

Academic Calendar for EVEN Semester of UG & PG programs for the year 2021-22

	VI semester B.E./B.Tech.	VI semester B.Arch./ B.Plan.	VIII semester B.E./B.Tech.	VIII semester B.Plan./B.Arch.	IX semester B.Arch #	IV Semester B.Arch.	IV semester B. Plan	IV semester MCA	IV semester M.Tech.	IV Semester M.Arch.	VI Sem MCA (2018 scheme)
Commencement of EVEN Semester	04.04.2022	04.04.2022	04.04.2022	04.04.2022	14.02.2022	11.04.2022	11.04.2022	04.04.2022	04.04.2022	06.04.2022	04.04.2022
Last Working day of EVEN Semester	16.07.2022	16.07.2022	30.06.2022	30.06.2022	10.06.2022	23.07.2022	23.07.2022	30.06.2022	30.06.2022	30.06.2022	30.06.2022
Practical/Viva- Examination	18.07.2022	18.07.2022			20.06.2022	25.07.2022	25.07.2022	04.07.2022			
	To 29.07.2022	To 29.07.2022	---	---	To 22.06.2022	To 30.07.2022	To 30.07.2022	To 09.07.2022	---	---	---
Theory Examinations	01.08.2022	01.08.2022	04.07.2022	04.07.2022		01.08.2022	01.08.2022	11.07.2022	20.07.2022		
	To 20.08.2022	To 20.08.2022	To 20.07.2022	To 15.07.2022	---	To 20.08.2022	To 20.08.2022	To 28.07.2022	To 10.08.2022	---	---
Internship	---	---	---	---	---	---	---	---	---	---	---
Internship Viva Voce/ Project viva	---	---	22.07.2022 To 30.07.2022	---	---	---	---	---	---	---	---
Summer Project / Professional training /Organization Study	---	---	---	---	---	---	---	---	---	---	---
Submission of the report to University	---	---	---	---	---	---	---	---	04.07.2022 To 18.07.2022	04.07.2022 To 16.07.2022	04.07.2022 To 16.07.2022
Commencement of ODD Semester	22.08.2022	22.08.2022	---	18.07.2022 (B. Arch.)	---	22.08.2022	22.08.2022	---	---	---	---

B.Arch. X and IX semester swapped for AY 2021-22

Please Note:

- The academic sessions for EVEN semesters should commence from the dates mentioned above.
- The Institute can plan to have extra classes before the last working day to complete the requisite hours of teaching and learning of courses as per the scheme.
- Faculty should conduct additional tutorial classes in Blended mode to solve the doubts of the students.
- The faculty/staff shall be available to undertake any work assigned by the university.
- Notification regarding the Calendar of Events relating to the conduct of University Examinations will be issued by the Registrar (Evaluation) from time to time.
- Academic Calendar may be modified based on guidelines/directions issued in the future by MHRD/UGC/AICTE/State Government.
- Academic Calendar is also applicable for Autonomous Colleges. In case any changes are to be effected by Autonomous Colleges in the academic terms and examination schedule, they could do so with the approval of the University.
- The college has to conduct offline classes to cover 80% of the syllabus of the courses; however, 20% of the syllabus can be covered in virtual (Online) mode. Attendance of the students for offline and online classes is mandatory and records should be maintained and submitted to the university whenever informed.



[[JAI SRI GURUDEV]]
Sri Adichunchanagiri Shikshana Trust (R.)

SJC Institute of Technology

CALENDAR OF EVENTS FOR THE ACADEMIC YEAR 2021-2022 (Even Semester)



(Affiliated to Visvesvaraya Technological University, Belagavi & Approved by AICTE, New Delhi) P. B No. 20, B. B. Road, Chickballapur - 562101, Karnataka
Phone: 08156 - 263181/82/83/84 Mobile: 9880373629/9901653915 Email: principal@sjcit.ac.in www.sjcit.ac.in
Accredited by NAAC, NBA, Gold rated by QS - I Gauge Certified

Week No.	Month	Week Days							No of Working Days	EVENTS
		Mon	Tue	Wed	Thu	Fri	Sat	Sun		
1.	MAR/APRIL	28	29	30	31	1	2	3	5	28 th HOD's / IC Meeting, April 1 st Staff Council Meeting, April 2 nd Chandramana Ugadi,
2.	APRIL	4	5	6	7	8	9	10	6	4 th - Registration and commencement of VI, VIII Sem BE & IV sem: M.Tech, 4 th HOD's / IC Meeting, 10 th Sri Ramanavami
3.	APRIL	11	12	13	14	15	16	17	4	April 11 th HOD's / IC Meeting, 14 th Dr. B R Ambedkar Jayanthi / Sri Mahaveer Jayanthi, 15 th Good Friday
4.	APRIL	18	19	20	21	22	23	24	6	18 th HOD's / IC Meeting, 23 rd - Functional Committee Meeting
5.	APRIL/MAY	25	26	27	28	29	30	1	6	11 th HOD's / IC Meeting, 29 th SEED Activity, 1 st May Day
6.	MAY	2	3	4	5	6	7	8	5	2 nd HOD's / IC Meeting, 3 rd Ramzan, May 5 th to 7 th - Tutorial I, 11 th - Announcement of Attendance CIE - I
7.	MAY	9	10	11	12	13	14	15	6	9 th HOD's / IC Meeting, May 12 th , 13 th , 14 th - Continuous Internal Evaluation I [for VI / VIII] semester
8.	MAY	16	17	18	19	20	21	22	6	16 th HOD's / IC Meeting, May 20 th - CIE-I Progress Report Dispatch, May 21 st - Class Teachers and Proctors meeting
9.	MAY	23	24	25	26	27	28	29	5	23 rd HOD's / IC Meeting, 25 th - Course wise Mid Feedback, 27 th SEED Activity
10.	MAY/JUNE	30	31	1	2	3	4	5	6	30 th HOD's / IC Meeting, June 2 nd to 4 th - Tutorial II
11.	JUNE	6	7	8	9	10	11	12	6	6 th HOD's / IC Meeting, 8 th - Announcement of Attendance CIE - II, 9 th , 10 th , 11 th - Continuous Internal Evaluation II [for VI / VIII] semester
12.	JUNE	13	14	15	16	17	18	19	6	13 th HOD's / IC Meeting, 17 th - CIE-II Progress Report Dispatch, June 18 th - Class Teachers and Proctors meeting
13.	JUNE	20	21	22	23	24	25	26	5	20 th HOD's / IC Meeting, 24 th SEED Activity
14.	JUNE/JULY	27	28	29	30	1	2	3	6	27 th HOD's / IC Meeting, June 30 th to July 2 nd - Tutorial III, July 2 nd - Announcement of Attendance CIE - III
15.	JULY	4	5	6	7	8	9	10	6	4 th HOD's / IC Meeting, 4 th , 5 th , 6 th - Continuous Internal Evaluation III [for VI / VIII] semester, 9 th - IQAC Meeting, 10 th Bakrid
16.	JULY	11	12	13	14	15	16	17	6	11 th HOD's / IC Meeting, 13 th CIE-III Progress Report Dispatch, 14 th - Class Teachers & Mentors meeting, 14 th Course Wise Feedback, Course End Survey and Program Exit Survey
17.	JULY	18	19	20	21	22	23	24	6	18 th HOD's / IC Meeting, Last Working Day of Even Semester: 16 th July 2022
18.	JULY	25	26	27	28	29	30	31	6	25 th HOD's / IC Meeting
19.	AUG	1	2	3	4	5	6	7	6	1 st HOD's / IC Meeting
20.	AUG	8	9	10	11	12	13	14	5	8 th HOD's / IC Meeting, 9 th Moharam Last Day
21.	AUG	15	16	17	18	19	20	21	5	15 th Independence Day
22.	AUG	22	23	24	25	26	27	28	6	22 nd HOD's / IC Meeting, 22 nd to 26 th - Internal Quality Audit
23.	AUG/SEPT	29	30	31	1	2	3	4	5	29 th HOD's / IC Meeting, 31 st Vinayaka Chaturthi
24.	SEPT	5	6	7	8	9	10	11	6	5 th HOD's / IC Meeting
25.	SEPT	12	13	14	15	16	17	18	6	12 th HOD's / IC Meeting
26.	SEPT	19	20	21	22	23	24	25	6	19 th HOD's / IC Meeting, 23 rd SEED Activity, 25 th Mahalaya Amavasye

4th April - Commencement of VI & VIII Semester BE, IV Sem M Tech

<p>VISION Preparing Competent Engineering and Management Professional to Serve the Society</p>	<p>MISSION</p> <ul style="list-style-type: none"> ❖ Providing Students with a Sound Knowledge in Fundamentals of their branch of Study. ❖ Promoting Excellence in Teaching, Training, Research and Consultancy. ❖ Exposing Students to Emerging Frontiers in various domains enabling Continuous Learning. ❖ Developing Entrepreneurial acumen to venture into Innovative areas. ❖ Imparting Value based Professional Education with a sense of Social Responsibility.
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Dr. R. Ranganatha
Dr. R. Ranganatha
HOD MED

B. N. Shobha
21/03/2022
Dr. B. N. Shobha
Chairman

Dr. G. T. Rajith
Dr. G. T. Rajith
Principal




SJCIT



DEPARTMENT OF MECHANICAL ENGINEERING CALENDAR OF EVENTS FOR 2021 -22 EVEN SEMESTER

Week No.	Month	Week Days							No. of Working Days	EVENTS
		Mon	Tue	Wed	Thu	Fri	Sat	Sun		
1.	MAR /APRIL	28	29	30	31	1			5	April 1 st Staff Council Meeting , April 2 nd Chandramana Ugadi,
2.	APRIL	4	5	6	7	8	9	10	6	April 4 th - Registration and commencement of VI & VIII Semester B E
3.	APRIL	11	12	13	14	15	16	17	4	April 14 th Dr. B R Ambedkar Jayanthi / Sri Mahaveer Jayanthi, April 15 th Good Friday
4.	APRIL	18	19	20	21	22	23	24	6	
5.	APRIL /MAY	25	26	27	28	29	30		6	April 29 th SEED Activity, May 1 st May Day
6.	MAY	2	3	4	5	6	7		5	May 3 rd Ramzan
7.	MAY	9	10	11	12	13	14	15	6	May 12 th , 13 th , 14 th - Continuous Internal Evaluation I [for VI / VIII] semester
8.	MAY	16	17	18	19	20	21	22	6	
9.	MAY	23	24	25	26	27	28	29	5	May 27 th SEED Activity
10.	MAY /JUNE	30	31	1	2	3	4	5	6	
11.	JUNE	6	7	8	9	10	11	12	6	June 9 th , 10 th , 11 th - Continuous Internal Evaluation II [for VI / VIII] semester
12.	JUNE	13	14	15	16	17	18	19	6	
13.	JUNE	20	21	22	23	24	25	26	5	June 24 th SEED Activity
14.	JUNE /JULY	27	28	29	30	1	2	3	6	
15.	JULY	4	5	6	7	8	9	10	6	July 4 th , 5 th , 6 th - Continuous Internal Evaluation III [for VI / VIII] semester, July 10 th Bakrid
16.	JULY	11	12	13	14	15	16	17	6	
17.	JULY	18	19	20	21	22	23	24	6	July 19 th Last working day of Even Semester, July 22 nd SEED Activity
18.	JULY	25	26	27	28	29	30	31	6	
19.	AUG	1	2	3	4	5	6	7	6	
20.	AUG	8	9	10	11	12	13	14	5	Aug 9 th Moharam Last Day
21.	AUG	15	16	17	18	19	20	21	5	Aug 15 th Independence Day
22.	AUG	22	23	24	25	26	27	28	6	Aug 26 th SEED Activity
23.	AUG /SEPT	29	30	1	2	3	4	5	5	Aug 31 st Vinayaka Chaturthi
24.	SEPT	5	6	7	8	9	10	11	6	
25.	SEPT	12	13	14	15	16	17	18	6	
26.	SEPT	19	20	21	22	23	24	25	6	Sept 23 rd SEED Activity, Sept 25 th Mahalaya Amavasya


Dr. R. Ranganatha
HOD MED



S.J.C INSTITUTE OF TECHNOLOGY, CHICKBALLAPUR
Department of Mechanical Engineering
TIME TABLE

Faculty name: Dr. RAVI KUMAR.T.R
 For the period: 2021-2022 EVEN
 Room: LH-04 & LH-05

W.E.F 04-04-2022
 SEMESTER: 6 A&B

DAYS / TIME	9.00 - 10.00	10.00 - 10.50	10.50 - 11.00	11.00 - 11.50	11.50 - 12.40	12.40 - 1.30	1.30 - 2.20	2.20 - 3.10	3.10 - 4.00	4.00 - 4.10	4.10 - 5.00
MONDAY		DME-II [6B] [LH-05]				Lunch break	CAMAL(A1)			Tea break	DME-II [6A]
TUESDAY	DME-II [6A] [LH-04]										DME-II [6B]
WEDNESDAY	DME-II [6B]						DME-II [6A]				
THURSDAY	DME-II [6A]										
FRIDAY	DME-II [6B]	CAMAL(B2)									
SATURDAY	DME-II [6B]			DME-II [6A]							

NOTE: The time table must include subject name, class and room no

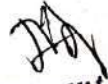
Prepared by :	Dr. Manjunatha K N	Approved by :	Dr. Ranganatha R
Date & Sign :	<i>[Signature]</i> 28/3/22	Date & Sign :	<i>[Signature]</i> 28/3/2022

||Jai Sri Gurudev||
S. J. C Institute of Technology, Chickballapur
Department of Mechanical Engineering
2021-22 EVEN SEM
Students list

Semester/Section : 6th A

Sl. No.	Reg No.	Name of the Student	Signature
1	ISJ19ME001	Adarsh M	
2	ISJ19ME002	Akarsh M	
3	ISJ19ME003	Akshay M	
4	ISJ19ME004	Amruth V M	
5	ISJ19ME005	Anirudh	
6	ISJ19ME006	Balaji N	
7	ISJ19ME007	Bhuvan Athresh S	
8	ISJ19ME008	Chadive Sathish Kumar Reddy	
9	ISJ19ME010	Chethanraj D N	
10	ISJ19ME011	Chirag C	
11	ISJ19ME012	Dhanush B	
12	ISJ19ME013	Dhanush N	
13	ISJ19ME014	Gagan Gowda C	
14	ISJ19ME015	Ganesh U	
15	ISJ19ME016	Harshith Gowda TI	
16	ISJ19ME018	Jahnvi Krupa A	
17	ISJ19ME019	Jashwanth J	
18	ISJ19ME020	Jayanth K R	
19	ISJ19ME021	Karthik B N	
20	ISJ19ME022	Keerthana B K	
21	ISJ19ME023	Kethireddy Hruday Reddy	
22	ISJ19ME024	Kumar S	
23	ISJ19ME025	Kuruba Avinash	
24	ISJ19ME026	Kushal Y S	
25	ISJ19ME027	Lakshay Kumar Singh	

26	ISJ19ME028	Likith K N	
27	ISJ19ME029	Madhu K	
28	ISJ19ME030	Madhu M N	
29	ISJ19ME031	Manju0th C	
30	ISJ19ME032	Manohar H K	
31	ISJ19ME034	Manoj H V	
32	ISJ19ME036	Md Aakib Khan	
33	ISJ19ME037	Mohammed Shoaib	
34	ISJ19ME038	Mohan H V	
35	ISJ19ME039	Mohankrish0 N	
36	ISJ19ME040	Mohith K V	
37	ISJ20ME400	Abhilash K N	
38	ISJ20ME401	Ajay Kumar G	
39	ISJ20ME402	Ashoka C	
40	ISJ20ME403	Bhavan.d	
41	ISJ20ME404	Chandan Gowda T N	
42	ISJ20ME405	Chandan N Gowda	
43	ISJ20ME406	Deepak N	
44	ISJ20ME407	G Chandan	
45	ISJ20ME408	Harshith A	
46	ISJ20ME409	Jayateertha C A	
47	ISJ20ME410	K G Rajeev lyengar	


 Department of Mechanical Engineering
 S.J.C. Institute of Technology
 Chickballapur-562 101

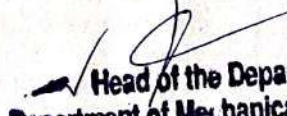
||Jai Sri Gurudev||
S. J. C Institute of Technology, Chickballapur
Department of Mechanical Engineering
2021-22 EVEN SEM

Students list

Semester/Section : 6th B

Sl. No.	Reg No.	Name of the Student	Signature
1	1SJ19ME041	Nagendra Babu N P	
2	1SJ19ME042	Nandan H	
3	1SJ19ME043	Nandhini G	
4	1SJ19ME044	Nikhil K M	
5	1SJ19ME045	Nithin M	
6	1SJ19ME046	Nithin M	
7	1SJ19ME047	Osama Hyder Babu Darvesh	
8	1SJ19ME049	Pooja P	
9	1SJ19ME050	Pothurai Ravikumar Reddy	
10	1SJ19ME051	Prabhakar Y V	
11	1SJ19ME052	Pulugura Manju0th Reddy	
12	1SJ19ME053	Punith D S	
13	1SJ19ME054	Rahul A	
14	1SJ19ME055	Rahul M	
15	1SJ19ME057	Rameshwar B M	
16	1SJ19ME058	Sagar T A	
17	1SJ19ME059	Sandeep B R	
18	1SJ19ME060	Sanivarapu Raja Sekhar Reddy	
19	1SJ19ME061	Sanjay S	
20	1SJ19ME062	Santosh N	
21	1SJ19ME063	Seetharam S	
22	1SJ19ME064	Shailesh N	
23	1SJ19ME065	Sharath Kumar H V	
24	1SJ19ME066	Shashank V	
25	1SJ19ME067	Shreyas L	
26	1SJ19ME068	Shrinidhi Kulkarni	
27	1SJ19ME069	Sreedhar A	

28	1SJ19ME071	Sridhar Reddy B	
29	1SJ19ME072	Sudeep Gowda N	
30	1SJ19ME073	Swasthik K M	
31	1SJ19ME074	Tabrez Pasha	
32	1SJ19ME075	Uday Kiran G R	
33	1SJ19ME076	V S Monish	
34	1SJ19ME077	Vijaykumar K S	
35	1SJ19ME078	Vivek B	
36	1SJ19ME079	Yashwanth K N	
37	1SJ20ME411	Karthik K J	
38	1SJ20ME412	Madhu T V	
39	1SJ20ME413	Nanda Kishore R	
40	1SJ20ME414	Pavan Kumar T N	
41	1SJ20ME415	Pradeep N	
42	1SJ20ME416	Praveen Kumar H A	
43	1SJ20ME417	Sumanth Y S	
44	1SJ20ME418	Varshith Gowda L	
45	1SJ18ME015	Boyananda Vardhan	
46	1SJ18ME017	Chandan Gowda M	
47	1SJ18ME074	Praveen G V	
48	1SJ19ME405	Girish KN	
49	1SJ20ME419	Arun Kumar K N	


Head of the Department
Department of Mechanical Engineering
S.J.C.I.T.,
CHICKBALLAPUR - 562 104

B. E. MECHANICAL ENGINEERING Choice Based Credit System (CBCS) and Outcome Based Education (OBE) SEMESTER - VI			
DESIGN OF MACHINE ELEMENTS II			
Course Code	18ME62	CIE Marks	40
Teaching Hours /Week (L:T:P)	3:2:0	SEE Marks	60
Credits	04	Exam Hours	03
Course Learning Objectives:			
<ul style="list-style-type: none"> To understand various elements involved in a mechanical system. To analyze various forces acting on the elements of a mechanical system and design them using appropriate techniques, codes, and standards. To select transmission elements like gears, belts, pulleys, bearings from the manufacturers' catalogue. To design a mechanical system integrating machine elements. To produce assembly and working drawings of various mechanical systems involving machine elements like belts, pulleys, gears, springs, bearings, clutches and brakes. 			
Module-1			
<p>Springs: Types of springs, spring materials, stresses in helical coil springs of circular and non-circular cross sections. Tension and compression springs, concentric springs; springs under fluctuating loads. Leaf Springs: Stresses in leaf springs, equalized stresses, and nipping of leaf springs. Introduction to torsion and Belleville springs. Belts: Materials of construction of flat and V belts, power rating of belts, concept of slip and creep, initial tension, effect of centrifugal tension, maximum power condition. Selection of flat and V belts- length & cross section from manufacturers' catalogues. Construction and application of timing belts. Wire ropes: Construction of wire ropes, stresses in wire ropes, and selection of wire ropes.</p>			
Module-2			
<p>Gear drives: Classification of gears, materials for gears, standard systems of gear tooth, lubrication of gears, and gear tooth failure modes. Spur Gears: Definitions, stresses in gear tooth: Lewis equation and form factor, design for strength, dynamic load and wear. Helical Gears: Definitions, transverse and normal module, formative number of teeth, design based on strength, dynamic load and wear.</p>			
Module-3			
<p>Bevel Gears: Definitions, formative number of teeth, design based on strength, dynamic load and wear. Worm Gears: Definitions, types of worm and worm gears, and materials for worm and worm wheel. Design based on strength, dynamic, wear loads and efficiency of worm gear drives.</p>			
Module-4			
<p>Design of Clutches: Necessity of a clutch in an automobile, types of clutch, friction materials and its properties. Design of single plate, multi-plate and cone clutches based on uniform pressure and uniform wear theories. Design of Brakes: Different types of brakes, Concept of self-energizing and self-locking of brakes. Practical examples, Design of band brakes, block brakes and internal expanding brakes.</p>			
Module-5			
<p>Lubrication and Bearings: Lubricants and their properties, bearing materials and properties; mechanisms of lubrication, hydrodynamic lubrication, pressure development in oil film, bearing modulus, coefficient of friction, minimum oil film thickness, heat generated, and heat dissipated. Numerical examples on hydrodynamic journal and thrust bearing design.</p>			

Antifriction bearings: Types of rolling contact bearings and their applications, static and dynamic load carrying capacities, equivalent bearing load, load life relationship; selection of deep groove ball bearings from the manufacturers' catalogue; selection of bearings subjected to cyclic loads and speeds; probability of survival.

Assignment:

Course work includes a **Design project**. Design project should enable the students to design a mechanical system (like single stage reduction gear box with spur gears, single stage worm reduction gear box, V-belt and pulley drive system, machine tool spindle with bearing mounting, C-clamp, screw jack, etc.) A group of students (maximum number in a group should be 4) should submit assembly drawing and part drawings, completely dimensioned, indicating the necessary manufacturing tolerances, surface finish symbols and geometric tolerances wherever necessary. Design project must be completed using appropriate solid modeling software. Computer generated drawings must be submitted. Design calculations must be hand written and should be included in the report. Design project should be given due credit in internal assessment.

Course Outcomes: At the end of the course, the student will be able to:

- CO1: Apply design principles for the design of mechanical systems involving springs, belts, pulleys, and wire ropes.
- CO2: Design different types of gears and simple gear boxes for relevant applications.
- CO3: Understand the design principles of brakes and clutches.
- CO4: Apply design concepts of hydrodynamic bearings for different applications and select Anti friction bearings for different applications using the manufacturers, catalogue.
- CO6: Apply engineering design tools to product design.
- CO7: Become good design engineers through learning the art of working in a team.

Question paper pattern:

- The question paper will have ten full questions carrying equal marks.
- Each full question will be for 20 marks.
- There will be two full questions (with a maximum of four sub-questions) from each module.
- Each full question will have sub- question covering all the topics under a module.
- The students will have to answer five full questions, selecting one full question from each module.

SI No	Title of the Book	Name of the Author/s	Name of the Publisher	Edition and Year
Textbook/s				
1	Shigley's Mechanical Engineering Design	Richard G. Budynas, and J. Keith Nisbett	McGraw-Hill Education	10 th Edition, 2015
2	Fundamentals of Machine Component Design	Juvinal R.C, and Marshek K.M	John Wiley & Sons	Third Edition 2007 Wiley student edition
3	Design of Machine Elements	V. B. Bhandari	Tata Mcgraw Hill	4th Ed 2016.
4	Design of Machine Elements-II	Dr.M H Annaiah Dr. J Suresh Kumar Dr.C N Chandrappa	New Age International (P) Ltd.,	1s Ed., 2016
Reference Books				
1	Machine Design- an integrated approach	Robert L. Norton	Pearson Education	2 nd edition
2	Design and Machine Elements	Spotts M.F., Shoup T.E	Pearson Education	8 th edition, 2006

Updated on 16.04.2020/28092020

3	Machine design Hall, Holowenko, Laughlin (Schaum's Outline Series)	adapted by S.K.Somani	Tata McGraw Hill Publishing Company Ltd	Special Indian Edition, 2008
4	Elements of Machine Design	H.G.Patil, S.C.Pilli, R.R.Malagi, M.S.Patil	IK International	First edition,2019
5	Design of Machine Elements Volume II	T. Krishna Rao	IK international publishing house	2013
6	Hand book of Mechanical Design	G. M. Maithra and L.V.Prasad	Tata McGraw Hill	2 nd edition,2004

Design Data Hand Books:

- [1] Design Data Hand Book, K.Lingaiah, McGraw Hill, 2nd edition, 2003.
- [2] Design Data Hand Book, K.Mahadevan and Balaveera Reddy, CBS publication.
- [3] Design Data Hand Book, H.G.Patil, I.K.International Publisher, 2010
- [4] PSG Design Data Hand Book, PSG College of technology, Coimbatore

[Signature]
Department of Mechanical Engineering
S.J.C. Institute of Technology
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|| Jai Sri Gurudev ||
Sri Adichunchanagiri Shikshana Trust

SJC INSTITUTE OF TECHNOLOGY

Estd: 1986

Chickballapur – 562 101

Department of Mechanical Engineering LESSON PLAN

SUBJECT TITLE	DESIGN OF MACHINE ELEMENTS II		
SUBJECT TYPE	CORE		
SUBJECT CODE	18ME62		
ACADEMIC YEAR	2021 (EVEN SEMESTER)	BATCH	2019-2023
SCHEME	CBCS scheme (Effective from the academic year 2018 -2019)		
SEMESTER & SECTION	VI 'A'		
IA MARKS	40	EXAM MARKS	60
NUMBER OF LECTURE HOURS/WEEK	5	TOTAL NUMBER OF LECTURE HOURS	50
FACULTY NAME	Dr. RAVIKUMAR T R	NO. OF TIMES HANDLED	4
COURSE LEARNING OBJECTIVES: This course will enable students to			
1. Understand various elements involved in a Mechanical system: Springs, Belts, Ropes, Gears, Clutches, Brakes and Bearings.			
2. Determine various forces and stresses induced on the elements of a mechanical system to do its function.			
3. Design Mechanical system integrating machine elements using appropriate techniques, Codes and Standards			
4. Select transmission elements like gears, belts, pulleys, bearings from the manufacturers' catalogue.			
5. Produce assembly and working drawings of various mechanical systems involving machine elements like belts, pulleys, gears, springs, bearings, clutches and brakes.			
Course Outcomes: At the end of this course, students are able to:			
CO1	Understand the type and design procedure of various Machine elements (such as Springs, Belts, Ropes, Gears, Clutches, Brakes and Bearings).		
CO2	Determine Forces and stresses induced in machine elements subjected to different types of loading conditions (Such as Static, Dynamic and Wear).		
CO3	Design Machine Elements based on Strength criteria.		
CO4	Select suitable bearings to give support to different rotating elements.		

