	/	a	/							
16	16 Fayas Ahamed S		a	a	/	a	/	a	a	/	a	/						
17	17 Gangadharan. K		/	/	/	/	/	/	/	/	/	/						
18	18 Gokul. D		a	a	/	/	/	a	/	/	/							
19	19 Gopi Krishnan. PU		a	a	/	a	/	a	/	/	/							
20	20 Harisharan. S		/	/	/	a	/	/	/	a	/							
21	21 Hijaz Al Fater. A		a	a	a	/	a	a	/	a	/	/						
22	22 Jothi Krishnan. N		a	a	/	/	/	/	/	/	a							
23	23 Krishna Prabhakaran. M		a	a	/	a	/	a	a	a	/	/						
24	24 Logesh. K		a	a	/	a	/	a	a	a	/	/						
25	25 Madhumitha. S		a	a	/	/	/	/	/	/	/	/						

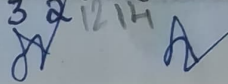
Marks Details

S.No.	Exp 1	Exp 2	Exp 3	Exp 4	Exp 5	Exp 6	Exp 7	Exp 8	Exp 9	Exp 10	Exp 11	Exp 12	Exp 13	Exp 14	Exp 15	Overall Total	Average Weightage	Model Exam	Internal Mark
	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25		25	30	50
1	25	24	23	24	25	23	24	24									24	35	35
2	25	24	23	24	25	25	25	25									24.5	46	44
3	25	25	24	23	25	24	24	25									24.3	44	42
4	25	25	24	25	26	23	22	21									23.7	29	33
5	25	25	24	25	24	25	25	25									27.7	46	45
6	24	23	22	20	23	20	21	20									21.6	29	31
7	25	24	25	23	22	23	24	24									23.7	46	42
8	24	24	25	24	25	24	24	25									24.3	45	40
9	24	24	25	24	23	24	24	25									24.1	44	41
10	24	25	25	24	23	20	21	23									23.1	38	33
11	25	24	24	23	24	24	25	24									24.1	40	39
12	25	25	24	25	24	25	25	25									24.7	46	45
13	25	25	25	25	25	25	25	25									25	46	41
14	25	25	25	25	25	25	25	25									25	46	45
15	25	24	23	22	21	24	23	21									22.8	45	40
16	24	20	21	20	21	20	21	20									20.8	30	33
17	25	25	25	25	25	25	25	25									25	44	43
18	25	25	25	25	25	25	25	25									25	47	46
19	25	24	25	24	25	24	25	24									24.5	40	39
20	25	24	25	25	24	24	25	25									24.6	45	45
21	25	25	25	25	24	21	20	23									23.5	30	36
22	25	24	23	22	24	24	25	24									23.8	40	40
23	25	25	25	25	25	25	25	25									25	40	40
24	25	24	25	25	24	24	23	24									24.2	41	39
25	25	25	25	25	25	25	25	25									25	42	41

LAB I:

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15

Reg.No.	Name	Date	30	30	9	9	4	11	18	25	8	18						
		Month	8	8	9	9	10	10	10	10	11	11						
		Hour	6	7	6	7	6	7	6	7	6	7	6	7				
26	Mohammed Faizel. M	a	a	a	a	a	a	/	a	a	a	a						
27	Mohammed Haneen. M	a	a	/	a	/	/	/	a	/	/							
28	Mohammed Riyasudan	a	a	a	a	a	a	a	a	a	a	a						
29	Mohammed Shalu. VP	a	a	/	a	/	/	/	a	/	/							
30	Muhammed Shameem K	a	a	/	a	/	/	/	/	/	/							
31	Muhammed Sidhan AK	a	a	/	a	/	/	/	a	/	/							
32	Muruganayagam S	a	a	/	/	/	/	a	a	a	/							
33	Nandhakishor. C	/	/	/	a	/	/	/	a	/	/							
34	Natendhiran. M	/	/	/	a	/	/	a	/	/	/							
35	Naveen Kumar D	a	a	/	a	/	/	a	a	/	/							
36	Padma Priya RS	a	a	/	a	/	/	a	/	/	a							
37	Patchamuthu. M	a	a	/	/	/	/	/	/	/	/							
38	Prithviraj. C	a	a	/	a	/	/	/	/	/	/							
39	Raghar R	a	a	/	/	/	/	a	/	a	/							
40	Ragubraj M	a	a	/	a	/	/	a	/	a	/							
41	Rahil Ahmed M	/	/	/	/	/	/	a	/	/	/							
42	Rins TN	a	a	/	a	/	/	a	/	/	/							
43	Ruban Durai E	a	a	a	/	a	/	a	/	a	/							
44	Sakthi Guhan	a	a	/	a	/	/	a	/	/	/							
45	Sanjana S	a	a	/	a	/	/	a	/	a	/							
46	Saran Greethan L	/	/	/	a	/	/	/	/	/	/							
47	Sathishkumar A	a	a	/	a	/	/	a	/	a	/							
48	Sharun M	a	a	a	/	a	/	a	/	a	/							
49	Sivaraman S.	/	/	/	a	/	/	a	/	a	/							
50	SriKanth. M	a	a	/	a	/	/	a	/	a	/							