EXPLORE
2

CO-PO MATRIX

COURSE OUTCOMES	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	3	2	-	-	-	-	-	-	-	-	-	-	3	
CO2	3	3	2	1	-	-	-	-	-	-	-	-	3	
CO3	3	2	3	2	-	-	-	-	-	-	-	-	3	
CO4	3	2	3	1	-	-	-	-	-	-	-	-	3	

Note: Justification of CO-PO mapping

CO'S	PO'S	LEVELS	JUSTIFICATIONS
CO1	PO1	3	CO1 is having high level consistency with PO1, because it addresses the fundamental knowledge of the subject to the students
	PO2	2	CO1 is having medium level consistency with PO2, because it derives the equations by using first principles of mathematics.
CO2	PO1	3	CO2 is having high level consistency with PO1, because it addresses apply the knowledge of mathematics to determination of the stresses induced in the machine elements.
	PO2	3	CO2 is having high level consistency with PO2, because the students are able to determine stresses in machine elements subjected to different types of loads.
	PO3	2	CO2 is having medium level consistency with PO3, because the students are able to design the machine elements based strength criteria by determining different stresses induced in the element
	PO4	1	CO2 is having Low level consistency with PO4, because the students are able to investigate stresses induced in machine elements to check the machine element is safe or not to withstand the applied load.
CO3	PO1	3	CO3 is having high level consistency with PO1, because the students know the knowledge of various forces acting on machine elements.
	PO2	2	CO3 is having medium level consistency with PO2, because it determine various stresses developed in a machine elements subjected to different loading conditions to check the design component is safe or not based on strength criteria.
	PO3	3	CO3 is having medium level consistency with PO3, because it determines the size of the machine elements based on strength criteria.

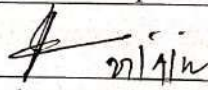
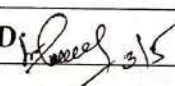
	PO4	2	CO3 is having medium level consistency with PO4, because it addresses the determination of stresses acting on the machine element and interpretation of the result with actual environment
CO4	PO1	3	CO4 is having high level consistency with PO1, because the students know the knowledge of Pressure distribution and load carrying capacity.
	PO2	2	CO4 is having medium level consistency with PO2, because it derives the equations and determine the pressure distribution subjected to different types of loads.
	PO3	3	CO4 is having high level consistency with PO3, because it determines the size of the bearings subjected to different loads and end conditions.
	PO4	1	CO4 is having low level consistency with PO4, because it addresses the determination of the size and interpretation of the result with actual environment conditions
CO1	PSO1	3	CO1 is having high level consistency with PSO1, because the students are able to know the design procedure before going to design a machine elements.
CO2	PSO1	3	CO2 is having high level consistency with PSO1, because the students are able to determine the stresses in various machine elements subjected to different types of loads.
CO3	PSO1	3	CO3 is having high level consistency with PSO1, because it determines the the size of the machine element subjected to various loads and end conditions.
CO4	PSO1	3	CO4 is having high level consistency with PSO1, because it determines the pressure distribution and the size of the bearings.

DELIVERY PLAN WITH DETAILS

MODULE - 2

Lecture #	Topic	Mode of Delivery (Pls Tick ✓)				Date of Delivery	COs Covered
		1	2	3	4		
1	Introduction about Engineering, Mechanical Engineering, Machine design		✓			5/4/22	
2	Syllabus, CO's		✓			6/4/22	
3	Gear drives: Classification of gears, Gear materials, Gear tooth and tooth failures, Lubrication of gears.		✓			7/4/22	CO1
4	Spur gears: Stresses in gear tooth, Design procedure,	✓				9/4/22	CO2
5	Gear tooth design against Static, Dynamic and Wear load.	✓				12/4/22	CO3
6	Solving Problems	✓				13/4/22	CO3
7	Solving Problems	✓				19/4/22	CO3
8	Helical gears: Definitions, Transverse and Normal module, Formative No. of teeth		✓			20/4/22	CO1
9	Design Procedure, Gear tooth design against Static, Dynamic and Wear load.	✓				21/4/22	CO1
10	Solving Problems	✓				23/4/22	CO3
11	Solving Problems	✓				26/4/22	CO3

Textbook : and chapter : **Textbook :** and chapter : "Design of Machine Elements", V B Bhandari, Tata Mcgraw Hill, 4th Edition, 2016. Chapter 17 and 18.

Signatures	Faculty: 	#HOURS	Allotted	Taken
	HoD:  3/5		16	16

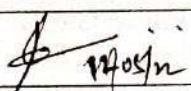
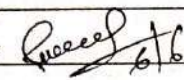
Remarks

MODULE - 3

Lecture #	Topic	Mode of Delivery (Pls Tick ✓)				Date of Delivery	COs Covered
		1	2	3	4		
1	Bevel gears: Definitions, Formative No. of teeth,		✓			27/4/22	CO1
2	Design procedure	✓				28/4/22	CO1
3	Gear tooth design against Static, Dynamic and Wear load.	✓				30/4/22	CO2
4	Solving Problems	✓				4/5/22	CO3
5	Solving Problems	✓				4/5/22	CO3
6	Worm gears: Definitions, Types of worm and	✓				5/5/22	CO1

	worm gears, tooth materials						
7	Design procedure,	√				5/5/22	CO1
8	Gear tooth design against Static, Dynamic and Wear load.	√				10/5/22	CO2
9	Solving Problems	√				11/5/22	CO3
10	Solving Problems	√				11/5/22	CO3

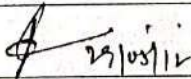
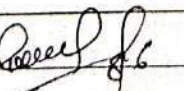
Textbook : and chapter: "Design of Machine Elements", V B Bhandari, Tata Mcgraw Hill, 4th Edition, 2016. Chapter 19 and 20.

Signatures	Faculty: 	#HOURS	Allotted	Taken
	HoD: 		12	12
Remarks				

MODULE - 4

Lecture #	Topic	Mode of Delivery (Pls Tick ✓)				Date of Delivery	COs Covered
		1	2	3	4		
1	Design of Clutches: Necessities, Types of clutch, Friction materials and its properties, Design of single plate and multi plate clutches		√			17/5/22	CO1
2	Solving Problems	√				18/5/22	CO3
3	Design of cone clutches, Problems	√	√			19/5/22	CO3
4	Design of Brakes: Different types of brakes, Self-energizing and self-locking of brakes		√			24/5/22	CO1
5	Design of band brakes, Solving Problems	√				25/5/22	CO3
6	Design of Block brakes, Solving Problems		√			26/5/22	CO3
7	Design of Internal expanding brakes, Solving Problems	√				28/5/22	CO3

Textbook : and chapter : "Design of Machine Elements", V B Bhandari, Tata Mcgraw Hill, 4th Edition, 2016. Chapter 11 and 12.

Signatures	Faculty: 	#HOURS	Allotted	Taken
	HoD: 		11	11
Remarks				

MODULE - 5

Lecture #	Topic	Mode of Delivery (Pls Tick ✓)				Date of Delivery	COs Covered
		1	2	3	4		

1	Lubrication and Bearings: Lubricants and their properties, Bearing materials and properties, Mechanisms of lubrication, Hydrodynamic lubrication. Terminologies		√			1/6/22	CO1
2	Design procedure of Hydrodynamic bearing, Solving Problems	√				2/6/22	CO1
3	Solving Problems	√				7/6/22	CO4
4	Thrust bearing design procedure, Problems	√				8/6/22	CO4
5	Antifriction bearings: Types of rolling contact bearings and their applications, Static and dynamic load carrying capacities, Equivalent bearing load, Load life relationship	√				14/6/22	CO2
6	Selection of deep; grove ball bearings from the manufacturer's catalogue	√				15/6/22	CO4
7	Solving Problems	√				16/6/22	CO4
8	Selection of bearings subjected to cyclic loads and speeds, probability of survival		√			21/6/22	CO4
9	Solving Problems	√				22/6/22	CO4

Textbook: and chapter:“Design of Machine Elements”, V B Bhandari, Tata Mcgraw Hill, 4th Edition, 2016. Chapter 15 and 16.

Signatures	Faculty:	#HOURS	Allotted	Taken
	HOD:			
Remarks				

MODULE – 1

Lecture #	Topic	Mode of Delivery (Pls Tick ✓)				Date of Delivery	COs Covered
		1	2	3	4		
1	Springs: Types of springs, spring materials and applications		√			23/6/22	CO1
2	Stresses in helical coil springs of different cross sections		√			25/6/22	CO2
3	Solving Problems	√				28/6/22	CO3
4	Leaf springs: Stresses in leaf springs, Problems	√				29/6/22	CO1
5	Belts: Materials, Concepts of slip and creep, Initial tension, Centrifugal tension and Maximum power condition, Timing belts		√			30/6/22	CO1
6	Selection of Flat belts: Design procedure, Solving Problems	√	√			7/7/22	CO3
7	Selection of V belts: Design Procedure, Solving Problems	√				9/7/22	CO3
8	Wire ropes: Construction of wire ropes ,Stresses in wire ropes	√				12/7/22	CO1
9	Selection of wire ropes: Design procedure,	√				13/7/22	CO3

10	Solving Problems	√	14/7/22	CO3
Textbook : and chapter : "Design of Machine Elements", V B Bhandari, Tata Mcgraw Hill, 4 th Edition, 2016. Chapter 10, 13 and 14.				
Signatures	Faculty:	#HOURS	Allotted	Taken
	HoD:		10	16
Remarks				

Text Books:

1. "Mechanical Engineering Design", Shigley's, Richard G and J Keith Nisbett, McGraw-Hill Education, 10th Edition, 2015.
2. "Design of Machine Elements", V B Bhandari, Tata Mcgraw Hill, 4th Edition, 2016.

Reference Books:

1. "Machine Design- an integrated approach", Robert L Norton, Pearson Education, 2nd Edition, 2016.
2. "Design and Machine Elements", Spotts M F, Shoup T E, Pearson Education, 8th Edition, 2006.
3. "Machine Design", Schaum's Outline series, Hall, Holowenko, Laughlin adapted by S K Somani, Tata McGraw Hill publishing company Ltd, Special indian Edition, 2008.

Design Data Hand Book:

1. Design Data Hand Book, K Lingaiah, McGraw Hill, 2nd edition, 2003.

(Note: Mode of Delivery : 1:Black Board 2:PPT 3:Video 4:Demo/Hands-on)

INTERNAL/ASSIGNMENT/QUIZ SCHEDULE

TEST and QUIZ		COs and Portions Covered		ASSIGNMENT	
Test# and Quiz#	DATE	CO	Modules	Assignment#	Submission DATE
T1 & Q1	12/5/2022	CO1, CO2 & CO3	Modules 2 & 3	A1	11/5/2022
T2 & Q2	09/6/2022	CO1 & CO3	Modules 4 & 5	A2	08/6/2022
T3 & Q3	04/7/2022	CO1, CO2, CO3 & CO4	Modules 5 & 1	A3	03/7/2022


SUMMARY

Signatures With Date	Faculty:	Total #HOURS	Allotted	Taken
	HoD:		50	71
Remarks				

ENCLOSURES

1. Syllabus
2. CO Attainment
3. Gap Analysis
4. Special lectures/talks arranged if any

Feedback by PAC


04/04/2022
Faculty


Course coordinator


PAC


HOD



Estd: 1986

|| Jai Sri Gurudev ||
Sri Adichunchanagiri Shikshana Trust *

SJC INSTITUTE OF TECHNOLOGY

Chickballapur – 562 101

Department of Mechanical Engineering

QUESTION BANK

SUBJECT TITLE	DESIGN OF MACHINE ELEMENTS II		
SUBJECT TYPE	CORE		
SUBJECT CODE	18ME62		
ACADEMIC YEAR	2021-22 (EVEN SEMESTER)	BATCH	2019-2023
SCHEME	CBCS scheme (Effective from the academic year 2018 -2019)		
SEMESTER	VI 'A & B'		
FACULTY NAME and DESIGNATION	Dr. RAVIKUMAR T R, Assistant Professor		

<i>Module -1</i>			
<i>Q. No.</i>	<i>Questions</i>	<i>Bloom's LL</i>	<i>COs</i>
1	Enumerate the application of springs. Classify in detail about helical and leaf springs	L1	CO1
2	Classify different types of belts used in machine tools.	L1	CO1
3	Write a short note on Timing belts used in precision machines.	L1	CO1
4	Derive an expression for the deflection of a close coiled helical spring.	L2	CO1
5	Derive an expression for the stress induced in a helical spring, with usual notations. (June 2012)	L2	CO1
6	Derive an expression for an effort required to raise the load Q by using Hoist and Tackle mechanism.	L2	CO1
7	A carriage weighing 25000 N is moving on track with a linear velocity of 3.6 km/hour. If it is brought to rest by two helical compression springs in the form of a bumper by undergoing a compression of 180 mm. The springs may be assumed to have a spring index of 6 and permissible shear strength of 450 MPa. Design the spring and determine the diameter of the	L3	CO2

	wire, mean coil diameter and the length of the spring. Assume the modulus of rigidity of the spring material as 81.4 GPa. (June 2012)		
8	A V-belt drive is required to transmit 15kW at 210mm sheave running at 800 rpm to another pulley to run at 400 rpm. The belt used is 30mm wide at top, 21mm thick with V-angle 40°. The allowable stress for belt material is 2MPa. Center distance is 1.2m. Specific weight of belt material is 1.1gm/cc. Coefficient of friction of smaller pulley is 0.3 and for larger pulley is 0.25. Find the number of V-belts of given cross section required for this application.	L3	CO3
9	For a flat belt drive, the following data are given: Power transmitted = 10kW Speed of motor = 1200 rpm Speed of driven pulley = 400 rpm Velocity of belt = 14m/s Load factor = 1.2 Density of leather = 9.8 kN/m ³ Smaller pulley diameter to thickness of belt ratio = 36 Factor of safety = 10 Ultimate strength of belt material = 24 MPa Centre distance = 2.1 m and Coefficient of friction = 0.36 Design the belt.	L4	CO3
10	Design the complete specification of a helical compression spring to sustain axial load of 3 kN. The deflection is 60mm and the spring index is 6. Shear stress is not to exceed 300 MPa. Take $G = 81 \text{ GPa}$. Take clearance $a = 0.25y$. Assume squared and round ends.	L4	CO3

Module -2

Q. No.	Questions	Bloom's LL	COs
1	Sketch and Explain the different forms of Involute gear tooth. (June 2012)	L1	CO1
2	Explain the gear tooth failure modes and their possible remedies to avoid	L1	CO1

	the failure.		
3	Explain formative number of teeth in helical gears.	L1	CO1
4	Derive an expression for beam strength of a spur gear tooth. Also list the assumptions. (June/July 2019)	L2	CO1
5	Design a pair of spur gear transmits 15kW from a shaft rotating at 1100 rpm to a parallel shaft which is to rotate at 340 rpm. Assume number of teeth on pinion 31 and 20° FDI tooth form. The material for pinion is C45 steel untreated and for gear cast steel 0.2%C untreated.	L3	CO3
6	Design a bronze spur gears 81MPa and mild steel pinion 101MPa to transmit 5kW at 1800rpm. The velocity ratio is 3.5 to 1, pressure angle is 14 1/2° involute. Not less than 15 teeth are to be used on either gear. Determine the module, face width & suggest suitable surface hardness for the weaker member based on dynamic & wear considerations.	L3	CO2
7	The following data refer to a helical gear drive a. Power transmitted 30kW at 2800 rpm of pinion b. Speed reduction ration 4.5 c. Helix angle 25° d. Material for both pinion and gears is medium carbon steel whose allowable bending stress may be taken as 230MPa, BHN =275. e. Pinion material is limited to 125mm. Determine module and face width. Check the design for wear strength against dynamic loading. Determine also the axial thrust on the shaft.	L3	CO2
8	A cast steel pinion rotating at 900 rpm is to drive cast iron gear at 144 rpm. The static design stresses for pinion and gear materials are 103 MPa and 55 MPa respectively. The teeth are to have standard 20° stub involute profiles and the maximum power to be transmitted is 25 KW. Design the spur gears completely and check for the dynamic and wear loads. The gear surfaces are hardened to BHN 250. Use 16 teeth on the pinion.	L3	CO3
9	A pair of equal diameter herringbone gears of CI ($\sigma_0=60\text{MPa}$) is used to transmit 6kW at 6000rpm. The center distance between the gears is 80mm, the normal pressure angle is 20° and helix angle is 28°. The teeth's are FDI. Determine (i) transverse module, (ii) normal module & (iii) face	L4	CO3

	width.		
10	A pair of helical gears with a 23° helix angle is to transmit 2.5 KW at 10,000 rpm of the pinion. The velocity ratio is 4:1. Both gears are to be made of hardened steel with an allowable stress of 100 Mpa for each gear. The gears are 20° stub and the pinion is to have 24 teeth. Design the gears and determine the required BHN.	L4	CO1

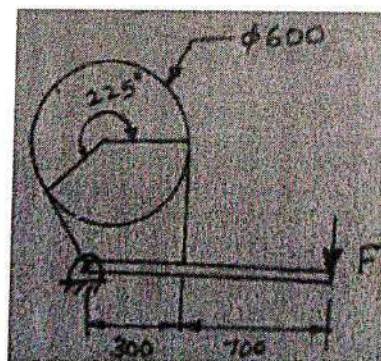
Module -3			
Q. No.	Questions	Bloom's LL	COs
1	Explain the advantages of worm drive. Write a note on materials used for worm and worm wheel. (June 2012)	L1	CO1
2	Explain self-locking effect in case of a worm gear drive.	L1	CO1
3	Under what circumstances the bevel gears are used? Give detailed classification of bevel gears.	L1	CO1
4	Derive an equation for formative number of teeth on bevel gear. (Dec 2018/Jan 2019).	L2	CO1
5	Design a pair of miter bevel gears to transmit 9kW at 1200 rpm. The pitch line velocity of gear is not exceeding 15m/sec.	L3	CO1
6	A pair of bevel gear wheels with 20° pressure angle consists of 20 teeth pinion meshing with 30 teeth gear. The module is 4 mm while face width is 20 mm. The surface hardness of both pinion and gear is 400 BHN. The pinion rotates at 500 rpm and receives power from an electric motor. The starting torque of the motor is 150 percent of the rated torque. Determine the safe power that can be transmitted considering the dynamic load wear strength and endurance strength. The allowable bending stress may be taken as 240 MPa. (June/July 2018)	L3	CO2
7	Design a worm and worm wheel to transmit a power of 10kW with a speed reduction ratio of 20 and a center distance of 220 mm. The worm speed is 1000 rpm.	L3	CO3
8	Complete the design and determine the input power capacity of a worm gear speed reduces unit composed of a hardened steel worm and a	L3	CO3

	phosphor bronze gear having 20° stub involute teeth. The center distance C is to be 200 mm, the transmission ratio is to be 10 and the worm speed is to be 1750 rev/min. (June/July 2018)		
9	Design a worm gear drive to transmit a 2kW at 1000rpm of worm. The velocity ratio is 20:1 and center distance is 200mm. Material for the gear is phosphor bronze and that of worm is hardened steel. Determine the efficiency of the drive.	L4	CO3
10	A speed reduced unit is to be designed for an input power of 0.75 kW with a transmission ratio of 27. The speed of the hardened worm is 1750 r/min. The worm wheel is made of phosphor bronze. The tooth form is to be $14\frac{1}{2}$ involute. The allowable stress for the wheel may be taken as 80 MPa.	L4	CO3

Module -4

<i>Q. No.</i>	<i>Questions</i>	<i>Bloom's LL</i>	<i>COs</i>
1	Explain briefly the uniform pressure theory and uniform wear theory as applicable to friction clutches and brakes.	L1	CO1
2	Name the different type of clutches. Describe with the help of a neat sketch the working principle of any one friction clutch.	L1	CO1
3	Classify the brakes and name different types of mechanical brakes.	L1	CO1
4	Derive a relation to compute the torque developed on block brake.	L2	CO1
5	With help of a neat sketch derive an equation for torque transmitting capacity of single plate clutch, considering uniform wear.	L2	CO1
6	An automotive plate clutch consists of two pairs of contacting surfaces with asbestos friction lining. The maximum engine torque is 250 N-m. The clamping force is provided by nine springs, each compressed by 5 mm to give a force of 800 N, when the clutch is new: i. What is the factor of safety with respect to slippage when the clutch is brand new? ii. What is the factor of safety with respect to slippage after initial wear has occurred? iii. How much wear of friction lining can take place before the	L3	CO2

	clutch will slip? (June/July 2018).		
7	A multi plate clutch consists of five steel plates and four bronze plates. The inner and outer diameter of friction disks are 75 mm and 150 mm respectively. The coefficient of friction is 0.1 and the intensity of pressure is limited to 0.3 N/mm ² . Assuming uniform wear theory. Calculate: i. The required operating force, ii. Power transmitting capacity at 750 r/min. (June 2012)	L3	CO2
8	A differential band brake is shown in Fig. The width and thickness of the steel band are 100 mm and 3 mm respectively. The permissible tensile stress in the band is limited to 50 MPa. The coefficient of friction between the friction lining and the drum is 0.25. Calculate i. Tension in the band, ii. The actuating force, iii. Torque capacity of the brake. (June 2012)	L3	CO2
9	Design a centrifugal clutch with four shoes for transmitting 20kW at 1200rpm. The speed at which engagement begins is 80% of the running speed. The inside radius of the pulley rim is 150mm. the shoes are lined with Ferodo lining for which $\mu=0.25$.	L4	CO3
10	A single band brake shown in fig. is to be designed to stop the rotation of a shaft transmitting a power of 45kW at a rated speed of 500 rpm. Selecting suitable materials determine, i) Dimensions of rectangular cross section of band. ii) Dimensions of rectangular cross section of brake lever.(Assume $h_1=2b_1$). iii) Diameter of fulcrum pin. Assume $I_p=1.5dp$, bearing stress $\sigma_b=10\text{MPa}$.	L4	CO3



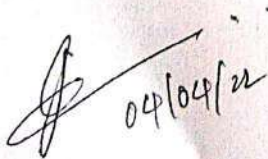
Module -5

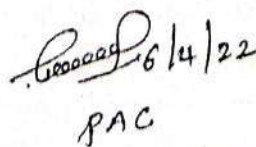
Q. No.	Questions	Bloom's LL	COs
1	List the different forms of lubrication and bearing materials.	L1	CO1
2	Explain the mechanism of Hydrodynamic lubrication in journal bearing.	L1	CO1
3	What are the advantages and disadvantages of rolling contact bearings?	L1	CO1
4	Derive Petroff's equation for coefficient of friction for Hydrodynamic bearing and also state assumption. (June/July 2019)	L2	CO1
5	Explain the properties of a good bearing material should possess. List the different types of bearing materials. (June 2012)	L2	CO1
6	The following data are given for a full journal bearing: Radial load 25 kN, L/d ratio 1:1, Unit bearing pressure 2.5 MPa, Viscosity of the lubricant 20Cp, Class of fit H7 e7. Calculate i. Dimensions of the bearing, ii. Minimum oil film thickness, iii. Requirement of oil flow. Assume that the process to clearance is centered. (June 2012)	L3	CO4
7	A 75mm long full journal bearing of diameter 75mm supports a load of 12 kN on a journal Y rotating at 1800 rpm. Assuming a ratio of 1000 and an oil having viscosity of 0.01 kg/ms at the operating temperature, Determine the coefficient of friction by using i. The McKee equation, ii. The Raimondi and Boyd curve, iii also determine the amount of heat generated using the co-efficient of friction as calculated by the McKee equation. (June/July 2018)	L3	CO4
8	Design a multi collar thrust bearing for a propeller shaft of a 400 kW marine oil engine. The engine makes 300 rpm. The propeller has a pitch of 2.5m and slip is 30%. The permissible bearing pressure is 0.5 N/mm ² . Assume (a) uniform pressure theory and (b) uniform wear theory.	L3	CO4
9	Design the main bearing for a stationary slow speed steam engine for the following data: journal diameter = 180mm, Maximum load on the piston = 70kN, Engine speed = 200 rpm.	L4	CO4
10	A deep groove ball bearing of BC 02 series has to work under following work cycle at constant shaft speed of 1440 rev/min. i. Radial load of 2.5	L4	CO4

	kN for 10 seconds. ii. Radial load of 1.2 kN for 20 seconds, iii. Radial load of 450 kN for 30 seconds and the above cycle repeats itself. The bearing has to work for five years at 80 hours/week. Select the bearing for the above purpose.		
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Note:

1. Questions shall be framed by consolidating comprehensively from the following sources
 - Exercise problems of text books/ references
 - Previous year question VTU exam Question paper. (Mark the year/exam beside the question)
 - Questions by Experts during Interview/Academic Audit
 - Internet sources/ other Universities examination question papers.
 - Own / experience.
 - Gate questions mentioning the year.
2. Questions shall follow all the Bloom's learning levels with appropriate action verbs
3. There shall be a total of 50 questions considering 10 questions from each module, of which, 3 questions each at L1 and L2, 2 questions at L3, 1 question each at L4 and L5/L6.
4. Ensure the coverage of all Cos.