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Marks Details

S.No.	Exp 1 25	Exp 2 25	Exp 3 25	Exp 4 25	Exp 5 25	Exp 6 25	Exp 7 25	Exp 8 25	Exp 9 25	Exp 10 25	Exp 11 25	Exp 12 25	Exp 13 25	Exp 14 25	Exp 15 25	Overall Total	Average Weightage 25	Model Exam 30	Internal Mark 50
26	25	24	25	24	25	20	20	21									23	30	31
27	25	24	25	25	25	25	24	23									24.5	42	39
28																			
29	25	24	23	22	21	24	23	21									22.8	44	39
30	25	24	23	24	23	24	23	24									23.8	40	37
31	25	25	25	24	23	25	24	25									24.5	39	35
32	25	25	25	24	23	23	24	23									24	40	35
33	25	25	24	25	23	24	24	25									24.5	42	41
34	25	25	25	25	25	25	24	25									24.8	40	37
35	24	24	25	24	23	25	24	23									24	40	36
36	25	25	25	25	25	25	25	25									25	48	44
37	25	25	24	25	24	25	25	25									24.7	47	44
38	25	25	25	25	25	25	25	25									25	47	42
39	25	24	25	24	25	25	25	25									24.7	45	40
40	25	24	25	24	23	24	25	24									24.2	45	40
41	25	25	24	25	23	25	25	25									24.6	48	45
42	25	25	24	25	23	25	24	25									24.5	45	40
43	25	25	25	24	25	24	24	25									24.6	45	39
44	25	25	25	25	24	25	24	24									24.5	40	36
45	25	25	25	25	25	25	25	25									25.1	47	46
46	24	24	25	24	25	24	25	25									24.5	46	42
47	25	25	25	25	25	24	25	23									24.6	44	40
48	25	24	23	24	22	23	22	23									23.2	40	35
49	24	24	23	24	21	24	23	24									23.3	44	40
50	25	25	24	23	22	24	23	24									23.7	40	37

LAB I:

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15

Reg.No.	Name	Date	30	30	13	27	4	15	8	25	8	15						
		Month	8	8	9	9	10	10	10	10	11	11						
		Hour	6	7	6	7	6	7	6	7	6	7	6	7	6	7	6	7
51	51	Srinithi. S	a	a	1	1	1	1	1	1	1	1						51
52	52	Sriram. M	a	a	a	1	1	a	1	1	1							52
53	53	Subashini S	a	a	1	1	1	1	1	1	1	a						53
54	54	Sulokshana. S	1	1	1	a	1	a	1	1	1							54
55	55	Suriya. S	a	a	1	a	1	1	1	1	1							55
56	56	Vaishali. B	a	a	1	1	1	1	a	1	a							56
57	57	Vishwa. B	a	a	a	1	1	a	1	1	a							57
58	58	Yuvraj. B	a	a	a	1	1	a	a	1	a							58
59	806	Prasanth. K	a	a	1	a	a	1	1	a	1							59
60	801	Abhishek. E	a	a	1	a	a	1	1	1	1							60
61	807	Sham Sunder. B	a	a	1	1	1	a	1	a	1							61
62	804	Mahesh Satish S	a	a	a	a	1	a	a	a	a							62
63	808	Siva Swiya K	a	a	1	a	1	1	1	a	1							63
64	803	Growthaman. K	1	1	1	1	1	1	1	1	1							64
65		Blurred Name																65
66	805	Muhammed Shahnad. A	a	a	1	a	a	1	1	a	1							66
67	802	Fasil Shereef. KP	a	a	1	a	a	1	a	1	a							67
68																		68
69																		69
70	Total No of Students:		67	67	67	67	67	67	67	67	67	67						70
71	Absent :		57	57	11	4	18	7	30	32	38	38						71
72	Present :		10	10	56	23	49	60	31	35	29	29						72
73	Signature:																	73
74																		74
75																		75

8 14 5 10 7 4 / 85 A

Marks Details

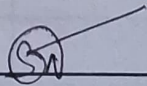
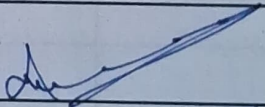
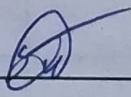
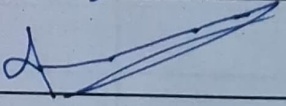
S.No.	Exp 1 25	Exp 2 25	Exp 3 25	Exp 4 25	Exp 5 25	Exp 6 25	Exp 7 25	Exp 8 25	Exp 9 25	Exp 10 25	Exp 11 25	Exp 12 25	Exp 13 25	Exp 14 25	Exp 15 25	Overall Total	Average Weightage 25	Model Exam 25	Internal Mark 50
51	24	25	25	25	25	25	25	25									24.8	45	40
52	25	24	25	25	25	25	24	23									24.5	42	37
53	25	25	25	25	25	25	25	25									25	46	44
54	24	24	24	24	24	25	25	25									24.3	46	45
55	25	24	23	22	24	24	25	24									23.8	46	42
56	25	25	25	25	25	25	25	25									25	47	48
57	24	25	24	25	25	24	25	24									24.5	44	40
58	25	24	25	25	24	25	24	25									24.6	42	40
59	24	24	24	23	24	24	23	24									23.7	44	40
60	25	24	24	24	23	24	23	24									23.8	42	41
61	24	24	24	24	24	24	23	24									23.8	42	39
62	25	24	25	24	25	24	24	24									24.3	45	41
63	25	24	25	24	25	25	25	24									24.6	46	42
64	25	25	25	25	25	24	25	24									24.7	47	44
65	25	25	25	25	25	25	25	25											
66	25	23	24	23	24	25	25	24									24.1	44	42
67	25	23	22	25	24	25	25	24									24.1	44	39
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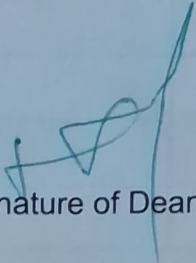
9

STUDENTS COUNCELLING RECORD

Reg. no:- 16 - Fayaz Ahamed. S advised to do the experiment and calculations in free hours (or) lunch hours.

RECORD OF INSPECTION

S.No.	Date Of Inspection	Signature of Faculty	Signature HOD
1	10/10/23		
2	9/11/23		

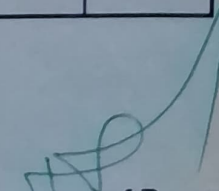

Signature of Dean

CLASS TIME TABLE

Day	1	2	3	4	5	6	7	8
	Monday	22CH3202	22ME3253	22CH3251	22MA3109	← 22CH3001 →		
Tuesday	22CH3203	22MA3109	22CH3201	22CH3202	22CH3202	22CH3203	22ME3253	
Wednesday	← 22ME3253 →		22CH3201	22MA3109	22CH3201	← 22CH3251 →		
Thursday	L1B	22CH3251	22CH3203	22MC3001	22MA3109	22CH3202	SEM.	
Friday	22ME3253	22CH3201	22MA3109	22CH3203	← 22CH3002 →			
Saturday	SEM	22CH3202	22CH3203	22CH3201	22MC3001	22CH3251	TWM	

FACULTY TIME TABLE

Day	1	2	3	4	5	6	7	8
	Monday							
Tuesday								
Wednesday						← 22CH3251 →		
Thursday								
Friday								
Saturday								


 Signature of Dean