 04/04/22

 6/4/22
PAC


HOD



Estd: 1986

|| Jai Sri Gurudev ||
Sri Adichunchanagiri Shikshana Trust ®

SJC INSTITUTE OF TECHNOLOGY

Chickballapur – 562 101

Department of Mechanical Engineering ASSIGNMENT

SUBJECT TITLE	DESIGN OF MACHINE ELEMENTS II		
SUBJECT TYPE	CORE		
SUBJECT CODE	18ME62		
ACADEMIC YEAR	2021-22 (EVEN SEMESTER)	BATCH	2019-2023
SCHEME	CBCS scheme (Effective from the academic year 2018 -2019)		
SEMESTER	VI 'A & B'		
FACULTY NAME and DESIGNATION	Dr. RAVIKUMAR T R, Assistant Professor		

Module -1

Q. No.	Questions	Bloom's LL	COs
1	A carriage weighing 25000 N is moving on track with a linear velocity of 3.6 km/hour. If it is brought to rest by two helical compression springs in the form of a bumper by undergoing a compression of 180 mm. The springs may be assumed to have a spring index of 6 and permissible shear strength of 450 MPa. Design the spring and determine the diameter of the wire, mean coil diameter and the length of the spring. Assume the modulus of rigidity of the spring material as 81.4 GPa. (June 2012)	L3	CO2
2	A loaded narrow gauge car weighs 18 kN and moving at a velocity of 80 m/min is brought to rest by a buffer spring; of two helical springs. In bringing the car to rest the spring undergoes a compression of 200 mm. The allowable shear stress is 0.3 GPa and spring index is 8. Solve for the dimensions of spring. Take $G = 84 \text{ GPa}$.	L3	CO3
3	A V-belt drive is required to transmit 15kW at 210mm sheave running at 800 rpm to another pulley to run at 400 rpm. The belt used is 30mm wide at top, 21mm thick with V-angle 40° . The allowable stress for belt	L3	CO3

	material is 2MPa. Center distance is 1.2m. Specific weight of belt material is 1.1gm/cc. Coefficient of friction of smaller pulley is 0.3 and for larger pulley is 0.25. Find the number of V-belts of given cross section required for this application.		
4	<p>For a flat belt drive, the following data are given:</p> <p>Power transmitted = 10kW</p> <p>Speed of motor = 1200 rpm</p> <p>Speed of driven pulley = 400 rpm</p> <p>Velocity of belt = 14m/s</p> <p>Load factor = 1.2</p> <p>Density of leather = 9.8 kN/m³</p> <p>Smaller pulley diameter to thickness of belt ratio = 36</p> <p>Factor of safety = 10</p> <p>Ultimate strength of belt material = 24 MPa</p> <p>Centre distance = 2.1 m and</p> <p>Coefficient of friction = 0.36</p> <p>Design the belt.</p>	L4	CO3
5	<p>Design the complete specification of a helical compression spring to sustain axial load of 3 kN. The deflection is 60mm and the spring index is 6. Shear stress is not to exceed 300 MPa. Take $G = 81 \text{ GPa}$. Take clearance $a = 0.25y$. Assume squared and round ends.</p>	L4	CO3

Module -2

Q. No.	Questions	Blooms LL	COs
1	Design a pair of spur gear transmits 15kW from a shaft rotating at 1100 rpm to a parallel shaft which is to rotate at 340 rpm. Assume number of teeth on pinion 31 and 20° FDI tooth form. The material for pinion is C45 steel untreated and for gear cast steel 0.2%C untreated.	L3	CO2
2	Design a bronze spur gears 81MPa and mild steel pinion 101MPa to transmit 5kW at 1800rpm. The velocity ratio is 3.5 to 1, pressure angle is 14 1/2° involute. Not less than 15 teeth are to be used on either gear. Determine the module, face width & suggest suitable surface hardness for the weaker member based on dynamic & wear considerations.	L3	CO2

3	<p>The following data refer to a helical gear drive</p> <ol style="list-style-type: none"> Power transmitted 30kW at 2800 rpm of pinion Speed reduction ration 4.5 Helix angle 25° Material for both pinion and gears is medium carbon steel whose allowable bending stress may be taken as 230MPa, BHN =275. Pinion material is limited to 125mm. Determine module and face width. Check the design for wear strength against dynamic loading. <p>Determine also the axial thrust on the shaft.</p>	L3	CO2
4	<p>A pair of equal diameter herringbone gears of CI ($\sigma_o=60\text{MPa}$) is used to transmit 6kW at 6000rpm. The center distance between the gears is 80mm, the normal pressure angle is 20° and helix angle is 28°. The teeth's are FDI. Determine (i) transverse module, (ii) normal module & (iii) face width.</p>	L4	CO3
5	<p>A pair of helical gears with a 23° helix angle is to transmit 2.5 KW at 10,000 rpm of the pinion. The velocity ratio is 4:1. Both gears are to be made of hardened steel with an allowable stress of 100 Mpa for each gear. The gears are 20° stub and the pinion is to have 24 teeth. Design the gears and determine the required BHN.</p>	L4	CO3

Module -3

Q. No.	Questions	Bloom's LL	COs
1	<p>Design a pair of miter bevel gears to transmit 9kW at 1200 rpm. The pitch line velocity of gear is not exceeding 15m/sec.</p>	L3	CO2
2	<p>A pair of bevel gear wheels with 20° pressure angle consists of 20 teeth pinion meshing with 30 teeth gear. The module is 4 mm while face width is 20 mm. The surface hardness of both pinion and gear is 400 BHN. The pinion rotates at 500 rpm and receives power from an electric motor. The starting torque of the motor is 150 percent of the rated torque. Determine the safe power that can be transmitted considering the dynamic load wear strength and endurance strength. The allowable bending stress may be taken as 240 MPa. (June/July 2018)</p>	L3	CO2

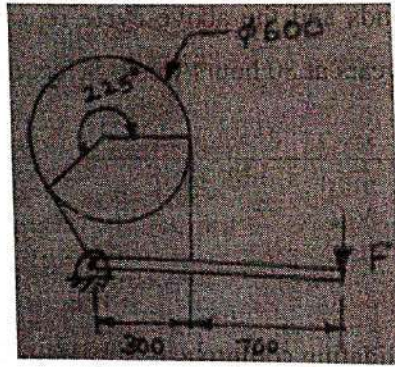
3	Design a worm and worm wheel to transmit a power of 10kW with a speed reduction ratio of 20 and a center distance of 220 mm. The worm speed is 1000 rpm.	L3	CO3
4	Design a worm gear drive to transmit a 2kW at 1000rpm of worm. The velocity ratio is 20:1 and center distance is 200mm. Material for the gear is phosphor bronze and that of worm is hardened steel. Determine the efficiency of the drive.	L4	CO3
5	A speed reduced unit is to be designed for an input power of 0.75 kW with a transmission ratio of 27. The speed of the hardened worm is 1750 r/min. The worm wheel is made of phosphor bronze. The tooth form is to be 14 ½ involute. The allowable stress for the wheel may be taken as 80 MPa.	L4	CO3

Module -4

Q. No.	Questions	Bloom's LL	COs
1	An automotive plate clutch consists of two pairs of contacting surfaces with asbestos friction lining. The maximum engine torque is 250 N-m. The clamping force is provided by nine springs, each compressed by 5 mm to give a force of 800 N, when the clutch is new: i. What is the factor of safety with respect to slippage when the clutch is brand new? ii. What is the factor of safety with respect to slippage after initial wear has occurred? iii. How much wear of friction lining can take place before the clutch will slip? (June/July 2018).	L3	CO2
2	A multi plate clutch consists of five steel plates and four bronze plates. The inner and outer diameter of friction disks are 75 mm and 150 mm respectively. The coefficient of friction is 0.1 and the intensity of pressure is limited to 0.3 N/mm ² . Assuming uniform wear theory. Calculate: i. The required operating force, ii. Power transmitting capacity at 750 r/min. (June 2012)	L3	CO2
3	A differential band brake is shown in Fig. The width and thickness of the steel band are 100 mm and 3 mm respectively. The permissible tensile stress in the band is limited to 50 MPa. The coefficient of friction between the friction lining and the drum is 0.25. Calculate i. Tension in	L3	CO3

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	the band, ii. The actuating force, iii. Torque capacity of the brake. (June 2012)		
4	Design a centrifugal clutch with four shoes for transmitting 20kW at 1200rpm. The speed at which engagement begins is 80% of the running speed. The inside radius of the pulley rim is 150mm. the shoes are lined with Ferodo lining for which $\mu=0.25$.	L4	
5	A single band brake shown in fig. is to be designed to stop the rotation of a shaft transmitting a power of 45kW at a rated speed of 500 rpm. Selecting suitable materials determine, i) Dimensions of rectangular cross section of band. ii) Dimensions of rectangular cross section of brake lever.(Assume $h_1=2b_1$). iii) Diameter of fulcrum pin. Assume $I_p=1.5dp$, bearing stress $\sigma_b=10\text{MPa}$.	L4	CO3




Module -5


Q. No.	Questions	Bloom's LL	COs
1	The following data are given for a full journal bearing: Radial load 25 kN, L/d ratio 1:1, Unit bearing pressure 2.5 MPa, Viscosity of the lubricant 20Cp, Class of fit H7 e7. Calculate i. Dimensions of the bearing, ii. Minimum oil film thickness, iii. Requirement of oil flow. Assume that the process to clearance is centered. (June 2012)	L3	CO4
2	A 75mm long full journal bearing of diameter 75mm supports a load of 12 kN on a journal Y rotating at 1800 rpm. Assuming a ratio of 1000 and an oil having viscosity of 0.01 kg/ms at the operating temperature, Determine the coefficient of friction by using i. The McKee equation, ii. The Raimondi and Boyd curve, iii also determine the amount of heat	L3	CO4

	generated using the co-efficient of friction as calculated by the McKee equation. (June/July 2018)		
3	Design a multi collar thrust bearing for a propeller shaft of a 400 kW marine oil engine. The engine makes 300 rpm. The propeller has a pitch of 2.5m and slip is 30%. The permissible bearing pressure is 0.5 N/mm ² . Assume (a) uniform pressure theory and (b) uniform wear theory.	L3	CO4
4	Design the main bearing for a stationary slow speed steam engine for the following data: journal diameter = 180mm, Maximum load on the piston = 70kN, Engine speed = 200 rpm.	L4	CO4
5	A deep groove ball bearing of BC 02 series has to work under following work cycle at constant shaft speed of 1440 rev/min. i. Radial load of 2.5 kN for 10 seconds. ii. Radial load of 1.2 kN for 20 seconds, iii. Radial load of 450 kN for 30 seconds and the above cycle repeats itself. The bearing has to work for five years at 80 hours/week. Select the bearing for the above purpose.	L4	CO4

Note:

- Questions shall be framed by consolidating comprehensively from the following sources
 - Exercise problems of text books/ references
 - Previous year question VTU exam Question paper. (Mark the year/exam beside the question)
 - Questions by Experts during Interview/Academic Audit
 - Internet sources/ other Universities examination question papers.
 - Own / experience.
- Questions shall follow all the Bloom's learning levels with appropriate action verbs
- There shall be a total of 25 questions considering 5 questions from each module, of which, 3 questions at L3, 2 questions each at L4/L5.
- Ensure the coverage of all COs
- Rubrics to be specified for all assignment questions.

 04/04/22
[Faculty]

 26/4/22
Reviewer


HOD



Estd: 1986

|| Jai Sri Gurudev ||
Sri Adichunchanagiri Shikshana Trust *

SJC INSTITUTE OF TECHNOLOGY

Chickballapur – 562 101

Department of Mechanical Engineering ASSIGNMENT-1

SUBJECT TITLE	DESIGN OF MACHINE ELEMENTS II		
SUBJECT TYPE	CORE		
SUBJECT CODE	18ME62		
ACADEMIC YEAR	2021-22 (EVEN SEMESTER)	BATCH	2019-2023
SCHEME	CBCS scheme (Effective from the academic year 2018 -2019)		
SEMESTER	VI 'A & B'		
FACULTY NAME and DESIGNATION	Dr. RAVIKUMAR T R, Assistant Professor		

Q. No.	Questions	Bloom's LL	COs
1	Design a pair of spur gear transmits 15kW from a shaft rotating at 1100 rpm to a parallel shaft which is to rotate at 340 rpm. Assume number of teeth on pinion 31 and 20° FDI tooth form. The material for pinion is C45 steel untreated and for gear cast steel 0.2%C untreated.	L4	CO3
2	Design a pair of spur gears to transmit a power of 18 kW from a shaft running at 1000 rpm to a parallel shaft to be run at 250 rpm maintaining a distance of 160 mm between the shaft centers. Suggest suitable surface hardness for the gear pair	L4	CO3
3	Design a pair of helical gears to transmit power of 15kW at 3200 rpm with speed reduction 4:1 pinion is made of cast steel 0.4% C-untreated. Gear made of high grade CI, Helix angle is limited to 26° and not less than 20 teeth are to be used on either gear. Check the gears for dynamic and wear considerations.	L4	CO3
4	A pair of equal diameter herringbone gears of CI ($\sigma_o=60\text{MPa}$) is used to transmit 6kW at 6000rpm. The center distance between the gears is 80mm, the normal pressure angle is 20° and helix angle is 28°. The teeth's are FDI. Determine (i) transverse module, (ii) normal module & (iii) face	L4	CO3

	width, iv) BHN for gears		
5	Design a pair of bevel gears to transmit 12 kW at 300 rpm of the gear and 1470 rpm of the pinion. The angle between the shaft axes is 90°. The pinion has 20 teeth and the material for gears is cast steel ($\sigma = 183.33\text{N/mm}^2$) BHN 320. Take service factor as 1.25 and check the gears for wear and dynamic load. Suggest suitable surface hardness for the gear pair.	L4	CO3
6	A pair of bevel gear wheels with 20° pressure angle consists of 20 teeth pinion meshing with 30 teeth gear. The module is 4 mm while face width is 20 mm. The surface hardness of both pinion and gear is 400 BHN. The pinion rotates at 500 rpm and receives power from an electric motor. The starting torque of the motor is 150 percent of the rated torque. Determine the safe power that can be transmitted considering the dynamic load wear strength and endurance strength. The allowable bending stress may be taken as 240 MPa.	L4	CO3

Rubrics:

1. If all questions answered - 6M
2. If on date submission (i.e. 08/06/2022) - 2M
3. If assignment write neatly - 2M

Total **10M**



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Page: 1/4

Draft Copy

Internal Test Question paper format- CBCS Scheme

Name of the staff/s: Dr. RAVIKUMAR T R
Date: 13/05/2022
Signature: *[Signature]* 13/05/22

Reviewer's Signature: _____

NOTE: Only the following information's to be given to the students.

S.J.C. Institute of Technology
Department: MECHANICAL ENGINEERING

Test : I
Semester: 6th Section: A & B
Subject Name & Code: DESIGN OF MACHINE ELEMENTS-II [18ME62]

Instructions

Date: 18/05/2022
Duration: 90 minutes

Max Marks: 50+10MCQ

- i. Answer all the questions.
- ii. Use of Design data hand book is permitted
- iii. Missing data, if any may be suitably assumed

Question Number		Marks	CO	BT/L
1	Derive an expression for beam strength of a spur gear tooth. Also list the assumptions made in design of spur gear.	10M	CO1	L2
	OR			
2	Derive an expression for the load carrying capacity of a helical gear tooth. Also list the assumptions made in design of helical gear.	10M	CO1	L2
3	Design a pair of spur gear transmits 15kW from a shaft rotating at 1100 rpm to a parallel shaft which is to rotate at 340 rpm. Assume number of teeth on pinion 31 and 20° FDI tooth form. The material for pinion is C45 steel untreated and for gear cast steel 0.2%C untreated.	10M	CO3	L4
	OR			
4	Design a pair of spur gears to transmit a power of 18 kW from a shaft running at 1000 rpm to a parallel shaft to be	10M	CO3	L4

not mark L3

L3

	run at 250 rpm maintaining a distance of 160 mm between the shaft centers. Suggest suitable surface hardness for the gear pair			
5	Design a pair of helical gears to transmit power of 15kW at 3200 rpm with speed reduction 4:1 pinion is made of cast steel 0.4% C-untreated. Gear made of high grade CI, Helix angle is limited to 26° and not less than 20 teeth are to be used on either gear. Check the gears for dynamic and wear considerations.	10M	CO3	L4
	OR			
6	A pair of equal diameter herringbone gears of CI ($\sigma_o=60\text{MPa}$) is used to transmit 6kW at 6000rpm. The center distance between the gears is 80mm, the normal pressure angle is 20° and helix angle is 28° . The teeth's are FDI. Determine (i) transverse module, (ii) normal module & (iii) face width, iv) BHN for gears	10M	CO3	L4
7	Explain the modes gear tooth failure and their possible remedies to avoid the failure.	10M	CO1	L2
	OR			
8	Explain Formative number of teeth on Helical Gear	10M	CO1	L2
9	Design a pair of bevel gears to transmit 12 kW at 300 rpm of the gear and 1470 rpm of the pinion. The angle between the shaft axes is 90° . The pinion has 20 teeth and the material for gears is cast steel ($\sigma = 183.33\text{N/mm}^2$) BHN 320. Take service factor as 1.25 and check the gears for wear and dynamic load. Suggest suitable surface hardness for the gear pair.	10	CO3	L4
	OR			
10	A pair of bevel gear wheels with 20° pressure angle consists	10	CO3	L4



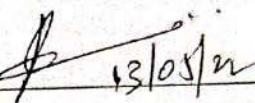
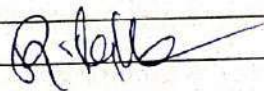
	of 20 teeth pinion meshing with 30 teeth gear. The module is 4 mm while face width is 20 mm. The surface hardness of both pinion and gear is 400 BHN. The pinion rotates at 500 rpm and receives power from an electric motor. The starting torque of the motor is 150 percent of the rated torque. Determine the safe power that can be transmitted considering the dynamic load wear strength and endurance strength. The allowable bending stress may be taken as 240 MPa.			
	Multiple Choice Questions			
1	When the axes of two shafts are perpendicular and intersecting, use a) Spur gear b) Worm gears c) Bevel gears d) Helical gears	1	CO1	L1
2	Which of the following type of gears are free from axial thrust a) Herringbone gears b) Worm gears c) Bevel gears d) Helical gears	1	CO1	L1
3	Which of the following type of gears are used for noiseless operations? a) Spur gear b) Bevel gear c) Worm gears d) Helical gears	1	CO1	L1
4	Involute profile is widely used for gear tooth because a) Pressure angle remains constant b) Face and Flank form a continuous curve c) Involute rack has straight sided teeth d) All the above factors	1	CO1	L1
5	In metric system, the size of the gear tooth is specified by a) Circular pitch b) Diametral pitch c) Module d) Pitch circle diameter	1	CO1	L1

6	The pitch circle diameter and number of teeth in a spur gear are d and z respectively. The module m is defined as a) $(\pi d / z)$ b) (d / z) c) (z / d) d) $(d z)$	1	CO1	L1
7	In spur gears, Lewis form factor depends upon a) Module b) Number of teeth c) Pressure angle d) Both b and c	1	CO1	L1
8	Beam strength of gear tooth is a) Maximum tangential force that the tooth can transmit without bending failure. b) Maximum bending stress that the tooth can transmit without failure. c) Maximum tangential force that the tooth can transmit without pitting failure. d) Maximum contact stress that the tooth can transmit without failure.	1	CO1	L1
9	Dynamic force on gear tooth is induced due to a) Inaccuracies of tooth profile and errors in tooth spacing b) Misalignment in bearings c) Elasticity of parts and inertia of rotating masses d) a, b and c	1	CO1	L1
10	Surface endurance strength of gear tooth depends upon a) Surface finish of gear tooth b) Ultimate tensile strength of gear materials c) Surface hardness of gear tooth d) Modulus of elasticity of gear materials	1	CO1	L1

**Internal Test Question paper format- CBCS Scheme**

Name of the staff/s: Dr. RAVIKUMAR T R

Date: 13/05/2022

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S.J.C. Institute of Technology

Department: MECHANICAL ENGINEERING

Test : I

Semester: 6th Section: A & B

Subject Name & Code: DESIGN OF MACHINE ELEMENTS-II [18ME62]

Instructions

Date: 18/05/2022

Duration: 90 minutes

Max Marks: 50+10MCQ

- Answer all the questions.
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Question Number		Marks	CO	RBTL
1	Derive an expression for beam strength of a spur gear tooth. Also list the assumptions made in design of spur gear.	10M	CO1	L3
	OR			
2	Derive an expression for the load carrying capacity of a helical gear tooth. Also list the assumptions made in design of helical gear.	10M	CO1	L3
3	Design a pair of spur gear transmits 15kW from a shaft rotating at 1100 rpm to a parallel shaft which is to rotate at 340 rpm. Assume number of teeth on pinion 31 and 20° FDI tooth form. The material for pinion is C45 steel untreated and for gear cast steel 0.2%C untreated.	10M	CO3	L4
	OR			
4	Design a pair of spur gears to transmit a power of 18 kW from a shaft running at 1000 rpm to a parallel shaft to be	10M	CO3	L4



	run at 250 rpm maintaining a distance of 160 mm between the shaft centers. Suggest suitable surface hardness for the gear pair			
5	Design a pair of helical gears to transmit power of 15kW at 3200 rpm with speed reduction 4:1 pinion is made of cast steel 0.4% C-untreated. Gear made of high grade CI, Helix angle is limited to 26° and not less than 20 teeth are to be used on either gear. Check the gears for dynamic and wear considerations.	10M	CO3	L4
	OR			
6	A pair of equal diameter herringbone gears of CI ($\sigma_o=60\text{MPa}$) is used to transmit 6kW at 6000rpm. The center distance between the gears is 80mm, the normal pressure angle is 20° and helix angle is 28° . The teeth's are FDI. Determine (i) transverse module, (ii) normal module & (iii) face width, iv) BHN for gears	10M	CO3	L4
7	Explain the modes gear tooth failure and their possible remedies to avoid the failure.	10M	CO1	L2
	OR			
8	Explain Formative number of teeth on Helical Gear	10M	CO1	L2
9	Design a pair of bevel gears to transmit 12 kW at 300 rpm of the gear and 1470 rpm of the pinion. The angle between the shaft axes is 90° . The pinion has 20 teeth and the material for gears is cast steel ($\sigma_o = 183.33\text{N/mm}^2$) BHN 320. Take service factor as 1.25 and check the gears for wear and dynamic load. Suggest suitable surface hardness for the gear pair.	10	CO3	L4
	OR			
10	A pair of bevel gear wheels with 20° pressure angle consists	10	CO3	L4

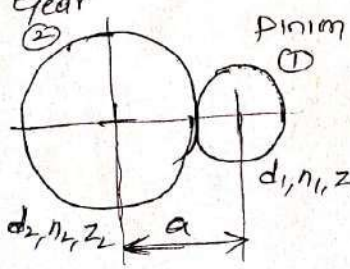


Test-1

DEPARTMENT

Scheme & Solutions

Semester: VIA/B Subject Title: DESIGN OF MACHINE ELEMENTS Subject Code: 18ME62
-II

Question Number	Solution	Marks Allocated
1.	<p>Beam strength of spur gear tooth</p> <p>Sketch - 0.2M</p> <p>Derivation $F_t = \sigma_b \cdot b \cdot y \cdot K_v$ \rightarrow 0.6M</p> <p>Assumptions [Atleast 4] - 0.2M</p>	10
2.	<p>Load carrying capacity of Helical gear tooth</p> <p>Sketch - 0.2M</p> <p>Derivation $F_t = \frac{\sigma_b \cdot b \cdot Y_p \cdot K_v}{C_w}$ \rightarrow 0.6M</p> <p>Assumptions [Atleast 4] - 0.2M</p>	10
3.	<p>Spur gear</p>  <p>Given data - 0.1M</p> <p>Other data $z_1 = 31$ $z_2 = 120$ } 0.1M</p> <p>gear is weaker \rightarrow 0.2M</p> <p>Module, $m = 5\text{mm}$ } 0.2M</p> <p>Face width, $b = 50\text{mm}$ }</p> <p>Tangential tooth load, $F_t = 3696.8\text{N}$ \rightarrow 0.1M</p> <p>Dynamic tooth load, $F_d = 18677.9\text{N}$ \rightarrow 0.2M</p> <p>Load stress factor, $K \geq 1.581$ } \rightarrow 0.2M</p> <p>BHN for pinion = 250 + gear = 300</p>	10M
4.	<p>Spur gear</p> <p>Given data - 0.1M</p> <p>Other data $d_1 = 64\text{mm}$, $d_2 = 256\text{mm}$ } 0.1M</p> <p>Assumption: Class-III, $z_1 = 20$ } \rightarrow 0.1M</p> <p>$\alpha = 20^\circ$ FDG</p> <p>pinion - SAE 3245</p> <p>gear is weaker - 0.1M</p> <p>Module, $m = 4\text{mm}$ } 0.2M</p> <p>$b = 40\text{mm}$ }</p> <p>$K_f =$</p>	

13/05/22



Subject Title: DME-II

Subject Code: 18ME62

Question Number	Solution	Marks Allocated
	Tangential tooth load, $F_t = 8057.81 \text{ N}$ Dynamic tooth load, $F_d = 13242.5 \text{ N}$ Load stress factor, $k = 3.233 \text{ N/mm}^2$ BHN for pinion = 450, & gear = 150	10M
5	<u>Helical gears</u> Given data: $P = 15 \text{ kW}$, $n_1 = 3200 \text{ rpm}$, $\beta = 26^\circ$, $Z_1 = 20$, $i = 4$ Other data: $n_2 = 800 \text{ rpm}$, $Z_2 = 80$, $Z_{v1} = 27.525$, $Z_{v2} = 110.18$ Gear is weaker - 01M Module, $m = 6 \text{ mm}$ Face width, $b = 60 \text{ mm}$ Tangential tooth load, $F_t = 1006 \text{ N}$ Dynamic tooth load, $F_d = 6155.27 \text{ N}$ Load stress factor, $k = 0.388 \text{ N/mm}^2$ BHN for pinion = 200 & gear = 150 BHN	10M
6.	<u>HERRINGBONE GEARS</u> Given data: $\sigma_b = 60 \text{ MPa}$, $P = 6 \text{ kW}$, $n_1 = 6000 \text{ rpm}$ $a = 80 \text{ mm}$, $\alpha = 20^\circ$, $\beta = 28^\circ$ Other data: Weaker member: Module $m =$ Face width $b = 30 \text{ mm}$ Tangential tooth load, $F_t =$ Dynamic tooth load, $F_d =$ BHN for pinion = & gear =	10M

12/05/22

Question Number	Solution	Marks Allocated
7	Modes of gear tooth failure List - 04M Explanation of each mode - 06M	10
8	Formative Number of teeth on Helical gear Definition - 02M Explanation Along with formula - 08M	10
9	<p><u>BEVEL GEARS</u></p> <p>Given data: $P = 12 \text{ kW}$, $n_2 = 300 \text{ rpm}$, $n_1 = 1470 \text{ rpm}$ $\Sigma = 90^\circ$, $Z_1 = 20$, $BHN = 320$, $C_s = 1.25$</p> <p>Other data: $Z_2 = 98$, $\delta_1 = 11.535^\circ$, $\delta_2 = 78.465^\circ$ } 02M $Z_{1V} = 20.442$, $Z_{2V} = 490$</p> <p>Weaker member: PINION \rightarrow 01M</p> <p>Module, $m = 3 \text{ mm}$ } 02M $b = 30 \text{ mm}$</p> <p>Tangential tooth load, $F_t = 3248.3 \text{ N}$ \rightarrow 01M</p> <p>Dynamic tooth load, $F_d = 13421.436 \text{ N}$ \rightarrow 02M</p> <p>Wear load $F_w = 52402 \text{ N}$ } \rightarrow 02M $BHN \text{ for Pinion} = 450$ & $\text{Gear} = 450$</p>	10
10	<p><u>BEVEL GEARS</u></p> <p>Given data: $\alpha = 20^\circ$, $Z_1 = 20$, $Z_2 = 30$, $m = 4 \text{ mm}$, $b = 20 \text{ mm}$, $BHN = 400$, $n_1 = 500 \text{ rpm}$ $T_{Max} = 150 \text{ T}$</p> <p>Other data: $n_2 = 333.33 \text{ rpm}$, $\delta_1 = 33.69^\circ$ } 03M $\delta_2 = 56.31^\circ$</p> <p>Assume: $\Sigma = 90^\circ$, $Z_{1V} = 24.04$ & $Z_{2V} = 57.08$ } 04M</p> <p>$d_1 = 80 \text{ mm}$, $d_2 = 120 \text{ mm}$, $L = 72.11 \text{ mm}$</p>	10

DEPARTMENT

Scheme & Solutions

Semester:

Subject Title:

Subject Code:

Question Number	Solution	Marks Allocated
	<p>WEAKER MEMBER : PINION $\rightarrow 0.1M$</p> <p>Beam Strength, $F_B = 5058.96 N$</p> <p>Wear Strength, $F_W = 5039.35 N$</p> <p>Dynamic load, $F_d = 109.486 N$</p> <p>Safe power, Tangential tooth load, $F_T = 3286.6 N$</p> <p>Safe power, $P = 6.883 kW$</p>	10
	<u>MCO</u>	
1	c. Bevel gear	
2	a. Herringbone gear	
3	d. Helical gear	
4	d. All the above factors	
5	c. module	
6	a. $\frac{\pi d}{2}$	
7	c. pressure angle	
8	a. Maximum tangential force that the tooth can transmit without bending failure	
9	d. a, b & c	
10	c. Surface hardness of gear tooth	

13/05/22



Estd: 1986

|| Jai Sri Gurudev ||
Sri Adichunchanagiri Shikshana Trust *

SJC INSTITUTE OF TECHNOLOGY

Chickballapur – 562 101

Department of Mechanical Engineering ASSIGNMENT-2

SUBJECT TITLE	DESIGN OF MACHINE ELEMENTS II		
SUBJECT TYPE	CORE		
SUBJECT CODE	18ME62		
ACADEMIC YEAR	2021-22 (EVEN SEMESTER)	BATCH	2019-2023
SCHEME	CBCS scheme (Effective from the academic year 2018 -2019)		
SEMESTER	VI 'A & B'		
FACULTY NAME and DESIGNATION	Dr. RAVIKUMAR T R, Assistant Professor		

Q. No.	Questions	Bloom's LL	COs
1	Completer the design and determine the input capacity of a worm gear speed reducer unit which consists of a hardened steel worm and a phosphor bronze gear having 20° stub involute teeth. The centre distance is to be 200 mm and transmission ratio is 10 and the worm speed is 2000 rpm.	L4	CO3
2	Design a worm gear drive to transmit a 2kW at 1000rpm of worm. The velocity ratio is 20:1 and center distance is 200mm. Material for the gear is phosphor bronze and that of worm is hardened steel. Determine the efficiency of the drive.	L4	CO3
3	Design the main bearing for a stationary slow speed steam engine for the following data: Journal diameter = 200mm, Maximum load on the piston = 80kN and Engine speed = 200 rpm.	L4	CO3
4	Design the main bearing of a steam turbine that runs at 1800 rpm. The load on the bearing is estimated to be 2500 N.	L4	CO3
5	A 75mm long full journal bearing of diameter 75mm supports a load of 10kN. The speed of the journal is 1200 rpm. The absolute viscosity of the	L4	CO3

	oil is 10×10^{-3} Pas and diameter clearance ratio is 0.001. Determine the coefficient of friction by using a) Petroff's equation b) Mckee's equation and c) Raimondi and Boyd curve.		
6	Design a multi collar thrust bearing for a propeller shaft of a 400 kW marine oil engine. The engine makes 300 rpm. The propeller has a pitch of 2.5m and slip is 30%. The permissible bearing pressure is 0.5 N/mm^2 . Assume uniform wear theory.	L4	CO3

Rubrics:

1. If all questions answered - 6M
2. If on date submission (i.e. 07/07/2022) - 2M
3. If assignment write neatly - 2M

Total 10M

*Dr. Ravikumar***Internal Test Question paper format- CBCS Scheme**

Name of the staff/s: Dr. RAVIKUMAR T R

Date: 06/06/2022

Signature: *[Signature]* 06/06/22

Reviewer's Signature:

NOTE: Only the following information's to be given to the students.

S.J.C. Institute of Technology

Department: MECHANICAL ENGINEERING

Test : II

Semester: 6th Section: A & B

Subject Name & Code: DESIGN OF MACHINE ELEMENTS-II [18ME62]

Instructions

Date: 09/06/2022

Duration: 90 minutes

Max Marks: 50+10MCQ

- Answer all the questions.
- Use of Design data hand book is permitted
- Missing data, if any may be suitably assumed

is small

Question Number		Marks	CO	RBTL
1	List and explain the properties of lubricant	10M	CO1	L2
OR				
2	With a neat sketch explain Hydrodynamic theory of lubrication.	10M	CO1	L2
3	Complete the design and determine the input capacity of a worm gear speed reducer unit which consists of a hardened steel worm and a phosphor bronze gear having 20° stub involute teeth. The centre distance is to be 200 mm and transmission ratio is 10 and the worm speed is 2000 rpm.	10M	CO3	L4
OR				
4	Design a worm gear drive to transmit a 2kW at 1000rpm of worm. The velocity ratio is 20:1 and center distance is 200mm. Material for the gear is phosphor bronze and that of worm is hardened steel. Determine the efficiency of the drive.	10M	CO3	L4



5	Derive an expression for load carrying capacity of Worm gear tooth under static loading conditions.	10M	CO1	L3
OR				
6	Derive Petroff's equations for coefficient of friction for Hydrodynamic bearing and also state assumptions.	10M	CO1	L3
7	Design the main bearing for a stationary slow speed steam engine for the following data: Journal diameter = 200mm, Maximum load on the piston = 80kN and Engine speed = 200 rpm.	10M	CO4	L4
OR				
8	Design the main bearing of a steam turbine that runs at 1800 rpm. The load on the bearing is estimated to be 2500 N	10M	CO4	L4
9	A 75mm long full journal bearing of diameter 75mm supports a load of 10kN. The speed of the journal is 1200 rpm. The absolute viscosity of the oil is 10×10^{-3} Pas and diameter clearance ratio is 0.001. Determine the coefficient of friction by using a) Petroff's equation b) Mckee's equation and c) Raimondi and Boyd curve.	10	CO4	L4
OR				
10	Design a multi collar thrust bearing for a propeller shaft of a 400 kW marine oil engine. The engine makes 300 rpm. The propeller has a pitch of 2.5m and slip is 30%. The permissible bearing pressure is 0.5 N/mm ² . Assume uniform wear theory.	10	CO4	L4
Multiple Choice Questions				
1	Worm gears are widely used when a) Velocity ratio is high b) Space is limited c) Axes of shafts are non-intersecting d) All the three	1	CO1	L1

2	A worm gear drive consists of double start worm meshing with a 50 teeth worm wheel. The velocity ratio is a) 25 b) 100 c) 50 d) 75	1	CO1	L1
3	In thrust bearings, the load acts a) Along the axis of rotation b) Perpendicular to the axis of rotation c) Parallel to the axis of rotation d) a and c	1	CO1	L1
4	In case of full journal bearing, the angle of contact of the bushing with the journal is a) 60° b) 90° c) 180° d) 360°	1	CO1	L1
5	The length to diameter ratio for a short bearing is a) More than 1 b) Less than 1 c) ∞ d) 1	1	CO1	L1
6	The unit of Absolute viscosity is a) N/m ² b) N-m c) N-s / m ² d) N-m/s	1	CO1	L1
7	Petroff's equation is used to find out a) Load carrying capacity of the bearing b) Frictional losses in the bearing c) Unit bearing pressure on the bearing d) Pressure distribution around the periphery of the journal	1	CO1	L1
8	If η = Absolute viscosity, n' = Speed of the journal in rps and P = Bearing pressure a) $\eta n'/P$ b) $\eta n'P$ c) $\eta/P n'$ b) None of the above	1	CO1	L1
9	Sommerfeld number is a) Similar to bearing characteristic number b) Similar to Reynold's number c) Dimensionless parameter that contains all the design parameters d) Used to find out dynamic load carrying capacity of	1	CO1	L1

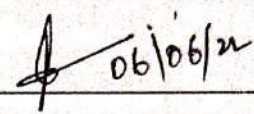


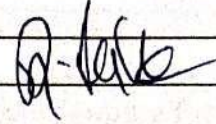
	the hydrodynamic bearing			
10	In most of internal combustion engines, crankshaft bearing is a) Hydrodynamic journal bearing b) Hydrostatic journal bearing c) Ball bearings d) Roller bearings	1	CO1	L1

Internal Test Question paper format- CBCS Scheme

Name of the staff/s: Dr. RAVIKUMAR T R

Date: 06/06/2022

Signature: 

Reviewer's Signature: 

NOTE: Only the following information's to be given to the students.

S.J.C. Institute of Technology

Department: MECHANICAL ENGINEERING

Test : II

Semester: 6th Section: A & B

Subject Name & Code: DESIGN OF MACHINE ELEMENTS-II [18ME62]

Instructions

Date: 09/06/2022

Duration: 90 minutes

Max Marks: 50+10MCQ

- i. Answer all the questions.
- ii. Use of Design data hand book is permitted
- iii. Missing data, if any may be suitably assumed

Question Number	Question	Marks	CO	RBTL
1	List and explain the properties of lubricant	10M	CO1	L2
OR				
2	With a neat sketch explain Hydrodynamic theory of lubrication.	10M	CO1	L2
3	Completer the design and determine the input capacity of a worm gear speed reducer unit which consists of a hardened steel worm and a phosphor bronze gear having 20° stub involute teeth. The centre distance is to be 200 mm and transmission ratio is 10 and the worm speed is 2000 rpm.	10M	CO3	L4
OR				
4	Design a worm gear drive to transmit a 2kW at 1000rpm of worm. The velocity ratio is 20:1 and center distance is 200mm. Material for the gear is phosphor bronze and that of	10M	CO3	L4



	worm is hardened steel. Determine the efficiency of the drive.			
5	Derive an expression for load carrying capacity of Worm gear tooth under static loading conditions.	10M	CO1	L3
	OR			
6	Derive Petroff's equations for coefficient of friction for Hydrodynamic bearing and also state assumptions.	10M	CO1	L3
7	Design the main bearing for a stationary slow speed steam engine for the following data: Journal diameter = 200mm, Maximum load on the piston = 80kN and Engine speed = 200 rpm.	10M	CO4	L4
	OR			
8	Design the main bearing of a steam turbine that runs at 1800 rpm. The load on the bearing is estimated to be 2500 N	10M	CO4	L4
9	A 75mm long full journal bearing of diameter 75mm supports a load of 10kN. The speed of the journal is 1200 rpm. The absolute viscosity of the oil is 10×10^{-3} Pas and diameter clearance ratio is 0.001. Determine the coefficient of friction by using a) Petroff's equation b) Mckee's equation and c) Raimondi and Boyd curve.	10	CO4	L4
	OR			
10	Design a multi collar thrust bearing for a propeller shaft of a 400 kW marine oil engine. The engine makes 300 rpm. The propeller has a pitch of 2.5m and slip is 30%. The permissible bearing pressure is 0.5 N/mm^2 . Assume uniform wear theory.	10	CO4	L4
	Multiple Choice Questions			
1	Worm gears are widely used when a) Velocity ratio is high	1	CO1	L1

	b) Space is limited c) Axes of shafts are non-intersecting d) All the three			
2	A worm gear drive consists of double start worm meshing with a 50 teeth worm wheel. The velocity ratio is a) 25 b) 100 c) 50 d) 75	1	CO1	L1
3	In thrust bearings, the load acts a) Along the axis of rotation b) Perpendicular to the axis of rotation c) Parallel to the axis of rotation d) a and c	1	CO1	L1
4	In case of full journal bearing, the angle of contact of the bushing with the journal is a) 60° b) 90° c) 180° d) 360°	1	CO1	L1
5	The length to diameter ratio for a short bearing is a) More than 1 b) Less than 1 c) ∞ d) 1	1	CO1	L1
6	The unit of Absolute viscosity is a) N/m^2 b) N-m c) $N-s/m^2$ d) N-m/s	1	CO1	L1
7	Petroff's equation is used to find out a) Load carrying capacity of the bearing b) Frictional losses in the bearing c) Unit bearing pressure on the bearing d) Pressure distribution around the periphery of the journal	1	CO1	L1
8	If η = Absolute viscosity, n' = Speed of the journal in rps and P = Bearing pressure a) $\eta n'/P$ b) $\eta n'P$ c) $\eta/P n'$ b) None of the above	1	CO1	L1
9	Sommerfeld number is a) Similar to bearing characteristic number b) Similar to Reynold's number	1	CO1	L1



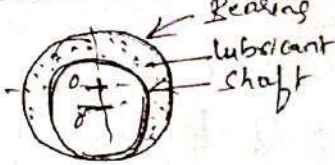
	<p>c) Dimensionless parameter that contains all the design parameters</p> <p>d) Used to find out dynamic load carrying capacity of the hydrodynamic bearing</p>			
10	<p>In most of internal combustion engines, crankshaft bearing is</p> <p>a) Hydrodynamic journal bearing</p> <p>b) Hydrostatic journal bearing</p> <p>c) Ball bearings</p> <p>d) Roller bearings</p>	1	COI	LI

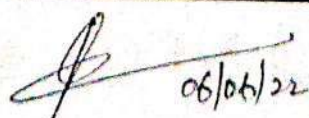


DEPARTMENT

TEST - 2

Scheme & SolutionsSemester: IIB Subject Title: DESIGN OF MACHINE ELEMENTS Subject Code: 18ME62 - II

Question Number	Solution	Marks Allocated
1	<p><u>Properties of lubricants</u></p> <p>- List \rightarrow (0.5 M)</p> <p>: Viscosity, Oiliness, Flash & Fire point, Cloud point & Pourpoint</p> <p>- Explanation of each Property (0.5 M)</p>	10 M
2.	<p><u>Hydrodynamic theory of Lubrication</u></p> <p>- Sketch (0.5 M)</p> <p>- Explanations (0.5 M)</p> 	10
3.	<p><u>WORM GEAR</u></p> <p>Given data & sketch - (0.2 M)</p> <p>Designation : $Z_1 Z_2 Q m - 4 40 10 8$ \rightarrow (0.2 M)</p> <p>Tangential Force, $F_t = 7,226.42 \text{ N}$</p> <p>Dynamic Force, $F_d = 11,262.42 \text{ N}$</p> <p>Wear Load, $F_w = 13,248 \text{ N}$</p> <p>Power $N = 13.53 \text{ kW}$</p> <p>Efficiency $\eta = 86\%$</p> <p>Heat generated $H_g = 4.08 \text{ kW}$</p> <p>Heat Dissipated, $H_d = 11.95 \text{ kW}$</p> <p>No Artificial cooling</p>	10


06/06/22

Subject Title: DME-II

Subject Code: 18ME62

Question Number	Solution	Marks Allocated
4.	<p><u>Worm gear</u></p> <p>Given data & Sketches — 02M</p> <p>Designations : $z_1/z_2 Q m = 2/40 10 8$ — 02M</p> <p>Tangential tooth load, $F_t = 2387.5 \text{ N}$</p> <p>Dynamic tooth load, $F_d = 2720.8 \text{ N}$</p> <p>Wear load, $F_w = 13,248 \text{ N}$</p> <p>Power, $N = 7.844 \text{ kW}$</p> <p>Efficiency, $\eta = 82.12\%$</p> <p>Heat generated, $H_g = 1.692 \text{ kW}$</p> <p>Heat dissipated, $H_d = 11.95 \text{ kW}$</p> <p>NO Artificial Cooling required</p>	10
5	<p><u>Worm gear</u></p> <p>Sketches - Forces Acting on worm gear — 04M</p> <p>Derivations, Tangential tooth load</p> $F_t = \sigma_2 b \gamma m_n C_v$ — 06M	10
6.	<p><u>Petroff's eqn</u></p> <p>Sketches with Assumptions — 04M</p> <p>Derivation, Coefficient of friction</p> $\mu = 2\pi^2 \left(\frac{\eta n'}{P} \right) \left(\frac{1}{\psi} \right)$ — 06M	

[Signature]
06/06/22

Subject Title: DME-II

Subject Code: 18ME62

Question Number	Solution	Marks Allocated
7.	<p><u>Journal bearing</u></p> <p>Given datax with unit conversions - 01M</p> <p>Design of bearing, $d = 0.12m$ $L = 0.12m$ $Pact = 2 \times 10^6 N/m^2$ } - 02M</p> <p>Type of oil, SAE60 — 01M</p> <p>Heat generated, $H_g = 698.132W$ } - 02M Heat dissipated, $H_d = 227.2W$ }</p> <p>$h_{min} = 3.6 \times 10^{-5}m$ & $\phi = 52^\circ$ — 01M</p> <p>Rate of oil flow, $\phi = 5.16 \times 10^{-5} m^3/s$ } 02M $Q_s = 3.405 \times 10^{-5} m^3/s$ }</p> <p>Power loss due to friction, $N\mu = 698.132W$ - 01M</p>	10
8.	<p><u>Journal bearing</u></p> <p>Given datax with Unit conversions - 01M</p> <p>Design: $d = 0.105m$, $L = 0.05m$, } - 02M $Pact = 1 \times 10^6 N/m^2$ }</p> <p>Type of oil - SAE20 — 01M</p> <p>$H_g = 153.832W$, $H_d = 15.975W$ — 02M</p> <p>$h_{min} = 1.85 \times 10^{-5}m$, $\phi = 72^\circ$ — 01M</p> <p>$\phi = 4.22 \times 10^{-6} m^3/s$, $Q_s = 1.4348 \times 10^{-6} m^3/s$ - 02M</p> <p>$N\mu = 153.832W$ — 01M</p>	10

[Signature]
06/06/22



Subject Title: DME-II

Subject Code: 18ME62

Question Number	Solution	Marks Allocated
9.	<p><u>Journal bearing</u> Given data with Unit Conversions - 02M a) Petroff's eqn, $\mu = 2.22 \times 10^{-3}$ - 02M b) McKee eqn, $\mu = 4.22 \times 10^{-3}$ - 02M c) Fairbank & Boyd $\mu = 4.5 \times 10^{-3}$ - 03M</p>	10
10	<p><u>Multi collar thrust bearing</u> Given data with Unit Conversions - 02M Other data: $v = 8.75 \text{ m/s}$, $W = 45.71 \times 10^3 \text{ N}$ $d_1 = 0.11 \text{ m}$, $d_2 = 0.165 \text{ m}$ } - 02M a) $p = c$, $i = 10$ collars $\eta_f = 60 \text{ N-m}$ $N\mu = 1.8 \text{ kW}$ } - 03M b) $p = c$, $i = 8$ collars $\eta_f = 61.566 \text{ N-m}$ } + $N\mu = 1.93 \text{ kW}$ - 03M</p>	10
b	<p><u>Multiple Choice Questions</u></p> <p>1, d) All the Above 2, a) 25 teeth 3, d) a + c 4, d) 360° 5, b) $4/d < 1$ 6, c) $N-s/m^2$ 7, b) 8, a) $\frac{\eta n^1}{p}$ 9, a) 10, a) hydrodynamic journal bearing</p>	10



Estd: 1986

|| Jai Sri Gurudev ||
Sri Adichunchanagiri Shikshana Trust *

SJC INSTITUTE OF TECHNOLOGY

Chickballapur – 562 101

Department of Mechanical Engineering ASSIGNMENT-3

SUBJECT TITLE	DESIGN OF MACHINE ELEMENTS II		
SUBJECT TYPE	CORE		
SUBJECT CODE	18ME62		
ACADEMIC YEAR	2021-22 (EVEN SEMESTER)	BATCH	2019-2023
SCHEME	CBCS scheme (Effective from the academic year 2018 -2019)		
SEMESTER	VI 'A & B'		
FACULTY NAME and DESIGNATION	Dr. RAVIKUMAR T R, Assistant Professor		

Q. No.	Questions	Bloom's LL	COs
1	In a multiple disc clutch the radial width of the friction material is to be 0.2 of maximum radius. The coefficient of friction is 0.25. The clutch is to transmit 60kW at 3000 rpm. Its maximum diameter is 250mm and the axial force is limited to 600N. Determine a) Number of driving and driven discs. b) Mean unit pressure on each contact surface. Assume uniform wear.	L4	CO3
2	A cone clutch has a semi-cone angle of 12° to transmit 10kW at 750 rpm. The width of the face is one fourth of the mean diameter of friction lining. If the normal intensity of pressure between the contacting surface is not to exceed 0.85 bar, assuming uniform wear criterion and taking $\mu = 0.2$. Calculate dimensions of clutch. Also find the axial force while running i.e., at the beginning of engagement.	L4	CO3
3	A belt is required to transmit 18.5kW from a pulley of 1.2m diameter running at 250 rpm to another pulley which runs at 500 rpm. The distance between the centers of pulleys is 2.7m. The following data refer to an open belt drive $\mu = 0.25$. Safe working stress for leather is 1.75N/mm^2 . Thickness of belt = 10mm. Determine the width and length of belt taking	L4	CO3

	centrifugal tension into account. Also find the initial tension in the belt and absolute power that can be transmitted by this belt and the speed at which this can be transmitted.		
4	A nylon core flat belt 200mm wide weighing 20 N/m, connecting a 300mm diameter pulley to a 900 mm diameter driven pulley at a shaft spacing of 6m, transmits 55.2 kW at a belt speed of 25 m/s. a) Calculate the belt length and the angles of wrap, b) Compute the belt tensions based on a co-efficient of friction 0.38.	L4	CO3
5	A V-belt is to be arranged between two shafts whose centers are 3000 mm. The driving pulley is of 850 mm effective diameter and is to be supplied with 75 kW at 960 rpm. The follower pulley is to run at 480 rpm. Determine the number of belts required for the following particulars. Area of belt section = 400 mm ² Weight of belt = 0.01 N/cm ³ Safe working tensile stress = 2.1 N/mm ² Coefficient of friction = 0.27 Groove angle of pulley = 40° Also find the initial tension required in each belt.	L4	CO3
6	Select a V-belt drive to transmit 10 kW of power from a pulley of 200 mm pitch diameter mounted on an electric motor running at 720 rpm to another pulley mounted on compressor running at 200 rpm. The service is heavy duty varying from 10 hours to 14 hours per day and centre distance between centre of pulleys is 600mm.	L4	CO3

Rubrics:

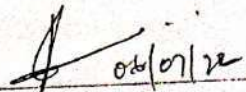
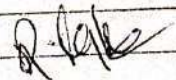
1. If all questions answered - 6M
2. If on date submission (i.e. 16/07/2022) - 2M
3. If assignment write neatly - 2M

Total 10M

**Internal Test Question paper format- CBCS Scheme**

Name of the staff/s: Dr. RAVIKUMAR T R

Date: 06/07/2022

Signature: Reviewer's Signature: 

NOTE: Only the following information's to be given to the students.

S.J.C. Institute of Technology

Department: MECHANICAL ENGINEERING

Test : III

Semester: 6th Section: A & B

Subject Name & Code: DESIGN OF MACHINE ELEMENTS-II [18ME62]

Instructions

Date: 09/07/2022

Duration: 90 minutes

Max Marks: 50+10MCQ

- Answer all the questions.
- Use of Design data hand book is permitted
- Missing data, if any may be suitably assumed

Question Number		Marks	CO	RBTL
1	Name the different type of clutches. Describe with the help of a neat sketch the working principle of any one friction clutch.	10	CO1	L2
	OR			
2	Classify the brakes and Explain with a sketch of any one Brake system.	10	CO1	L2
3	Derive an expression for Torque transmitted by friction surfaces in Disc or Plate clutch under Uniform Pressure theory.	10	CO1	L3
	OR			
4	Derive an expression for Torque transmitted by friction surfaces in Cone clutch under Uniform Pressure theory.	10	CO1	L3
5	In a multiple disc clutch the radial width of the friction material is to be 0.2 of maximum radius. The coefficient of	10	CO3	L4



	friction is 0.25. The clutch is to transmit 60kW at 3000 rpm. Its maximum diameter is 250mm and the axial force is limited to 600N. Determine a) Number of driving and driven discs. b) Mean unit pressure on each contact surface. Assume uniform wear.			
	OR			
6	A cone clutch has a semi-cone angle of 12° to transmit 10kW at 750 rpm. The width of the face is one fourth of the mean diameter of friction lining. If the normal intensity of pressure between the contacting surface is not to exceed 0.85 bar, assuming uniform wear criterion and taking $\mu = 0.2$. Calculate dimensions of clutch. Also find the axial force while running i.e., at the beginning of engagement.	10	CO3	L4
7	A belt is required to transmit 18.5kW from a pulley of 1.2m diameter running at 250 rpm to another pulley which runs at 500 rpm. The distance between the centers of pulleys is 2.7m. The following data refer to an open belt drive $\mu = 0.25$. Safe working stress for leather is 1.75N/mm^2 . Thickness of belt = 10mm. Determine the width and length of belt taking centrifugal tension into account. Also find the initial tension in the belt and absolute power that can be transmitted by this belt and the speed at which this can be transmitted.	10	CO3	L4
	OR			
8	A nylon core flat belt 200mm wide weighing 20 N/m, connecting a 300mm diameter pulley to a 900 mm diameter driven pulley at a shaft spacing of 6m, transmits 55.2 kW at a belt speed of 25 m/s. a) Calculate the belt length and the angles of wrap, b) Compute the belt tensions based on a coefficient of friction 0.38.	10	CO3	L4

9	<p>A V-belt is to be arranged between two shafts whose centers are 3000 mm. The driving pulley is of 850 mm effective diameter and is to be supplied with 75 kW at 960 rpm. The follower pulley is to run at 480 rpm. Determine the number of belts required for the following particulars.</p> <p>Area of belt section = 400 mm^2 Weight of belt = 0.01 N/cm^3 Safe working tensile stress = 2.1 N/mm^2 Coefficient of friction = 0.27 Groove angle of pulley = 40° Also find the initial tension required in each belt.</p>	10	CO3	L4
OR				
10	<p>Select a V-belt drive to transmit 10 kW of power from a pulley of 200 mm pitch diameter mounted on an electric motor running at 720 rpm to another pulley mounted on compressor running at 200 rpm. The service is heavy duty varying from 10 hours to 14 hours per day and centre distance between centre of pulleys is 600mm.</p>	10	CO3	L4
Multiple Choice Questions				
1	<p>The clutch used in Trucks is</p> <p>a) Centrifugal clutch c) Multi-plate clutch b) Cone clutch d) Single plate clutch</p>	1	CO1	L1
2	<p>The clutch used in Scooters is</p> <p>c) Centrifugal clutch c) Multi-plate clutch a) Cone clutch d) Single plate clutch</p>	1	CO1	L1
3	<p>In case of multi-plate clutch in i_1 is number of disks on driving shaft and i_2 is the number of disks on driven shaft, then the number of pairs of contacting surfaces is given by</p> <p>b) $i_1 + i_2$ c) $i_1 + i_2 - 1$ c) $i_1 + i_2 + 1$ d) $i_1 - i_2$</p>	1	CO1	L1



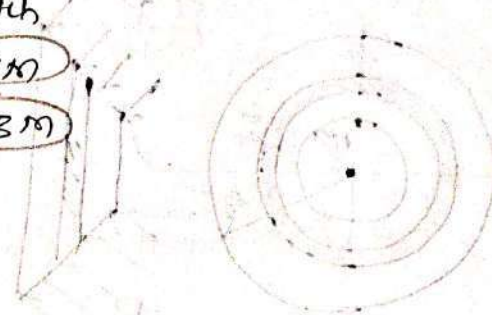
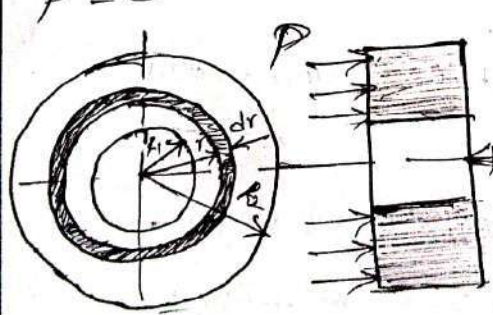
4	The cone clutches have become obsolete because a) Strict requirement of co-axiality of two shafts b) Difficult of disengage c) Difficult of Construction d) None of the above	1	COI	LI
5	Torque transmitting capacity of clutch depends upon a) Coefficient of friction b) Dimensions of friction lining c) Axial force provided to engage the clutch d) All the above three factors	1	COI	LI
6	The commonly used angle between leather or asbestos friction lining surface and axis of cone clutch for a cone clutch is a) 14.5° c) 12.5° b) 20° d) 45°	1	COI	LI
7	The brake used in railway coaches is a) Shoe Brake c) Band brake b) Block brake d) Disk brake	1	COI	LI
8	The brake used in most of motor cycles is a) Internal expanding brake c) Band brake b) Block brake d) Disk brake	1	COI	LI
9	The suitable material for belt used in flour mill is a) Leather c) Canvas or Cotton duck b) Rubber d) Balata gum	1	COI	LI
10	The condition for maximum power transmission is that the maximum tension in the flat belt should be equal to a) 3Tc b) Tc c) Tc/3 d) 2Tc Where: Tc – Tension in belt due to Centrifugal force	1	COI	LI



TEST-3

Subject Title: DESIGN OF MACHINE ELEMENTS - II

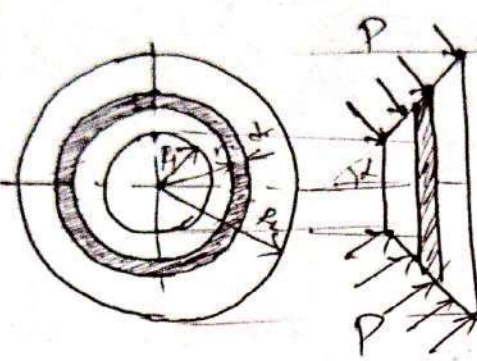
Subject Code: 18ME62

Question Number	Solution	Marks Allocated
1.	<p><u>Types of clutches :</u> List - (04M) Any one friction clutch. Sketch - (03M) Explanation - (03M)</p> 	10
2.	<p><u>Types of Brakes</u> List - (04M) Any one Braking system Sketch - (03M) Explanation - (03M)</p>	10
3.	<p><u>Torque transmitted by friction surface in Disc or plate clutch</u></p> <p>$P = c$ Sketch - (02M)</p>  <p>Total Axial Force $F_a = \int_{r_1}^{r_2} 2\pi P r dr$ (02M)</p> <p>Total frictional torque per Active surface $M_t = \int_{r_1}^{r_2} 2\pi \mu r P r^2 dr$ (02M)</p> <p>Under $P = c$ [Uniform pressure theory] $M_t = \frac{1}{2} \mu F_a D_m$ (03M) Where $D_m = \text{Mean diameter} = \frac{2}{3} \left[\frac{D_2^3 - D_1^3}{D_2^2 - D_1^2} \right]$ (01M)</p>	10

Signature and date: 06/07/22

Subject Title:

Subject Code:

Question Number	Solution	Marks Allocated
4.	<p><u>Torque transmitted by friction surface in Cone clutch</u></p> <p>Sketch - (02M)</p>  <p>Total Axial force $F_a = \int_{r_1}^{r_2} p \cdot 2\pi r \cdot dr$ - (02M)</p> <p>Total Friction Torque $M_t = \int_{r_1}^{r_2} 2\pi \mu p r^2 \frac{dr}{\sin \alpha}$ - (02M)</p> <p>Under Uniform Pressure theory [P=C] $M_t = \frac{\mu F_a D_m}{2 \sin \alpha}$ - (03M)</p> <p>Where D_m - Mean diameter = $\frac{2}{3} \left[\frac{D_2^3 - D_1^3}{D_2^2 - D_1^2} \right]$ - (01M)</p>	10
5	<p><u>Multi-plate clutch</u></p> <p>Given data with unit conversion - (02M)</p> <p>a) <u>No. of discs</u></p> <p>No. of Total torque, $M_t = 191000 \text{ N-m}$ - (01M)</p> <p>Mean diameter, $D_m = 225 \text{ mm}$ - (01M)</p> <p>No. of Active Surfaces, $i = 12$ - (02M)</p> <p>No. of discs on the driver shaft, $i_1 = 6$</p> <p>No. of discs on the driven shaft, $i_2 = 7$ } (02M)</p> <p>Total No. of disc, $i = i_1 + i_2 = 6 + 7 = 13$</p>	10

06/07/22

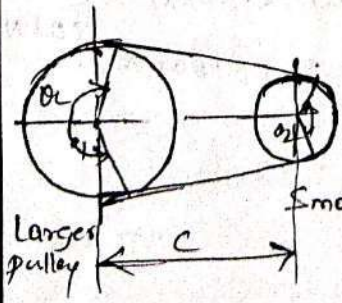
DEPARTMENT

Scheme & Solutions

Semester:

Subject Title:

Subject Code:

Question Number	Solution	Marks Allocated
6	<p>b) Mean Unit Pressure, $p \leq 0.024 \text{ N/mm}^2$ - Limiting mean unit pressure, $p = 0.024 \text{ N/mm}^2$ (0.1M) For Actual mean unit pressure, $p = 0.022 \text{ N/mm}^2$ (0.1M)</p> <p><u>CONE CLUTCH</u></p> <p>Given data's with Unit Conversion - (0.2M)</p> <p>a) Torque transmitted, $M_t = 127333.33 \text{ N-mm}$ (0.2M) b) Axial Force, $F_a = 0.01388 D_m^2$ (0.1M) c) Dimensions, $D_m = 268 \text{ mm}$ } (0.2M) Face width, $b = 67 \text{ mm}$ Inner dia, $D_1 = 254 \text{ mm}$ } (0.2M) Outer dia, $D_2 = 282 \text{ mm}$ Axial force, $F_a = 996.9 \text{ N}$ Axial force required when one member is rotating $F_a = 1934.31 \text{ N}$ (0.1M)</p>	10
7.	<p><u>Flat belt drive [Open drive]</u></p>  <p>Given data's with Unit conversions (0.2M)</p> <p>Smaller diameter, $d_1 = 600 \text{ mm}$ velocity, $v = 15.829 \text{ m/s}$ (0.2M) $\sigma_c = 0.25573 \text{ N/mm}^2$ } (0.1M) $e_{MR} = 2.075$</p>	

06/07/22



Subject Title:

Subject Code:

Question Number	Solution	Marks Allocated
8	<p>Constant $k = 0.52$,</p> <p>Width of the belt, $b = 152 \text{ mm}$ } 0.2M</p> <p>Length of the belt, $L = 8260.96 \text{ mm}$ } 0.1M</p> <p>Initial tension, $T_0 = 2006.552 \text{ N}$ } 0.1M</p> <p>Absolute power, $= 21.8 \text{ kW}$ } 0.2M</p> <p>$\& V_{\text{max}} = 23.92 \text{ m/s}$ } 0.2M</p> <p><u>Nylon Core flat belt drive</u></p> <p>Given data with Unit Conversion } 0.2M</p> <p>a) <u>length of belt [L]</u></p> <p>Angle of wrap, $\theta_2 = 3.2416 \text{ rad}$ } 0.2M</p> <p>$\theta_3 = 3.04185 \text{ rad}$ }</p> <p>Length of open belt $L = 13895.893 \text{ mm}$ } 0.1M</p> <p>b) <u>Belt tensions</u></p> <p>$e^{\mu\theta} = 2.1765$, $k = 0.6852$, $T_C = 1274.21 \text{ N}$ } 0.2M</p> <p>Total power transmitted, $P =$</p> <p>Tension on tight side, $T_1 = 4496.627 \text{ N}$ } 0.1M</p> <p>Tension on slack side, $T_2 = 2288.665 \text{ N}$ }</p>	10

[Signature] 06/07/22



DEPARTMENT

Scheme & Solutions

Semester:

Subject Title:

Subject Code:

Question Number	Solution	Marks Allocated
9.	<p><u>V-belt drive</u> Given data with Unit Conversion - (0.2M) Diameter of larger pulley, $D = 1700 \text{ mm}$ (0.2M) velocity, $V = 42.726 \text{ m/s}$ Centrifugal Stress, $\sigma_c = 1.861 \text{ N/mm}^2$ (0.1M) Capacity, $\theta_s = 2.8573 \text{ rad}$ (0.2M) $\theta_L = 3.4259 \text{ rad}$ $e^{M/\sin \alpha} = 14.698 \times 9.54$ Constant, $k = 0.8952$, Power/belt = 3.628 kW, No. of belts = 3. (0.3M) Initial tension, $T_0 = 796.64 \text{ N}$.</p>	10
10.	<p><u>V-belt drive</u> Given data with Unit Conversion - (0.2M) Diameter of larger pulley, $D = 720 \text{ mm}$ (0.1M) - Select the <u>cls of belt</u> $d_e = 228 \text{ mm}$, the cls of belt is 'C' (0.2M) $V = 7.54 \text{ m/s}$, Power capacity, $N^* = 4.4 \text{ kW}$ (0.1M) No. of belts = 1, $l_i = 2667 \text{ mm}$ (0.2M) Correct centre distance, $C = 580.73 \text{ mm}$ (0.1M) Specification of V-belt, C2667, $N = 22 \text{ mm}$, $T = 14 \text{ mm}$ (0.1M)</p>	10

06/05/22

Subject Title:

Subject Code:

Question Number	Solution	Marks Allocated
	<u>MULTIPLE CHOICE QUESTIONS</u>	
1	d) Single plate clutch	01
2.	c) Multi-plate clutch	01
3.	c) $i_1 + i_2 - 1$	01
4.	a) Satisfy requirements of co-axially of two shafts	01
5.	d) All the above three factors	01
6.	c) 12.5°	01
7.	b) Block brake	01
8.	d) Disk brake	01
9.	c) Canvas (b) Cotton duck	01
10.	a) 3TC	01

[Signature] 06/07/22

|| Jai Sri Gurudev ||
S J C INSTITUTE OF TECHNOLOGY
DEPARTMENT OF MECHANICAL ENGINEERING

FINALIZED MARKS
SUB: DME- II [18ME62]
SEM: VI A

SI No.	USN	STUDENT NAME	TEST 1 (50M)	TEST 2 (50M)	TEST 3 (50M)	AVERA GE TEST (50M)	AVERA GE TEST (30M)	AS1 /MCQ 1 (10M)	AS2 /MCQ 2 (10M)	AS3/M CQ 3(10M)	AVG AS / MCQ (10M)	CIE (40M)
1	1SJ19ME001	Adarsh M	0-23	24	13	12-20	7-12	0-07	5-07	3-07	3-07	10-19
2	1SJ19ME002	Akarsh M	30	36	38	35	21	10	8	8	9	30
3	1SJ19ME003	Akshay M	42-22	30	42-42	25-30	15-23	2	2	2	07-2-08	17-30
4	1SJ19ME004	Amruth V M	24	26	33	28	17	10	8	8	9	26
5	1SJ19ME005	Anirudh	46	46	34	42	25	10	10	10	10	35
6	1SJ19ME006	Balaji N	46	24	34	35	21	9	9	9	9	30
7	1SJ19ME007	Bhuvan Athresh S	15	29	28	24	14	9	9	8	9	23
8	1SJ19ME008	Chadive Sathish Kumar R	27	45	29	34	20	9	9	8	9	29
9	1SJ19ME010	Chethanraj D N	26	24	40	30	18	9	9	9	9	27
10	1SJ19ME011	Chirag C	26-32	0-24	9-22	12-27	7-16	0	0	5	2-07	9-29-23
11	1SJ19ME012	Dhanush B	34	41	33	36	22	10	9	8	9	31
12	1SJ19ME013	Dhanush N	27	29	26	27	16	8	8	8	8	24
13	1SJ19ME014	Gagan Gowda C	31	41	38	37	22	0	3	5	3-08	25-30
14	1SJ19ME015	Ganesh U	17	23	13-33	18-24	11-15	4	2	1	2	13-20
15	1SJ19ME016	Harshith Gowda TI	47	28	23	33	20	9	9	9	9	29
16	1SJ19ME018	Jahnvi Krupa A	46	37	40	41	25	9	8	7	8	33
17	1SJ19ME019	Jashwanth J	29	25	27	27	16	0	7	4	4-08	20-22
18	1SJ19ME020	Jayanth K R	46-21	29-46	29	35	21	9	9	8	9	30
19	1SJ19ME021	Karthik B N	26	27	32	28	17	9	9	8	9	26
20	1SJ19ME022	Keerthana B K	46	41	40	42	25	10	8	8	9	34
21	1SJ19ME023	Kethireddy Hruday Reddy	37	32	13	27	16	9	9	8	9	25
22	1SJ19ME024	Kumar S	46	30	44	40	24	9	9	9	9	33

23	ISJ19ME025	Kuruba Avinash	23	38	22	28	17	10	10	10	10	27 ✓
24	ISJ19ME026	Kushal Y S	22	22	12	19	11	10	10	7	9	20 ✓
25	ISJ19ME027	Lakshay Kumar Singh	18 22	27 42	30 41	25 42	25 25	9 10	6	5	7	22 32 ✓
26	ISJ19ME028	Likith K N	0 22	15 22	13 22	9 22	6 24	0	3	5	3 07	9 21 ✓
27	ISJ19ME029	Madhu K	37	33	23	31	19	0	0	0	0	19 20 ✓
28	ISJ19ME030	Madhu M N	46	44	19	36	22	8	8	8	8	30 ✓
29	ISJ19ME031	Manjunath C	21	31	20 40	24 30	14 18	10	8	9	9	23 27 ✓
30	ISJ19ME032	Manohar H K	16	25	41	27	16	10	8	8	9	25 ✓
31	ISJ19ME034	Manoj H V ✓	37 19:34	33	25	26 32	15 19	9	9	8	9	24 18 ✓
32	ISJ19ME036	Md Aakib Khan	0 21	0 38	15 34	5 34	3 21	0	0	1	0	3 22 ✓
33	ISJ19ME037	Mohammed Shoaib	37 42	27 42	34	33 39	20 24	10	4 7	0 7	5 8	25 32 ✓
34	ISJ19ME038	Mohan H V	44	34	28	35	21	8	8	8	8	29 ✓
35	ISJ19ME039	Mohankrishna N	7 22	10 36	18 22	12 24	7 15	9	9	9	9	16 24 ✓
36	ISJ19ME040	Mohith K V	4 21	7 22	30	14 24	8 15	0	4	4	3 07	11 22 ✓
37	ISJ20ME400	Abhilash K N	33	31	39	34	21	9	9	9	9	30 ✓
38	ISJ20ME401	Ajay Kumar G	45	45	21	37	22	10	10	10	10	32 ✓
39	ISJ20ME402	Ashoka C	44	46	33	41	25	10	10	10	10	35 ✓
40	ISJ20ME403	Bhavan.d	36	49	28	38	23	9	9	0	6	29 ✓
41	ISJ20ME404	Chandan Gowda T N	0	0	6	2	1	0	0	3	1	20 20 ✓
42	ISJ20ME405	Chandan N Gowda	35	27	39	34	20	9	9	8	9	29 ✓
43	ISJ20ME406	Deepak N	35	24	34	31	19	8	8	7	8	27 ✓
44	ISJ20ME407	G Chandan	43	48	21	37	22	6 08	4 08	3 08	4 08	27 30 ✓
45	ISJ20ME408	Harshith A	0 27	0 32	23	8 31	5 19	10	10	10	10	15 29 ✓
46	ISJ20ME409	Jayateertha C A	38	36	35	36	22	9	9	9	9	31 ✓
47	ISJ20ME410	K G Rajeev Iyengar	35	44	37	39	23	10	8	10	9	33 ✓

|| Jai Sri Gurudev ||
S J C INSTITUTE OF TECHNOLOGY
DEPARTMENT OF MECHANICAL ENGINEERING

FINALIZED MARKS
SUB: DME- II [18ME62]
SEM: VI B

Sl No.	USN	STUDENT NAME	TEST 1 (50M)	TEST 2 (50M)	TEST 3 (50M)	AVERA GE TEST (50M)	AVERA GE TEST (30M)	AS1/M CQ 1 (10M)	AS2/M CQ 2 (10M)	AS3/M CQ 3 (10M)	AVG AS/MCQ (10M)	CIE (40 M)
1	1SJ18ME015	Boya Nandavardhan	25	35	34	31	19	0	0	0	01	19 26
2	1SJ18ME017	Chandan Gowda M	31	44	23	33	20	8	8	5	7	27
3	1SJ18ME074	Praveen G V	43	25	25	31	19	9	9	8	9	28
4	1SJ19ME041	Nagendra Babu N P	48	34	25	36	21	10	10	9	10	31
5	1SJ19ME042	Nandan H	25	30	35	30	18	3	2	3	3	21
6	1SJ19ME043	Nandhini G	22	26	43	30	18	10	9	7	9	27
7	1SJ19ME044	Nikhil K M	41	47	36	41	25	10	9	9	9	34
8	1SJ19ME045	Nithin M	38	38	25	34	20	10	10	9	10	30
9	1SJ19ME046	Nithin M	39	25	30	31	19	9	9 8	8	9 8	27
10	1SJ19ME047	Osama Hyder Babu Darvesh	28	44	34	35	21	9	9	9	9	30
11	1SJ19ME049	Pooja P	33	43	25	32 34	19 21	9	9	2	7	26 28
12	1SJ19ME050	Pothurai Ravikumar Reddy	27	18	18	21	13	9	9	8	9	22
13	1SJ19ME051	Prabhakar Y V	48	32	19	33	20	10	9	8	9	29
14	1SJ19ME052	Pulugura Manjunath Reddy	26	48	12	29	17	9	9	9	9	26
15	1SJ19ME053	Punith D S	48	31	44	41	25	10	9	10	10	35
16	1SJ19ME054	Rahul A	42	38	28	36	22	10	10	9	10	32
17	1SJ19ME055	Rahul M	30	34	27	30	18	9	9	9	9	27
18	1SJ19ME057	Rameshwar B M	32	39	25	32	19	9	9	9	9	28
19	1SJ19ME058	Sagar T A	32	47	47	42	25	10	10	9	10	35
20	1SJ19ME059	Sandeep B R	43	29 26	30	34	20	9	8	8	8	29
21	1SJ19ME060	Sanivarapu Raja Sekhar Red	37	37	43	39	23	9	9	8	9	32
22	1SJ19ME061	Sanjay S	20	23	32	25	15	0	7	4	4	19
23	1SJ19ME062	Santosh N	17 32	28 13	22	22 22	13 20	9	8	9	9	22 24
24	1SJ19ME063	Seetharam S	26	32	42	33	20	10	10	9	10	30

25/07/20

25	ISJ19ME064	Shailesh N											
26	ISJ19ME065	Sharath Kumar H V	38	25	35	33	20	8	8	8	8	28	
27	ISJ19ME066	Shashank V	41	33	36	37	22	9	9	8	8	31	
28	ISJ19ME067	Shreyas L	29	43	36	36	22	9	9	8	9	31	
29	ISJ19ME068	Shrinidhi Kulkarni	19	42	29	30	18	9	9	8	9	31	
30	ISJ19ME069	Sreedhar A	35	35	15	28	17	9	8	7	8	27	
31	ISJ19ME071	Sridhar Reddy B	38	22	29	30	18	9	9	9	9	25	
32	ISJ19ME072	Sudeep Gowda N	13	36	36	28	17	9	9	9	9	27	
33	ISJ19ME073	Swasthik K M	41	45	19	35	21	8	9	9	9	26	
34	ISJ19ME074	Tabrez Pasha	19	33	26	26	16	8	8	8	8	30	
35	ISJ19ME075	Uday Kiran G R	36	27	18	27	16	8	8	8	8	24	
36	ISJ19ME076	V S Monish	035	27	619	1107	716	07	07	27	107	25	
37	ISJ19ME077	Vijaykumar K S	11	25	27	21	13	8	8	8	8	21	
38	ISJ19ME078	Vivek B	34	33	10	26	15	9	8	9	9	24	
39	ISJ19ME079	Yashwanth K N	22	47	42	37	22	10	10	9	10	32	
40	ISJ19ME405	Girish. K. N	39	39	44	41	24	9	9	9	9	33	
41	ISJ20ME411	Karthik K J	28	23	32	28	17	10	10	9	10	27	
42	ISJ20ME412	Madhu T V	40	41	29	37	22	0	0	0	0	22	
43	ISJ20ME413	Nanda Kishore R	42	34	42	39	24	10	10	9	10	34	
44	ISJ20ME414	Pavan Kumar T N	34	41	30	35	21	9	9	8	9	30	
45	ISJ20ME415	Pradeep N	39	35	22	32	19	8	3	0	4	23	
46	ISJ20ME416	Praveen Kumar H A	46	48	38	44	26	10	10	9	10	36	
47	ISJ20ME417	Praveen Kumar H A	39	28	28	32	19	9	9	9	9	28	
48	ISJ20ME418	Sumanth Y S	24	34	30	29	18	9	9	0	6	24	
49	ISJ20ME419	Varshith Gowda L	5	25	30	20	12	9	9	0	6	24	
		Arun Kumar K N	29	32	38	33	20	507	507	08	307	20	

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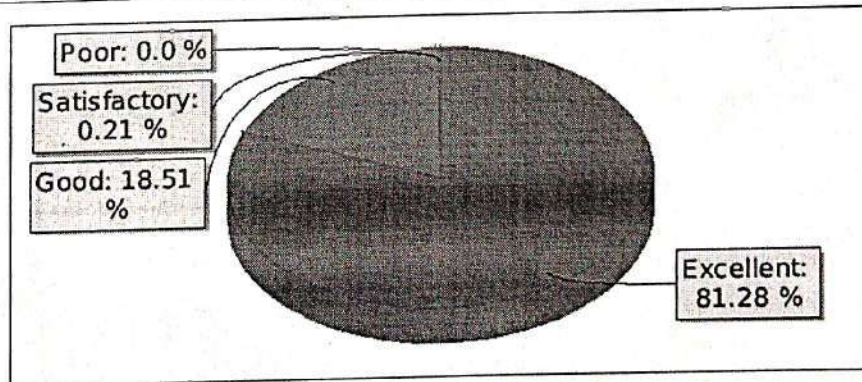


Course-Wise 2021-22

Batch : BE , 2019-2023
 Name of the Faculty : Dr Ravi Kumar T R
 Course Code : 18ME62
 Course Name : DESIGN OF MACHINE ELEMENTS II

Department : Mechanical Engineering
 Semester 6 , Sec : B
 Date : 08 Jul 2022

No	Questions	Score on a scale of 4				Feedback Percentage	Average Score (4)
		4	3	2	1		
<i>General</i>							
1	Preparation of the class	41	6	0	0	96.8	3.9
2	Stressing on important ideas and points	37	10	0	0	94.7	3.8
3	Communication of teacher	39	8	0	0	95.7	3.8
4	Response to questions and doubts	38	9	0	0	95.2	3.8
5	Coverage of syllabus	36	11	0	0	94.1	3.8
6	Availability of teacher outside the class hour	37	10	0	0	94.7	3.8
7	Usefulness of notes given	37	10	0	0	94.7	3.8
8	Knowledge gained by attending the class	41	6	0	0	96.8	3.9
9	Maintenance of discipline in the class	39	7	1	0	95.2	3.8
10	Overall ranking of performance of teacher	37	10	0	0	94.7	3.8
Total Count		382	87	1	0	95.3	3.82



Comments
Nice
Excellent
Good
No
Good

Good
Good
Way of teaching is excellent
Good
Good
Good
Excellent teaching
Excellent
Excellent
Good
good
Excellent
Good
Excellent
No
Teaching is good
Good
Teaching is understandable and notes provided are useful
Excellent
Good
Excellent
Good
Very good
good
Good
Good
Excellent
Good
Good
Good
Good
Super
Good
Fantastic
Good
Super person in my life
Good sir
Excellent
No comments
Good

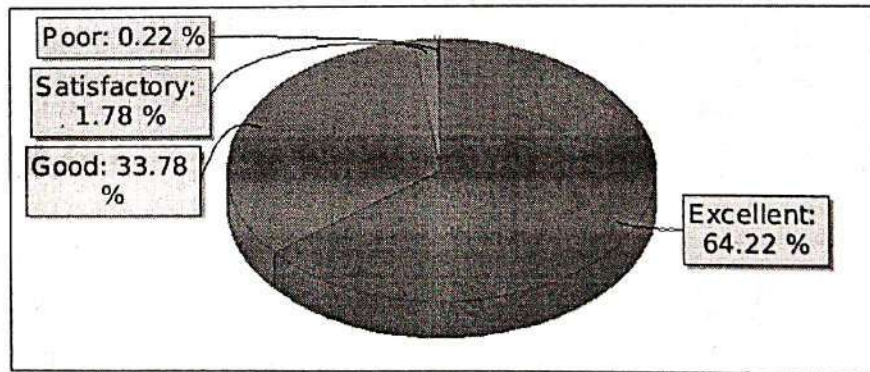


Course-Wise 2021-22

Batch : BE , 2019-2023
 Name of the Faculty : Dr Ravi Kumar T R
 Course Code : 18ME62
 Course Name : DESIGN OF MACHINE ELEMENTS II

Department : Mechanical Engineering
 Semester 6 , Sec : A
 Date : 08 Jul 2022

No	Questions	Score on a scale of 4				Feedback Percentage	Average Score (4)
		4	3	2	1		
<i>General</i>							
1	Preparation of the class	31	13	1	0	91.7	3.7
2	Stressing on important ideas and points	31	13	1	0	91.7	3.7
3	Communication of teacher	30	14	1	0	91.1	3.6
4	Response to questions and doubts	30	15	0	0	91.7	3.7
5	Coverage of syllabus	27	17	1	0	89.4	3.6
6	Availability of teacher outside the class hour	29	16	0	0	91.1	3.6
7	Usefulness of notes given	28	15	2	0	89.4	3.6
8	Knowledge gained by attending the class	29	15	1	0	90.6	3.6
9	Maintenance of discipline in the class	26	18	0	1	88.3	3.5
10	Overall ranking of performance of teacher	28	16	1	0	90	3.6
Total Count		289	152	8	1	90.5	3.62



Comments	
No	
Good	
Excellent	
Good	
No comments	

The best teacher i have seen and very good in communicating with the doubts we have

Good

Good

.....
Good

Good teaching

No comments

Good

Good

Everything was taught very well. Thank you sir

Syallbus is completed on time and we can solve the problem very easily

Good

Good

Excellent

Excellent

Good

Good #

Excellent

Good

Good

Good

Kk

Good

Good

Good teaching

Good

Good Teaching

Excellent

Excellent

No

Hood

Fxcellent


Good

Good

Good teacher

Very good teacher

Good

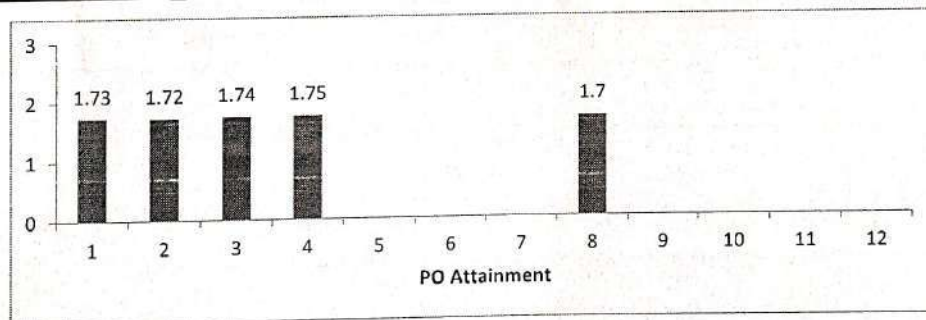
SJCT/NBA/ CO-PO-PSO REPT/ 2021-22	 S J C INSTITUTE OF TECHNOLOGY Chickballapur - 562 101 Department of Mechanical Engineering							
	Course Title						DESIGN OF MACHINE ELEMENTS II	Course Code
Subject Code	18ME62	Semester	6	Section	B	Emp.ID	1103	
Faculty Name	RAVIKUMAR T R						No.students	49

Summary of CO attainments of Sub: 18ME62 Based on TYPE-2 Academic Year:2021-22

CO	CID_CO	CIE			SEE			CES			TOT_Attainment		
		S_AT	T_ST	ATN	S_AT	T_ST	ATN	S_AT	T_ST	ATN	ATN	%	Status
CO1	C312.1	46	49	2.8	12	49	0.7	41	47	2.6	1.7	58	NO
CO2	C312.2	44	49	2.7	12	49	0.7	41	47	2.6	1.7	57	NO
CO3	C312.3	47	49	2.9	12	49	0.7	41	47	2.6	1.8	59	NO
CO4	C312.4	44	49	2.7	12	49	0.7	41	47	2.6	1.7	57	NO

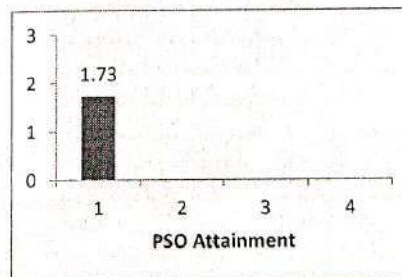
Summary of PO attainments of Sub: 18ME62 Based on TYPE-2 Academic Year:2021-22

PO Number	1	2	3	4	5	6	7	8	9	10	11	12
Direct ATNT(D)	1.62	1.62	1.62	1.63				1.63				
Indirect ATNT(ID)	2.6	2.6	2.6	2.6				2.6				
Total-ATNT	1.73	1.72	1.74	1.75				1.7				
Total-ATNT (%)	58	57	58	58				57				
Rel. to Mapping	6.9	5.2	4.6	2.3				1.1				



Summary of PSO attainments in Year:2021-22

PSO Number	1	2	3	4
Direct ATNT(D)	1.62			
Indirect ATNT(ID)	2.6			
Total-ATNT	1.73			
Total-ATNT (%)	58			
Rel. to Mapping	6.9			



SJCIT/NBA/
COURSE/
2021-22



S J C INSTITUTE OF TECHNOLOGY
Chickballapur - 562 101
Department of Mechanical Engineering

Course Information

Programme Name:	Mechanical Engineering					Subject Type:	Theory	
Academic Year:	2021-22	Semester:	6	Section:	B			
Course Title:	DESIGN OF MACHINE ELEMENTS II						Class Strength:	49
Course Instructor Name:	RAVIKUMAR T R							
Subject Code:	18ME62	Course No:	2	Course ID:	C312			

Scheme of Teaching & Marks

Contact Hr/Week:	5	Lecture Hours (Hr.):	3	Tutorials (Hr.):	2
Max.CIE Marks:	40	Max. SEE Marks:	60	Total Max.Marks:	100
Min.CIE Marks:	19	Min.SEE Marks:	21	Total Min.Marks:	40
Final CIE (IA) Marks:	40	Assignment Marks:	10	Test Marks:	30

Threshold Values for Attainment Calculation

Final CO Attainment

Attainment level	3	%	2	%	1	%	(Percentage Contribution, %)					
Internal Assessment	>=	60	>=	50	>=	40	CIE	40	SEE	50		
SE Examination	>=	50	>=	40	>=	35	-		CES	10		

Statements of Course Outcomes

No.of CO's

4 Target(%) BL

C312.1	Design procedure of various Machine elements (such as Springs, Belts, Ropes, Gears, Clutches, Brakes, etc.)	60
C312.2	Failure modes induced in machine elements subjected to different types of loading conditions (Such as Stress, Strain, etc.)	60
C312.3	Design Machine Elements based on Strength criteria.	60
C312.4	Select suitable bearings to give support to different rotating elements.	60

Semester End Exam. (SEE) Target(%)

90


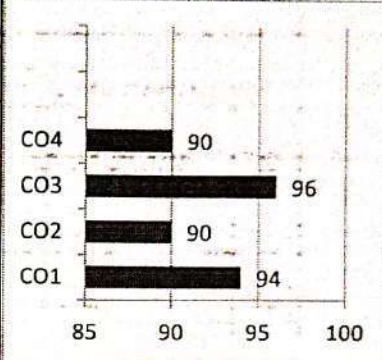
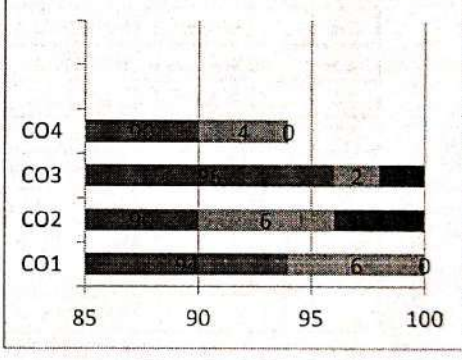


Course End Survey(CES) Target (%):

10

CO-PO Mapping Table (In the scale of 3)

CO-PSO Mapping Table

CO/PO	CO-PO Mapping Table (In the scale of 3)												CO-PSO Mapping Table				
	1	2	3	4	5	6	7	8	9	10	11	12	CO/PSO	1	2	3	4
C312.1	3	2						2					C312.1	3			
C312.2	3	3	2	1									C312.2	3			
C312.3	3	2	3	2									C312.3	3			
C312.4	3	2	3	1									C312.4	3			
Total	12	9	8	4				2					Total	12			

SJCIT/NBA/ CO-REPT/ 2021-22		 S J C INSTITUTE OF TECHNOLOGY Chickballapur - 562 101 Department of Mechanical Engineering							
Course Title		DESIGN OF MACHINE ELEMENTS II					Course Code	C312	
Subject Code	18ME62	Semester	6	Section	B	Emp.ID	1103		
Faculty Name	RAVIKUMAR T R					No.students	49		
CO Attainment from -TEST - 3, in the Subject: 18ME62-Based on: TYPE-2, Academic Year 2021-22									
Sl.	CO Number	Sum	T_Std	Av-AT	TS(=3)	AT,%	Ac_AT	ATNT	
CO1	C312.1	144	49	2.9	46	94	2.8	YES	
CO2	C312.2	140	49	2.9	44	90	2.7	YES	
CO3	C312.3	144	49	2.9	47	96	2.9	YES	
CO4	C312.4	136	49	2.8	44	90	2.7	YES	
Distribution of CO Attainment from -TEST - 3, in Subj: 18ME62-Based on: TYPE-2, ACDY:2021-22									
Sl.	CO Number	3	%	2	%	1	%		
CO1	C312.1	46	94	3	6		0		
CO2	C312.2	44	90	3	6	2	4		
CO3	C312.3	47	96	1	2	1	2		
CO4	C312.4	44	90	2	4		0		
Remarks of Course Instructor									
									
Signature of HOD/DAC				Signature of Course Instructor					

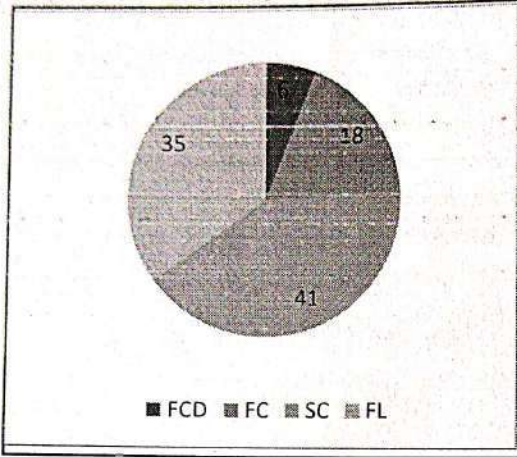
SJCIT/NBA/
SEE-REPT/
2021-22



S J C INSTITUTE OF TECHNOLOGY
Chickballapur - 562 101
Department of Mechanical Engineering

Course Title	DESIGN OF MACHINE ELEMENTS II			Course Code	C312
Subject Code	18ME62	Semester	6	Section	B
Faculty Name	RAVIKUMAR T R			Emp.ID	1103
				No.students	49

Result Analysis of Subject Code -18ME62 - for the Academic year 2021-22



No. Students	Pass	%	Fail	%
49	32	65	17	35

No. Students	49	%	Grade Point
FCD	3	6	10,9,8
FC	9	18	7
SC	20	41	6,4
FL	17	35	0

CIE	AVG	SEE	AVG	TOT	AVG
40	28	60	22	100	50

Sum_AT	66
T_students	49
Avg.ATNT	1.4
Sum_AT(=3)	12
AT(=3)%	24
Attainment	NO

Grade Letter	S	A	B	C	D	E	F
Grade Point	10	9	8	7	6	4	0
No.of Students			3	9	20		14
% of Students			6	18	41		29


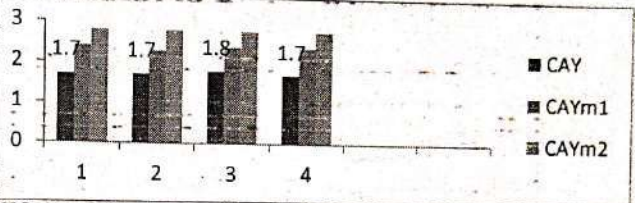
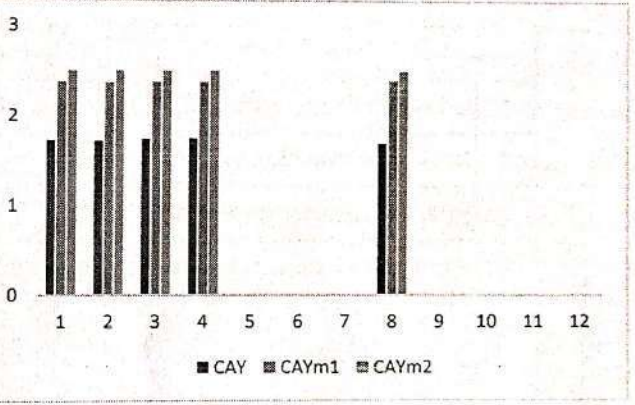
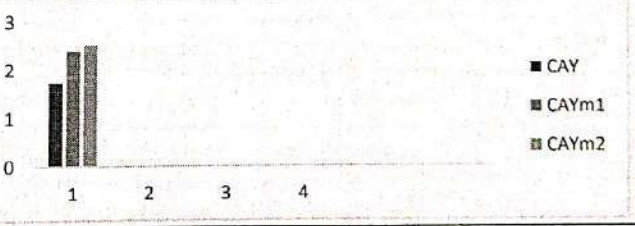

CIE and SEE correlation Coefficient	0.51
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Course Coordinator Remarks on Semester End Results for the Academic Year 2021-22

(Empty space for remarks)


Signature of Course Coordinator

Signature HOD/DAC

SICIT/NBA/ S&F-REPT/ 2021-22		 S J C INSTITUTE OF TECHNOLOGY Chickballapur - 562 101 Department of Mechanical Engineering					
Course Title		DESIGN OF MACHINE ELEMENTS II				Course Code	C312
Subject Code	18ME62	Semester	6	Section	B	Emp.ID	1103
Faculty Name		RAVIKUMAR T R				No.students	49
CO-ATTAINMENT COMPARISON FOR THE CAY, CAY-1, CAY-2							
Sl.	CO_ID	2021-22	2020-21	2019-20			
1	C312.1	1.7	2.4	2.8			
2	C312.2	1.7	2.3	2.8			
3	C312.3	1.8	2.4	2.8			
4	C312.4	1.7	2.4	2.8			
PO-ATTAINMENT COMPARISON FOR THE CAY, CAY-1, CAY-2							
Sl.	PO-No.	2021-22	2020-21	2019-20			
1	PO-1	1.73	2.38	2.5			
2	PO-2	1.72	2.37	2.5			
3	PO-3	1.74	2.38	2.5			
4	PO-4	1.75	2.38	2.5			
5	PO-5						
6	PO-6						
7	PO-7						
8	PO-8	1.7	2.4	2.5			
9	PO-9						
10	PO-10						
11	PO-11						
12	PO-12						
PSO-ATTAINMENT COMPARISON FOR THE CAY, CAY-1, CAY-2							
Sl.	PSO-No.	2021-22	2020-21	2019-20			
1	PSO-1	1.73	2.38	2.5			
2	PSO-2						
3	PSO-3						
4	PSO-4						
Academic Year		Course Instructor Name					
2021-22		RAVIKUMAR T R					
2020-21		Prof. RAVIKUMAR T R					
2019-20		Dr SURESH GOWDA M V					
 Signature of Course Instructor				Signature of HOD/DAC			

SJCIT/NBA/
CER/
2021-22



S J C INSTITUTE OF TECHNOLOGY
Chickballapur - 562 101
Department of Mechanical Engineering

Summary of Course Outcomes

Weight, %	Attainment				Blooms Levels	
	40	50	10	Total	Level's	No.
CO-Number	CIE	SEE	CES	Total		
C312.1	2.8	0.7	2.6	1.7		2
C312.2	2.7	0.7	2.6	1.7		3
C312.3	2.9	0.7	2.6	1.8		3
C312.4	2.7	0.7	2.6	1.7		3

E. Students Feedback

Over all feedback value

93

F. Remarks on CIE, attainment and suggestion(s) to improve course delivery by course instructor

SOLVE MORE NUMBER OF PROBLEMS


G. Innovative/Best methods used for course delivery by the course instructor

PPT, VIDEOS AND SHOWN ACTUAL MODELS USING DESIGN CALCULATIONS

H. Remarks of the Module Coordinator

Signature
Name

Module Coordinator


RAVIKUMAR T R
Course Instructor

Signature of the HOD

||Jai Sri Gurudev||
S J C Institute of Technology, Chickballapur – 562 101
Mechanical Engineering Department

Sem / Sec : VI A & B
Sub / Code : Design of Machine Elements-II (18ME62)
Subject Teacher : Ravikumar T R

Summary of DME-II subject result

a) Current Academic Year (2021-22):

Section	No of Students appeared	No. of Students passed	No. of students failed	Pass Percentage	Average Pass Percentage
A	46	24	22	52.17 %	60.00 %
B	49	33	16	67.35 %	

b) Failure Analysis:

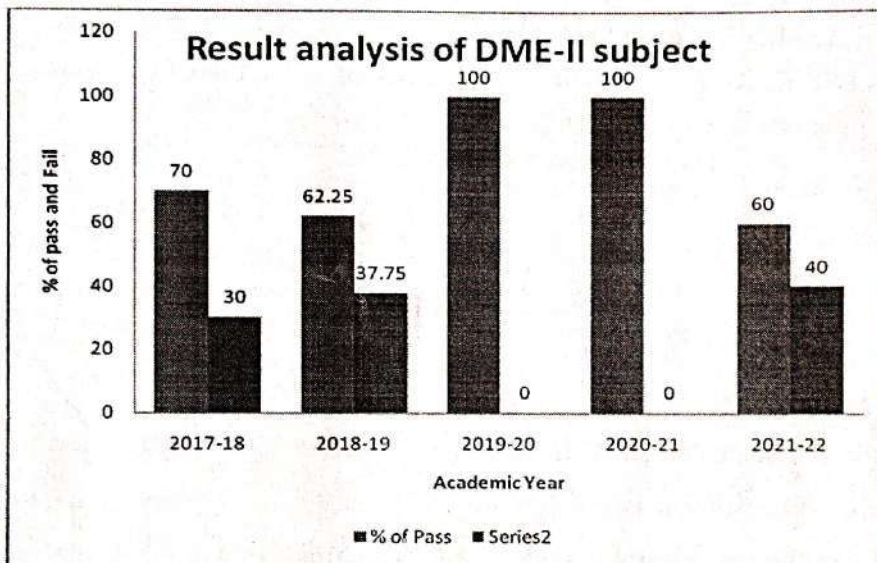
In VI semester DME-II subject pass percentage is 60.00%, when compared to previous year results it is too low, this is because of so many number of students are irregular to the classes and not taken regular internals due to not registered their name to the university in stipulated period. The subject is problematic one which needs to solve more number of problems and requires proper usage of data hand book and also need thorough basic knowledge of the subject Mechanics of Materials and Design of machine elements I, most of the students are failed in that subject.

The department is listed this subject as critical subject in 6th semester. However this one is solved by making students to solve more number of problems in class room.

The previous year results of this subject listed below

Previous year DME-I results


Academic Year	Pass Percentage	Fail Percentage
2017-18	70	30
2018-19	62.25	37.75
2019-20	100	00
2020-21	100	00
2021-22	60	40



c) Corrective measures:

1. As irregularity of the students is the main reason for the failure they are advised to be regular for the classes in future.
2. Additional classes will be engaged for the failed students in this semester.
3. Study materials and VTU previous year question papers problems with solutions will be provided.

Date: 02/11/2022


Ravikumar T R

Period : From APR 2022 To JULY 2022

Semester : Odd / Even ✓

Name of the Teacher : RAVIKUMAR T.R

Designation : ASSISTANT PROFESSOR

Department : MECHANICAL ENGINEERING

Sl. No.	Sem. / Sec. / Branch	Course Title	Course Code
1	<u>VI / A / MECHANICAL</u>	<u>DESIGN OF MACHINE ELEMENTS - II</u>	<u>18ME62</u>
2	<u>VI / B / MECHANICAL</u>	<u>DESIGN OF MACHINE ELEMENTS - II</u>	<u>18ME62</u>
3			
4			

	REVIEWS at the End of the				End of Semester
	1st Month	2nd Month	3rd Month	4th Month	
Staff	<u>[Signature] 04/05/22</u>	<u>[Signature] 06/06/2022</u>	<u>[Signature] 05/07/22</u>	<u>[Signature]</u>	<u>[Signature] 03/10/2022</u>
HOD Reviewer	<u>[Signature] 26/5/22</u>	<u>[Signature] 6/6/22</u>	<u>[Signature] 5/7/22</u>	<u>[Signature]</u>	<u>[Signature]</u>

LESSON PLANNING

DESIGN OF MACHINE ELEMENTS - II
[18ME62]

Class : VI A

Course with Code :

Period : From APRIL 2022 To JULY 2022

1st Month : From <u>04th APRIL</u> To <u>30th APRIL</u>	No. of Hours Planned :	<u>216</u>	Actual No. of Hours Taken :	<u>16</u>
---	------------------------	------------	-----------------------------	-----------

Chapter / Experiment / Module No. :

MODULE-2. GEAR DRIVES, SPUR GEARS, HELICAL GEARS

- Classification of gear, gear tooth failure, Terminologies
- Design of Spur gear against Static, Dynamic & Wear loads
- Design of Helical gear against Static, Dynamic & Wear loads

MODULE-3 BEVEL GEARS AND WORM GEARS

- Definitions, Formative no. of teeth, Design of bevel gears against

HOD Review and Sign. :

2nd Month : From <u>01st MAY</u> To <u>31st MAY</u>	No. of Hours Planned :	<u>18</u>	Actual No. of Hours Taken :	<u>11</u>
---	------------------------	-----------	-----------------------------	-----------

Chapter / Experiment / Module No. : Static, Dynamic & Wear load.

- Design of Worm gear Subjected to Static, Dynamic & Wear load.

MODULE-5. LUBRICATION AND BEARINGS

- Lubricants & their Properties, Hydrodynamic lubrications,
- Design of Hydrodynamic journal & Thrust bearings
- Design of Antifriction bearing

HOD Review and Sign. :

3rd Month : From <u>01st JUN</u> To <u>30th JUN</u>	No. of Hours Planned :	<u>22</u>	Actual No. of Hours Taken :	<u>20</u>
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Chapter / Experiment / Module No. :

MODULE-4. DESIGN OF CLUTCHES AND BRAKES

- Clutches, Types, Design of Single, multi-plate clutches & Cone clutches based on $P=c$ & $P_r=c$.
- Brakes, types, Design of band brakes, Block brake & Internal ^{Expanding} contracting brake

MODULE-1. SPRINGS, & BELTS

- Introduction, Types of Springs, Different c/s, Leaf Spring,

HOD Review and Sign. :

4th Month : From <u>01st July</u> To <u>19th July</u>	No. of Hours Planned : <u>09</u>	Actual No. of Hours Taken : <u>09</u>
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Chapter / Experiment / Module No. :

~~Basell~~ Belleville Spring
 Belts - Introduction, Types, Design of flat belt & V-belt
 Wire ropes - Construction, Design of wire rope.

HOD Review and Sign. :

[Signature]

5th Month : From To	No. of Hours Planned :	Actual No. of Hours Taken :
---------------------------------	------------------------	-----------------------------

Chapter / Experiment / Module No. :

HOD Review and Sign. :

Tutorials & Tests Conducted on

Tutorial - 1 :

1	7	0	5	2	0	2	2
---	---	---	---	---	---	---	---

Test - 1 :

1	8	0	5	2	0	2	2
---	---	---	---	---	---	---	---

Tutorial - 2 :

0	8	0	6	2	0	2	2
---	---	---	---	---	---	---	---

Test - 2 :

0	9	0	6	2	0	2	2
---	---	---	---	---	---	---	---

Tutorial - 3 :

0	7	0	7	2	0	2	2
---	---	---	---	---	---	---	---

Test - 3 :

0	9	0	7	2	0	2	2
---	---	---	---	---	---	---	---

[Signature]
04/04/22
Staff Sign

[Signature]
04/04/22
Reviewer Sign

[Signature]
HOD Sign

LESSON PLANNING

DME-II [18ME62]

Class : VI B

Subject with Code :

Period : From APRIL 2022 To JULY 2022

1st Month : From <u>04th APRIL</u> To <u>30th APRIL</u>	No. of Hours Planned : 22 16	Actual No. of Hours Taken : 19
---	--	--------------------------------

Chapter / Experiment / Module No. :

MODULE-2. GEAR DRIVES, SPUR GEARS, HELICAL GEARS
 - Classification of gear, gear tooth failure, Terminologies
 - Design of spur gear against static, Dynamic & wear load
 - Design of Helical gear Subjected to Static, Dynamic & wear load.

MODULE-3. BEVEL GEARS AND WORM GEARS
 - Definition, Design of bevel gears Subjected to Static, Dynamic & wear load.

HOD Review and Sign:

2nd Month : From <u>01st MAY</u> To <u>31st MAY</u>	No. of Hours Planned : 22 16	Actual No. of Hours Taken : 19
---	--	--------------------------------

Chapter / Experiment / Module No. :

- Design of Worm gear Subjected to Static, Dynamic & wear load

MODULE-5. LUBRICATION AND BEARINGS
 - Lubricants & their Properties, Hydrodynamic lubrication
 - Design of Hydrodynamic journal & Thrust bearings
 - Design of Anti-friction bearings.

HOD Review and Sign:

3rd Month : From <u>01st JUN</u> To <u>30th JUN</u>	No. of Hours Planned : 22 15	Actual No. of Hours Taken : 18
---	--	--------------------------------

Chapter / Experiment / Module No. :

MODULE-4. DESIGN OF CLUTCHES AND BRAKES
 - Clutches, Types, Design of Single plate, Multi plate clutches & Cone clutches based on $P=C$ & $P_r=C$
 - Brakes, Types, Design of band brake, Block brakes & Internal expanding brakes.

MODULE-1. SPRINGS & BELTS. Introduction, Types of Springs, Leaf Springs.

HOD Review and Sign:


4th Month : From 01st JULY To 19th JULY No. of Hours Planned : 10 Actual No. of Hours Taken : 10

Chapter / Experiment / Module No. :

Belleville Spring,

Belts : Introduction, Types, Design of Flat belt & V-belt

Wire ropes : Construction, Design of Wire rope.

HOD Review and Sign. 

5th Month : From To No. of Hours Planned : Actual No. of Hours Taken :

Chapter / Experiment / Module No. :

HOD Review and Sign. :

Tutorials & Tests Conducted on

Tutorial - 1 :

1	6	0	5	2	0	2	2
---	---	---	---	---	---	---	---

Test - 1 :

1	8	0	5	2	0	2	2
---	---	---	---	---	---	---	---

Tutorial - 2 :

0	8	0	6	2	0	2	2
---	---	---	---	---	---	---	---

Test - 2 :

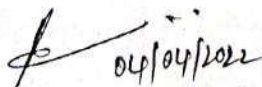
0	9	0	6	2	0	2	2
---	---	---	---	---	---	---	---


Tutorial - 3 :

0	7	0	7	2	0	2	2
---	---	---	---	---	---	---	---

Test - 3 :

0	9	0	7	2	0	2	2
---	---	---	---	---	---	---	---


Staff Sign


Reviewer Sign


HOD Sign

ATTENDANCE

DESIGN OF MACHINE ELEMENTS - II [ISMCL]

ASSESSMENT

Class: VI A

Subject:

Sl. No.	USN	NAME	05/04							20/04							Attendance				CIE Marks				Assignment Marks (10)	CIE Marks (40)	SEE Marks (60)		
			01	05	06	01	05	06	01	05	06	01	05	06	01	05	06	A1	A2	A3	Final	T1	T2	T3				Final	
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	8	9	10	11	12	13	14	(30)				(30)	(30)
1	15J19MCC01	ADARSH M	1	2	3	A	4	5	6	7	A	A	7	8	A	A	A	50	59	62	62	23	24	13	12	07	20	05	
2	02	AKARSH M	1	2	3	4	A	A	5	6	7	8	9	10	11	12	13	75	79	83	85	23	26	38	21	09	30	35	
3	13	ATISHAY M	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	92	94	96	97	24	30	24	23	08	30	13	
4	04	AMRUTH V.M	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	92	94	92	93	24	26	23	17	08	26	14	
5	05	ANIEUDH	1	2	3	4	A	A	5	6	7	8	9	10	11	12	13	75	65	56	60	26	28	34	25	10	35	42	
6	06	BALAJI N	1	2	3	A	4	5	6	7	8	9	10	11	12	13	14	79	76	75	78	26	24	23	21	09	30	21	
7	07	BHUVAN ATHRESHS	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	46	41	46	52	15	29	28	14	09	23	03	
8	08	CHADIVE SATHISH KUMAR REDDY	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	82	75	77	79	27	25	29	20	09	29	36	
9	10	CHEZHANRAJ DN	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	83	88	92	93	26	24	20	18	09	27	07	
10	11	CHIRAG C	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	83	85	79	81	26	24	23	16	07	23	15	
11	12	DHANUSH B	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	100	97	99	95	34	41	33	22	09	21	23	
12	13	DHANUSH N	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	75	75	75	78	27	29	26	16	08	24	17	
13	14	GAGAN GOWDA C	1	2	3	A	4	5	6	7	8	9	10	11	12	13	14	88	85	85	86	31	41	33	22	08	30	21	
14	15	GANESH C	1	2	3	A	4	5	A	6	7	8	9	10	11	12	13	75	79	87	88	17	23	23	15	05	20	A	
15	16	HARSHITH GOWDA TL	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	100	94	92	93	47	28	23	20	09	29	28	
16	17	HARSHITH K (JL)	1	2	3	A	A	A	A	A	A	A	A	A	A	A	A	100	-	-	-	12	-	-	-	-	-	-	
17	18	JAHNAVI KRUPA A	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	100	97	92	93	46	37	40	25	08	33	36	
18	19	JASHWANTH J	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	67	68	75	78	29	25	27	16	08	24	27	
19	20	JAYANTH KR	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	92	94	92	93	29	46	29	21	09	30	29	
20	21	KARTHIK BN	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	83	85	87	88	28	27	32	17	09	26	21	
21	22	KEERTHANA BK	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	100	97	94	95	46	41	40	25	08	34	41	
22	23	KETHIREDDY HARUDAY REDDY	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	83	85	87	88	37	32	23	16	09	25	21	
23	24	KUMAR S	1	2	3	4	5	6	7	8	9	A	A	10	11	12	13	92	94	94	95	46	30	44	24	09	33	26	
24	25	KURUBA ANJASH	1	2	3	4	A	A	A	5	6	7	8	9	10	11	12	79	75	63	67	23	38	22	17	10	27	16	
25	26	KUSHAL VS	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	92	94	90	91	22	22	12	11	09	20	09	
No. of Abs.			0	0	0	05	04	04	03	13	13	04	04	03	05	05	05					04	01	00					
Initials			V	V	V	V	V	V	V	V	V	V	V	V	V	V	V	V	V	V	V	V	V	V	V	V	V	V	V

17 Feb 2024 = 01
 18 Feb 2024 = 03
 19 Feb 2024 = 01
 20 Feb 2024 = 01
 21 Feb 2024 = 04

ATTENDANCE

Class: V A

Subject: De

06 Zlaxner Grace

ASSESSMENT

Sl. No.	USN	NAME	29/06	29/06	29/06	01/07	06/07	06/07	07/07	07/07	Total										Attendance				CIE Marks				Assignment Marks (10)	CIE Marks (40)	SEE Marks (60)
			02	05	06	01	05	06	02	03	A1	A2	A3	Final	T1	T2	T3	Final													
			45	46	47	48	49	50	51	52	(58)	53	54	55	56	57	58	59	60	(50)	(50)	(50)	(20)								
1	15J19MCC01	ADARSH M	28	29	30	A	A	A	31	2	26	07	06	06	07		05	03			50	59	62	62	23	24	13	12	07	20	05
2	02	AKARSH M	36	37	38	39	40	41	42	43	49	10	08	08		06	04	02			75	79	83	85	30	36	38	21	09	30	35
3	03	AISHAY M	43	44	45	46	47	48	49	50	56	08	08	07	08	02	02	02			92	94	96	97	42	30	32	23	08	30	13
4	04	AMRUTH V.M	43	A	A	44	45	46	47	48	54	10	08	08			00	05			92	94	92	93	24	26	33	17	08	26	14
5	05	ANIRUDH	A	A	A	A	36	37	38	39	35	10	10	10	10	03	06				75	65	56	60	46	48	54	25	10	35	42
6	06	BALAJI N	24	A	A	35	36	37	38	39	45	09	09	09			04	02			79	76	75	78	46	24	34	21	09	30	21
7	07	BHUVAN ATHREESH	20	21	22	A	23	24	A	A	30	09	09	08		06	00	05			46	41	46	52	15	29	28	14	09	23	03
8	08	CHADIVE SATHISH KUMAR	35	A	A	36	37	38	39	40	46	09	09	08		02	05				82	75	77	79	27	45	29	20	09	29	26
9	10	CHEZHANRAJ D.N	41	42	43	44	45	46	47	48	54	09	09	09		02	04	03			83	88	92	93	26	24	40	18	09	27	07
10	11	CHIRAG C	38	39	40	41	A	A	A	A	47	07	07	07				05			83	85	79	81	30	24	23	16	07	23	15
11	12	DHANUSH B	42	43	44	45	46	47	48	49	55	10	09	08		02	04	01			100	97	99	95	34	41	33	22	09	31	23
12	13	DHANUSH N	32	33	34	35	36	37	38	39	45	08	08	08		02	05	00			75	75	75	78	27	29	26	16	08	24	17
13	14	ELIAN ELONDA C	A	39	40	A	41	42	43	44	50	08	08	08		00	03	05			88	85	85	86	31	41	33	22	08	30	21
14	15	GANESH C	38	39	40	41	42	43	44	45	51					04	02	01			75	79	87	88	17	23	33	15	05	20	A
15	16	HARSHITH ELONDA T.L	A	42	43	44	45	46	47	48	54	09	09	09		00	00	06			100	94	92	93	47	28	23	20	09	29	28
16	17	HARSHITH K (N)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-			-	-	-	-	-	-	-	-	-	-	-
17	18	JAHNAVI KRUPA A	41	42	43	44	45	46	47	49	54	09	08	07		03	05	04			100	97	92	93	46	37	40	25	08	33	36
18	19	JASHWANTH J	32	33	34	35	36	37	38	39	45	08	08	06		00	07	04			67	68	75	78	29	25	27	16	08	24	27
19	20	JAYANTH K.R	43	44	45	46	A	A	47	48	54	09	09	08		00	09	04			92	94	92	93	29	46	29	21	09	30	29
20	21	KARTHIK B.N	40	A	A	41	42	43	44	45	51	09	09	08		00	00	00			83	85	87	88	28	27	32	17	09	26	21
21	22	KEERTHANA B.K	42	43	44	45	46	47	48	49	55	10	08	08		00	06	00			100	97	94	95	46	41	40	25	08	34	41
22	23	KETHIREDDY HARUDAY REDDY	40	41	42	43	A	A	44	45	51	09	09	08		00	04	06			83	85	87	88	37	32	213	16	09	25	21
23	24	KUNAL S	42	43	44	45	46	47	48	49	55	09	09	09		00	03	01			92	94	94	95	46	30	44	24	09	33	26
24	25	KURUBA AVINASH	A	A	A	29	30	31	32	33	39	10	10	10	10	00	06	03			79	75	63	67	23	38	22	17	10	27	16
25	26	KUSHAL Y.S	40	41	42	43	44	45	46	47	52	10	10	07		05	05	05			94	94	90	91	22	22	12	11	09	20	09
	No. of Abs.		04	06	06	04	04	04	02	02															04	01	00				
	Initials		f	f	f	f	f	f	f	f	f	f	f	f	f	f	f	f	f	f	f	f	f	f	f	f	f	f	f	f	f

ATTENDANCE

Class: VI A

Subject: _____

Sl. No.	USN	NAME
26	27	LAKSHAY KUMAR SINGH
27	28	LIKITH KN
28	29	MADHU K
29	30	MADHU M N
30	31	MANJUNATH C
31	32	MANOHAR H K
32	34	MANOJ H V
33	36	MD. AAFIB KHAN
34	37	MIDHAMMED SHOAIB
35	38	MOHAN H V
36	39	MOHAN KRISHNA N
37	40	MOHITH KV
38	15520ME400	ABHILASH KN
39	401	AJAYKUMAR G
40	402	ASHOKA C
41	403	BHAVAN D
42	404	CHANDAN GOWDA TN
43	405	CHANDAN N GOWDA
44	406	DEEPAK N
45	407	G CHANDAN
46	408	HARSHITH A
47	409	JAYATEERHA CA
48	410	K. G RAJEEV IYENGAR
49		
50		
No. of Abs.		01 07 07 04 08 08 07 07
Initials		A A A A A A A A

23/06	29/06	29/06	01/07	06/07	06/07	07/07	07/07
02	05	06	01	05	06	02	03
45	46	47	48	49	50	51	52
39	40	41	42	43	44	45	46
25	26	27	A	A	A	A	A
A 35	A	A	A	A	A	A	A
A 41	A	A	42	43	44	45	46
A 41	A	A	42	43	44	45	46
44	45	46	47	48	49	50	51
42	44	45	46	47	48	49	50
22	33	34	35	A	A	A	A
32	33	34	A	A 35	A 36	37	38
A 44	A	A	45	A 46	A 47	48	49
A	35	36	A	A	A	A	A
33	34	35	36	A	A	A	A
A 24	A	A	25	A	A	26	27
38	39	40	41	42	43	44	45
40	41	42	43	44	45	A	A
27	28	29	30	A	A	31	32
32	33	34	35	A	A	36	37
40	41	42	43	44	45	A	A
43	44	45	46	47	48	49	50
A 34	A	A	35	36	37	38	39
A 33	A	A	34	35	36	37	38
40	41	42	43	44	45	46	47
42	44	45	46	47	48	49	50
01	07	07	04	08	08	07	07

Ob Classmate Grace

ASSESSMENT

Total	Attendance				CIE Marks				Assignment Marks	CIE Marks	SEE Marks								
	A1	A2	A3	Final	T1	T2	T3	Final											
	(10)	(10)	(10)	(10)	(10)	(10)	(10)	(30)											
A A A3 Avg 8	M1	M2	M3	Avg M															
(58)	53	54	55	56	57	58	59	60											
52	09	07	07	00	06	05			88	82	88	90	42	42	40	25	07	32	21
32	08	06	06		03	05			62	62	52	57	23	22	22	14	07	21	12
41	00	00	00		00				41	00	00	00	37	00	00	19	00	20	13
52	08	06	08		05	01			83	88	88	90	46	47	19	22	08	030	09
52	10	08	09		04	08	01		92	91	88	90	21	31	40	18	09	27	15
57	10	08	08		00	06	05		100	97	98	98	16	25	40	16	09	25	05
53	09	09	08		02	05	03		92	94	96	97	39	33	25	19	09	28	23
41	00	00	00				01		75	75	67	71	21	38	34	21	01	22	12
44	10	07	07	08		04			71	75	75	76	42	42	34	24	18	32	27
55	08	08	08		04	05	06		100	97	94	95	44	34	28	21	08	29	21
42	09	09	09		06	05	04		92	79	69	72	22	36	18	15	09	24	21
42	07	06	06		00	04	04		71	75	69	72	24	22	20	15	07	28	17
33	09	09	09						38	41	52	57	33	28	39	21	09	30	02
51	10	10	10		00	06	08		75	79	87	88	45	45	21	22	10	32	21
45	10	10	10		03	03			88	85	87	88	44	48	33	25	10	35	27
38	09	09	00				00		58	56	62	66	36	49	23	23	06	29	08
43							03		75	75	71	75			06			20	00
51	09	09	08		04	04	02		100	91	87	88	35	27	39	20	09	29	22
56	08	08	07		01	03	00		100	100	96	97	35	24	34	19	08	27	10
45	08	08		07	06	04	03		75	75	75	78	48	48	21	22	08	30	10
44	10	10	10				00		71	68	75	76	37	32	23	14	10	29	15
53	09	09	09		00	03	04		92	88	90	91	38	36	35	22	09	31	39
56	10	08	10		05	05	04		92	88	96	97	35	44	37	24	09	33	23

(47)

ATTENDANCE

Class: VII B

Subject: _____

+ 06 classes
Grade

Sl. No.	USN	NAME	07/07	08/07				
			03	67				
26	068	SHKINIDHI KULKARNI	57	63				
27	069	SREEDHAR A	41	47				
28	071	SRIDHAR REDDY B	A	45				
29	072	SUDEEP GOWDA N	57	63				
30	073	SWASTHIK K M	38	44				
31	074	TABIEZ PASHA	51	57				
32	075	UDAY KIRAN G R	A	42				
33	076	V S MOUISH	41	47				
34	077	VIJANKUMAR K S	44	50				
35	078	VIVEK B	53	59				
36	079	YASHWANTH K N	61	67				
37	15J18ME074	PRAVEEN G V	57	63				
38	15J20ME411	KARTHIK K J	56	62				
39	412	MADHU T V	59	65				
40	413	NANDA KISHORE R	A	56				
41	414	PAVAN KUMAR	A	51				
42	415	PRADEEP N	49	55				
43	416	PRAVEEN KUMAR H A	50	56				
44	417	SUMANTH V S	51	57				
45	418	VARSHITH GOWDA L	A	53				
46	15J18ME015	BOYANANDA VARDHAN	A	33				
47	017	CHANDAN GOWDA M	A	43				
48	15J19ME405	GIRISH K N	54	60				
49	15J20ME419	ARUN KUMAR K N	A	40				
50								
	No. of Abs.		08					
	Initials		A	A				

ASSESSMENT

A1	A2	A3	Avg A	M1	M2	M3	Avg M	Attendance				CIE Marks				Assignment Marks	CIE Marks	SEE Marks
								M105	M106	M107	M107	T1	T2	T3	Final			
53	54	55	56	57	58	59	60	A1	A2	A3	Final	T1	T2	T3	Final	(10)	(40)	(60)
09	08	07	08	03	04	04		93	93	93	94	135	134	15	17	08	25	32
09	09	09	09	00	04	04		82	79	67	70	38	22	29	18	09	27	21
09	09	09	09			04		75	75	64	67	13	36	36	17	09	26	12
08	09	09				02		90	93	93	94	46	45	19	21	09	30	24
08	08	08				02		75	63	62	66	99	33	26	16	05	24	29
09	09	09	09	02	00	04		92	93	84	85	36	23	18	16	09	25	21
09					00	02		73	65	59	63	35	27	14	16	07	23	02
08	08	08	08	00	02	00		63	75	67	70	11	25	27	13	08	21	21
09	08	09	09		03	02		60	51	72	75	34	23	10	15	09	24	09
10	10	09	10	01	05	00		87	86	87	88	22	41	42	22	10	32	23
09	09	09		00	02	02		100	100	100	100	39	39	44	24	09	33	25
09	09	08	09	00	04	00		90	93	93	94	43	25	25	19	09	28	30
				00	00	00		93	91	92	93	40	41	29	22	00	22	42
10	10	09		00	03	04		100	100	96	97	42	34	42	24	10	34	21
09	09	08	09			04		90	88	82	84	34	41	30	21	09	30	18
08					03	00		80	77	75	76	39	35	22	19	04	23	08
10	10	09	10		04	00		80	79	80	82	45	48	38	26	10	36	25
09	09	09	09	00	00	04		87	81	82	84	39	28	28	19	09	28	24
09	09			00	00	00		77	79	84	85	29	34	20	18	06	24	14
09	08	07	08	00	05	04		77	79	77	79	15	25	30	12	08	20	35
								53	44	44	49	25	35	19	01	20	07	07
08	08					05		60	56	61	64	39	44	23	20	07	27	21
10	10	09	10		03	00		90	84	89	90	28	23	32	17	10	27	36
07	07	07		05	05	00		67	54	56	60	29	32	38	20	07	27	14
												05	06	01				

ATTENDANCE

ASSESSMENT

Class: VI B

Subject: D

+06 classes
Grace

Sl. No.	USN	NAME	07/07		67			
			02	03				
1	15J19ME04	NAGENDRA BABU NP	4	57	58	64		
2	042	NANDAN H	2	A	A	47		
3	043	NANDHINI G	4	55	56	62		
4	044	NIKHIL KM	3	47	48	54		
5	045	NITHIN M	4	52	53	59		
6	046	NITHIN M	3	47	48	54		
7	047	OSAMA HYDER BABU DA	3	50	51	57		
8	049	POOJA P	4	52	53	59		
9	050	POTHURAI RAVIKUMAR R	24	39	40	46		
10	051	PRABHAKAR YV	4	A	A	61		
11	052	PULUGURU MANJUNATH	27	36	37	43		
12	053	PUNITH DS	4	59	60	66		
13	054	RAHUL A	4	56	57	63		
14	055	RAHUL M	4	48	49	55		
15	057	RAMESHWAR BM	3	42	43	49		
16	058	SARJAK TA	4	58	59	65		
17	059	SANDEEP BR	4	A	A	56		
18	060	SANIVARAPPU RAJA-SHEK	4	57	58	64		
19	061	SANTAY S	3	46	47	53		
20	062	SANTOSH N	3	39	40	46		
21	063	SEETHARAM S	3	44	45	51		
22	064	SHAILESH N	4	53	54	60		
23	065	SHARATH KUMAR HV	3	51	52	58		
24	066	SHASHANK V	4	57	58	64		
25	067	SHREYAS L	3	44	45	51		
No. of Abs.			4	03	03			
Initials			A	A	A			

Sl. No.	Attendance							CIE Marks				Assignment Marks	CIE Marks	SEE Marks																
	A1	A2	A3	Avg A	M1	M2	M3	Avg M	14/05	06/06	07/07				16/07	T1	T2	T3	Final											
1	53	54	55	56	57	58	59	60	90	98	95	96	48	34	25	21	10	31	21											
2	10	10	09			07	02		75	78	67	70	25	30	35	18	03	21	09											
3	10	09	07	09	07	08	02		90	98	92	93	22	26	43	18	09	27	21											
4	10	09	09	10	04	00	00		87	90	79	81	39	49	36	24	10	24	21											
5	10	10	09		02	07	05		97	98	87	88	33	39	25	20	10	30	25											
6	09	09	08	08	03	00	02		87	88	79	81	31	25	20	01	08	27	21											
7	09	09	09	09	03	04	05		93	88	84	85	28	33	34	21	09	30	02											
8	09	09	08			06	02		90	93	87	88	33	42	21	21	09	28	02											
9	09	09	08	09	00	06	06		60	51	66	67	27	18	18	13	09	22	14											
10	10	09	08	09	05	04	04		90	98	90	91	48	32	19	20	09	29	27											
11	09	09	09			00	03		50	58	61	64	26	48	12	17	09	26	18											
12	10	09	10	10		03	01		100	100	98	99	48	31	22	25	10	35	31											
13	10	10	09	10	04	04	00		97	98	93	94	42	38	28	22	10	32	21											
14	09	09	09	09	07	02	02		83	88	80	82	30	34	27	18	09	27	09											
15	09	09	09	09		03	03		75	75	71	73	22	23	25	19	09	28	23											
16	10	10	09		04	06	02		97	98	96	97	32	47	47	05	10	35	36											
17	09	08	08	08	00	02	01		100	91	84	85	43	28	30	20	08	28	29											
18	09	09	08	09	03	05	04		100	100	95	96	37	37	43	23	09	32	30											
19					00	07	04		87	84	77	79	20	23	32	15	09	20	14											
20	09	08	09	09	00	06	03		67	65	66	67	32	28	22	20	09	29	29											
21	10	10	09		06	05	00		75	75	75	76	26	32	42	20	10	30	40											
22	08	08	08	08	03	07	03		83	88	89	90	38	25	35	20	08	28	27											
23	09	09	08		00	05	05		80	86	85	87	42	33	36	22	09	31	36											
24	09	09	08	09	03	04	05		90	93	95	96	29	43	36	22	09	31	41											
25	09	09	08		05	06	03		83	79	75	76	19	42	29	18	09	27	33											
No. of Abs.													03	01	00															
Initials											A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A

ATTENDANCE

ASSESSMENT

Class: VII B

Subject:

+ 06 classes
Grade

Sl. No.	USN	NAME	09/07	Total										
			02	67	03	04	05	06	07	08				
26	01 068	SHRINIDHI KULKARNI	57	63										
27	069	SREEDHAR A	41	47										
28	071	SRIDHAR REDDY B	A	45										
29	072	SUDEEP GOWDA N	57	63										
30	073	SWASTHIK K M	38	44										
31	074	TABEEZ PASHA	51	57										
32	075	UDAY KIRAN G. R	A	42										
33	076	V. S. MOXISH	41	47										
34	077	VIJAYKUMAR K S	44	50										
35	078	VIVEK B	53	59										
36	079	YASHWANTH K N	61	67										
37	15J18ME074	PRAVEEN G. V	57	63										
38	15J20ME411	KARTHIK K J	56	62										
39	412	MADHU T V	59	65										
40	413	NANDA KISHORE R	A	56										
41	414	PAVAN KUMAR	A	51										
42	415	PRADEEP N	49	55										
43	416	PRAVEEN KUMAR H A	50	56										
44	417	SUMANTH V S	51	57										
45	418	VARSHITH GOWDA L	A	53										
46	15J18ME015	BOYANANDA VARDHAN	A	33										
47	017	CHANDAN GOWDA M	A	42										
48	15J19ME405	GIRISH K N	54	60										
49	15J20ME419	ARUN KUMAR K N	A	40										
50														
No. of Abs.			08											
Initials			A	A										

										Attendance				CIE Marks				Assignment Marks	CIE Marks	SEE Marks				
A1	A2	A3	Avg A	M1	M2	M3	Avg M	14/05	08/06	01/07	14/07	15/05	09/06	01/07	Final	T1	T2				T3	Final		
53	54	55	56	57	58	59	60	A1	A2	A3	Final	(10)	(10)	(10)	(30)	(10)	(10)	(10)	(40)	(60)				
09	08	07	08	03	04	04		93	93	93	94	135	134	15	17	08	25	32						
09	09	09	09	00	04	04		82	79	67	70	38	22	29	18	09	27	21						
09	09	09	09			04		75	75	64	67	13	36	36	17	09	26	12						
08	09	09				02		90	90	93	94	46	45	19	21	09	30	24						
08	08	08				02		75	63	62	66	99	33	26	16	08	24	29						
09	09	09	09	02	00	04		92	93	84	85	36	23	18	16	09	25	43						
09						02		75	65	59	63	35	27	19	16	07	23	02						
08	08	08	08	00	02	00		63	75	67	70	11	25	27	13	08	21	21						
09	08	09	09		03	02		60	51	72	75	39	22	10	15	09	24	09						
10	10	09	10	01	05	00		89	86	87	88	22	47	42	22	10	32	23						
09	09	09		00	02	02		100	100	100	100	39	39	44	24	09	33	25						
09	09	08	09	00	04	00		90	93	93	94	43	25	19	09	28	47							
				00	00	00		93	91	92	93	40	42	29	22	00	22	42						
10	10	09		00	03	04		100	100	96	97	42	34	42	24	10	34	21						
09	09	08	09			04		90	88	82	84	34	41	30	21	09	30	18						
08					03	00		80	77	75	76	39	35	22	19	04	23	08						
10	10	09	10		04	00		80	79	80	82	45	46	38	26	10	36	25						
09	09	09	09	00	00	04		87	81	82	84	39	28	28	19	09	28	24						
09	09			00	00	00		77	79	84	85	27	34	30	18	06	24	14						
09	08	07	08	00	05	04		77	79	77	79	05	25	30	12	08	20	35						
								53	44	44	49	25	35	36	19	01	20	07						
08	08					05		60	56	61	64	39	44	23	20	07	27	21						
10	10	09	10		03	00		90	84	89	90	28	23	22	17	10	27	36						
07	07	07		05	05	00		67	54	56	60	29	32	38	20	07	27	14						
											05	06	01											

Feb 29 = 01
 Fe 26 = 01
 CC 20 = 02
 P 22 = 10
 F = 10

WORK DIARY

Monday	Tuesday	Wednesday
Date: 04/04/2022 "College Reopen" DME-II VI-B - 10:00 to 11:50 - Bridge Course - Introduction to MECHANICAL Engg.	Date: 05/04 DME-II - VI-A - 9:00 to 10:00 AM - Bridge Course - Introduction to Mechanical Engineering.	Date: 06/04 VI-B - 9:00 to 10:50 - Design, Machine Design Types, Codes & Standards, Syllabus, Col's. VI-A - 1:30 to 3:10 - Design, Machine Design Types, Codes & Standards, Syllabus, Col's.
Date: 11/04 VI-B - 10:00 to 11:50 MOD 2. Gears, Gear drives, Spur & Helical gears - Introduction, Definitions, Types, Terminologies, Design of Spur gear CAMA lab - VI-A - 1:30 to 4:10 PM - Introduction to modeling & analysis lab, Answer, Syllabus - Analysis of Straight bar.	Date: 12/04 VI-A - 9:00 to 10:00 AM MOD 2. Gears, Gear drives, Spur & Helical gears. - Introduction, Definition, Types, Terminologies	Date: 13/04 VI-B - 9:00 to 10:50 - Design procedure of Spur gear VI-A 1:30 to 3:10 - Design procedure of Spur gear
Date: 18/04 VI-B - 10:00 to 11:50 - Solved problems Design of Spur gear [TYPE-I] CAMA lab VI-A Classes of 51 students attend less than 100 hrs. due to CAMD lab going on CAP LAB.	Date: 19/04 VI-A - 9:00 to 10:00 AM - Solved a problem on Design of Spur gear. [TYPE-I]	Date: 20/04 VI-B 9:00 to 10:50 - Solved problems on Design of Spur gear. [TYPE-II] VI-A - 1:30 to 3:10 PM - Solved problems on Design of Spur gear [TYPE-2]

WORK DIARY

Thursday	Friday	Saturday
Date: 07/04 Students are not attended classes due to ^{some of them} not registered their names to V.T.U.	Date: 08/04	Date: 09/04
Date: 14/04 "AMBEDKAR JAYANTHI"	Date: 15/04 "GOOD FRIDAY"	Date: 16/04 Holiday
Date: 21/04 VI-A - 9:00 to 10:50 - Solved problems on Design of Spur gear. [TYPE-I]	Date: 22/04 VI-B - 9:00 to 10:00 - Solved problems on Spur gear [TYPE-II] CAMA lab VI-B - 10:00 to 12:40 - Introduction to CAMA lab, Answer, Syllabus, - Solved problem on Analysis of bar	Date: 17/04 Holiday Date: 23/04 VI-B - 9:00 to 10:00 - Solved problem on Spur gear. [TYPE-III] Date: 24/04 Holiday

WORK DIARY

Monday	Tuesday	Wednesday
<p>Date: 25/04</p> <p>DOME-II 10:00 to 11:50</p> <p>VI-B - 10:00 to 11:50</p> <p>- Solved problems on Spur gear [TYPE-III]</p> <p>CAMA Lab VI-A₁</p> <p>- 1:30 to 4:00 pm</p> <p>- Stress Analysis of Straight & Stepped bar</p> <p style="text-align: right;"><i>P. Raju</i></p>	<p>Date: 26/04</p> <p>VI-A 9:00 to 10:00</p> <p>- Solved problems on Spur gear. [TYPE-II]</p>	<p>Date: 27/04</p> <p>VI-B 9:00 to 10:50</p> <p>- Solved problems on Spur gear [TYPE-IV]</p> <p>VI-A 11:30 to 3:10 PM</p> <p>- Solved problems on Spur gear [TYPE-II]</p>
<p>Date: 02/05</p> <p>"RAMZON FESTIVAL"</p>	<p>Date: 03/05</p> <p>"BASAVA JAYANTHI"</p>	<p>Date: 04/05</p> <p>VI-B 9:00 to 10:50</p> <p>- Design procedure of Helical gear & Solved problem on Helical gear [TYPE-2]</p> <p>VI-A 1:30 to 3:10 pm</p> <p>- Helical gears, Intro to CAM, Types, Terminologies, Design of Helical gears, Design procedure.</p>
<p>Date: 09/05</p> <p>VI-B 10:00 to 11:50</p> <p>- Solved problems on Bevel gears [TYPE-I method]</p> <p>VI-A₁ - 1:30 to 4:00 pm</p> <p>- Stress Analysis of Tapered bar</p>	<p>Date: 10/05</p> <p>VI-A & B 9:00 to 10:50</p> <p>Solved problems on Bevel gears.</p>	<p>Date: 11/05</p> <p>VI-B 9:00 to 10:50 AM</p> <p>- Solved problems on Bevel gear of [TYPE-II method]</p> <p>VI-A - 11:30 to 3:10 PM</p> <p>- Solved problems on Bevel gears [TYPE-II method]</p>

WORK DIARY

Thursday	Friday	Saturday
<p>Date: 28/04</p> <p>VI-A 9:00 to 10:50</p> <p>- Solved problems on Spur gear [TYPE-III] & TYPE-IV</p>	<p>Date: 29/04</p> <p>VI-B 9:00 to 10:00</p> <p>- Introduction to Helical gears, TYPE, Terminologies</p> <p>CAMA lab VI-B₂</p> <p>- 10:00 to 12:40</p> <p>- Analysis of Stepped bar</p>	<p>Date: 30/04</p> <p>Students are not attended the class due to - M-2 Exam in morning session</p>
<p>Date: 05/05</p> <p>Exam Duty</p> <p>- Classes altered to Dr. TNR.</p>	<p>Date: 06/05</p> <p>VI-B 9:00 to 10:00</p> <p>- Solved problem on Helical gear Type-I & Type-II methods</p> <p>CAMA lab: VI-B₂</p> <p>- Analysis of Tapered bar</p> <p>- Analysis of Trusses</p>	<p>Date: 07/05</p> <p>VI A & B - 11:30 to 3:10 PM</p> <p>- mod 2. BEVEL GEARS</p> <p>- Introduction, TYPE, Terminology, Design procedure.</p>
<p>Date: 12/05</p> <p>VI-A 9:00 to 10:50</p> <p>- Solved problems on Helical gears</p>	<p>Date: 13/05</p> <p>Students Attended CAMA & ANALYSIS TRUSSES</p>	<p>Date: 14/05</p>
		<p>Date: 15/05</p> <p>Holiday</p>

WORK DIARY

Monday	Tuesday	Wednesday
Date: 16/05 VI-B 10:10 to 11:50 TUTORIAL - 2 Discussed VI-A1 - CAMA lab 1:30 to 4:00 - Stress Analysis of Trusses	Date: 17/05 VI-A 9:00 to 10:00 AM TUTORIAL - 2 Discussed	Date: 18/05 <div style="text-align: center; font-size: 2em;">TEST - 2</div>
Date: 23/05 VI-B 10:10 to 11:50 Worm gears: Introduction, Terminologies, Design of Worm gear VI-A1 - CAMA lab 1:30 to 4:00 - Analysis of Cantilever Beam Subjected to point load	Date: 24/05 Classes Suspended due to Discretion of Prof Chandrashekar P.M Prof. of ISE Dept.	Date: 25/05 VI-B 9:00 to 10:50 Design procedure of Worm gears. VI-A 1:30 to 4:00 Worm gears: Introduction, Terminologies, Design procedure of Worm gears
Date: 20/05 NO classes, I Attended Workshop on "ANUDESK", Conducted by ME, AE & AS Dept.	Date: 21/05 VI-B 9:00 to 10:00 Mod. 5. Lubrication & Bearings - Definition, Types & purpose of Lubricants, properties, selection requirements of Lubricant - Bearings, Types of Bearings	Date: 01/06 VI-B 9:00 to 10:50 - Hydrodynamic journal bearings, Design of journal bearing - Design procedure of journal bearing VI-A 1:30 to 4:00 Mod. 5. Lubrication & Bearings - Def, Types, Purposes of lubricant - Bearings, Types, Hydrodynamic journal bearings

62

WORK DIARY

Thursday	Friday	Saturday
Date: 19/05	Date: 20/05	Date: 21/05 Holiday
		Date: 22/05 Holiday
Date: 26/05 VI-B 9:00 to 10:50 Solved problems on Design of Worm gears	Date: 27/05 VI-B 9:00 to 10:00 Solved problems on Worm gear.	Date: 28/05 Conducted Technical Seminar for VIII Sem Students [B ₁ to B ₉]
		Date: 29/05 Holiday
Date: 02/06 VI-A 9:00 to 10:50 Mod. 5. Lubrication & Bearings - Def, Types, Purpose of Lubricant - Bearings, Types, Hydrodynamic journal bearings - Petroff's eqn, Derivation - Design procedure of journal bearings	Date: 03/06 VI-B 9:00 to 10:00 Mod. 5. Solved Problem on full journal bearing	Date: 04/06 Final NBA Related Works Carried out
		Date: 05/06 Holiday

63

WORK DIARY

Monday	Tuesday	Wednesday
Date: 06/06 VI A & B - 10:10 to 11:50 AM - Solved Problems in Journal bearing VI - A - 10:10 to 10:50 AM - Solved problems in Journal bearing VI - A - CAMA lab 1:20 to 4:10 PM - Analysis of Cantilever beam sub. to different loads	Date: 07/06 VI - A 9:10 to 10:50 - Design procedure of Journal bearings, Solved Problem on Journal bearing	Date: 08/06 VI A & B - 9:10 to 11:00 Thrust Bearings Discussed <u>TUTORIAL - 2</u>
Date: 13/06 VI - B 10:10 to 11:50 AM Solved problems on Thrust bearings. VI A - CAMA lab 1:20 to 4:10 PM - Analysis of plate with a hole problem.	Date: 14/06 VI - A 9:10 to 10:10 Solved problems on Thrust bearings	Date: 15/06 DME-II VI - A 1:30 to 3:10 PM Mod. 4. Clutches & Brakes Introduction, Types, Torque transmitted Derivation under $P=C$ & $PR=C$.
Date: 20/06 "CELEBRATION OF DEPARTMENT FEST" "TARANG-2K22"	Date: 21/06 VI A & B: 9:10 to 10:30 - Design of single & multi-plate clutch, set design procedure, Solved problems on single clutch plate.	Date: 22/06 VI A & B: 11:00 to 12:40 - Solved problems on multiplate clutch problems

WORK DIARY

Thursday	Friday	Saturday
Date: 09/06 (Blank)	Date: 10/06 TEST - 2	Date: 11/06 (Blank)
Date: 16/06 DME-II VI - A 9:10 to 10:50 - Classes Suspended due to "ETHNIC DAY"	Date: 17/06 DME-II VI - B - 9:10 to 10:10 AM MOD. 4. Clutches & Brakes. Introduction to clutch Types, Torque transmitted Derivation Under $P=C$ & $PR=C$.	Date: 12/06 NBA Team Visits Our College for Accreditation Date: 13/06 HR ENCLAVE Date: 14/06 HR ENCLAVE Date: 15/06 HR ENCLAVE Date: 16/06 HR ENCLAVE Date: 17/06 HR ENCLAVE Date: 18/06 HR ENCLAVE Date: 19/06 Holiday
Date: 23/06 VI A & B - 9:10 to 10:50 - Design of Cone clutch & Solved problems on Cone clutch.	Date: 24/06 "COLLEGE FEST SAMBHAMMA - 2K22"	Date: 20/06 Technical Seminar for B5, B6, B7, B8, & B9 Batches from 9:30 to 4:10 PM Date: 21/06 Holiday Date: 22/06 Holiday

WORK DIARY

Monday	Tuesday	Wednesday
Date: 27/06 VI - B ₂ : 9:15 to 12:40 PM - Analysis of beam sub. to different types of loading conditions - Analysis of a plate with a hole problem. VI A ₁ : 1:30 to 4:00 PM - Analysis of plate with a hole problem & - Modal Analysis of Cantilever beam & Fixed-Fixed beam	Date: 28/06 Dr. TNE has taken from class.	Date: 29/06 VI B - 9:10 to 10:40 Mod. 1. Design of Belt drive Drives, Types, Belt drive Types, Design of Flat belt drive, Design procedure 2:10 VI A - 1:30 to 3:20 PM Mod. 1. Design of Belt drive Types, Design of Flat belt drive, Design procedure
Date: 04/07 VI - A ₁ - 1:30 to 4:00 PM - Harmonic Analysis of a Cantilever beam - 2D Thermal Analysis of Composite Wall	Date: 05/07 VI - B - DME-II 1:30 to 2:10 PM Solved problems on Belt drive [Open & Crossed belt drive] - Taken students to M/c shop to show different type of belt drive	Date: 06/07 VI - A - 1:30 to 2:15 PM Solved problems on Flat belt drive [Open & Crossed belt drive] - Taken students to M/c shop to show <u>open & crossed belt drive</u> & <u>V belt drive</u> 1/4
Date: 10/07 TEST-3 has CONDUCTED	Date: 12/07	Date: 13/07 VI A + B - 11:10 to 12:40 PM - Solved problems on V-belt drive, - Introduction to Rope drive 'Admission Duty'

WORK DIARY

Thursday	Friday	Saturday
Date: 25/06	Date: 01/07 VI A + B - 9:10 to 10:40 AM Solved problem design of Flat belt drive VI - B ₂ - CIMA Lab 10:10 to 12:40 PM - Anal. Modal Analysis of Cantilever beam & Fixed Fixed end beam.	Date: 02/07 Conducted Technical Seminar Exam for B10 & B11 Batch students. - Dept. & Admission Duty
Date: 07/07 VI A + B 10:30 to 11:50 - V-belt drive, Introduction, Design procedure & solved problems on v-belt drive for both direct method & Manufacture Catalogue. - <u>TEST-3 DISCUSSED</u> VI A + B ₂ - Batch (CIMA Lab) - Conducted 1D & 2D Thermal Analysis.	Date: 08/07 HOD Sir engaged VI A + B Class.	Date: 09/07 TEST-3
Date: 14/07	Date: 15/07 VI A ₁ CIMA Lab 9:10 to 12:10 'LAB INTERNAL'	Date: 10/07 HOLIDAY
Date: 14/07	Date: 15/07	Date: 16/07
Date: 14/07	Date: 15/07	Date: 17/07

TEACHER APPRAISAL BY STUDENTS

Course	Class / Sec.	Total Students Participated	A	%	B	%	C	%	D	%	Total Points (A+B)
DME-II	VI/A	45	289	64.2	152	33.8	08	1.7	01	0.2	441 / 450 = 98%
DME-II	VI/B	47	382	81.27	87	22.7	01	0.21	00	00	469 / 470 = 99.7%
CAMA lab	VI/A1	21	247	61.9	143	35.84	05	1.2	04	1.00	390 / 399 = 97.7%
CAMA lab	VI/B2	22	360	86.14	58	16.11	00	00	00	00	418 / 418 = 100%

Additional Responsibilities :

- 1, Proctor for IV-B₂ BATCH Students
- 2, Discipline Duty main gate
- 3 Technical Seminar Co-ordinator
- 4, Alumni Co-ordinator [Dept.]
5. NAAC - Criterion-3 Member

6. NBA - Criterion-4 Co-ordinator
7. NDLI - Club member
8. Students Career Guidance Co-ordinator


Paper Presentation Details :

- NIL -


Training / Workshop / Seminar Attended Details :

- 1, Auto desk - Fusion 360 Hands on Workshop, Conducted by Dept. of ME, AE & AS, on 30/05/2022 at AED, SJGIT.
- 2, 5 Days Global E-FDP on "Unleashing Research Potential: Global Trends & Practices" Organized by Office of International Relations, Galgotias University, Greater Noida, Uttar Pradesh held from March 07-11 2022.

Date: 03/10/2022


Sign. of the Staff


HOD Remarks :


Sign. of the HOD

RESULT ABSTRACT

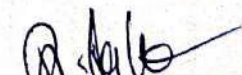
Period : From APR 2022 To JULY 2022

DATA	Course Title & Code			
	DME-II 181 [VI-A]	DME-II [VI-B]		
No. of Students Appeared	47	49		
Absentees	01	-NIL-		
First Class with Distinctions	01	01		
First Class	04	06		
Second Class	01	05		
Pass	18+1	21+4		
Fail	22-1=21	16-4=12		
% of Pass	52.17%	67.35%		


 03/10/2022
 Sign. of the Staff

54.35%
 Rajar EV

75.51%


 Sign. of the HOD

TIME TABLE

Time	1	2	3	4	5	6	7
	MONDAY		← DME-II [VI-B, LHS] →			← CAMAL(A1) (VII-A1) →	
TUESDAY	DME-II [VI-A] [LH-4]						
WEDNESDAY	← DME-II [VI-B] →				← DME-II [VI-A] →		
THURSDAY	← DME-II [VI-A] →						
FRIDAY	DME-II VI-B	← CAMAL (VI-B2) →					
SATURDAY	DME-II VI-B		DME-II VI-A				

Department : Vision & Mission

Aeronautical Engineering

Vision : Developing the department as a centre of excellence to evolve Aeronautical Engineers with knowledge, skill and character for all relevant occupations.

- Mission :**
- To build a talent pool of Aeronautical Engineers with innovative problem solving capabilities.
 - Orientation of the students to state-of-the-art technologies and research for aerospace product development activities.
 - To groom Aeronautical Engineers to be responsible citizens with sensitivity to ethical, societal and environmental issues.

Civil Engineering

Vision : To build competent Civil Engineers with a societal perspective.

- Mission :**
- By providing infrastructure and state-of-the-art laboratory facilities to meet the requirements of Curriculum, Research and Consultancy services.
 - By Imparting Technical Knowledge and skills of current & future needs of the Industry.
 - By inculcating Professionalism and motivate entrepreneurship among the students to serve the society.