KONGU ENGINEERING COLLEGE

(Autonomous Institution Affiliated to Anna University, Chennai)

PERUNDURAI ERODE – 638 060 TAMILNADU INDIA



REGULATIONS, CURRICULUM & SYLLABI – 2024

(CHOICE BASED CREDIT SYSTEM AND OUTCOME BASED EDUCATION)

(For the students admitted from the academic year 2024 - 2025)

BACHELOR OF ENGINEERING DEGREE IN MECHANICAL ENGINEERING

DEPARTMENT OF MECHANICAL ENGINEERING



B.E. MECHANICAL ENGINEERING CURRICULUM – R2024 (For the students admitted from the academic year 2024-25 onwards)

SEMESTER	K-I												
			Н	ours /	Seme	ster			Maximum Marks				
Course Code	Course Title	С	I	LI	TW	SL	тн	Cre dit	CA	ESE	Total	Cate gory	Туре
		L	Т	Р		OL.		-	JA.	LOL	Total		
Theory/The	eory with Practical				1							-	
24EGT11	English for Effective Communication - I	45	0	0	45	0	90	3	40	60	100	HS	С
24MAC11	Matrices and Ordinary Differential Equations	45	7	16	52	0	120	4	50	50	100	BS	A
24CYT12	Chemistry for Mechanical Systems	45	0	0	45	0	90	3	40	60	100	BS	С
24CSC11	Problem Solving and Programming in C	45	0	30	45	0	120	4	100	.0	100	ES	ОТ
24MET11	Engineering Drawing	30	15	0	45	0	90	3	40	60	100	ES	А
24TAM01	Heritage of Tamils	15	0	0	15	0	30	1	100	, 0	100	HS	ОТ
Practical /	Employability Enhancement					α							
24CYL12	Chemistry Laboratory for Mechanical Systems	0	0	30	0	0	30	1	60	40	100	BS	
24GCL12	Foundation Laboratory – Electrical, IoT and Web Technologies	0	0	90	0	0	90	3	100	0	100	ES	
24MNT12	Quantitative Aptitude – I	30	0	0	0	0	30	0	100	0	100	MC	1 * - * * * * * * * * * * * * * * * * *
24MNT11	Student Induction Program	0	0	90	0	0	90	0	100	0	100	МС	
, 1	Total Credits to be e	arne	1 .					22		•	•		

CI - Classroom Instructions, LI - Laboratory Instructions, TW - Term Work, SL - Self Learning, L - Lecture, T -Tutorial, P - Practical, C - Credit, TH - Total Hours, CA - Continuous Assessment, ESE - End Semester Examination.

Type: A - Analytical, D - Design using Hardware, S - Simulation using Coding, C - Concept, OC - Online course, OT - others

Signature of the Chairman
Board of Studies - Mechanical



B.E. MECHANICAL ENGINEERING CURRICULUM - R2024 (For the students admitted from the academic year 2024-25 onwards)

SEMESTE	R – II	- 1												
H.			Н	ours /	Seme	ster			Max	imum N	larks .			
Course Code	Course Title	С	1	LI	TW	SL	тн	Cre dit	CA	F0F	T-4-1	Cate gory	Туре	
×	- · · · · · · · · · · · · · · · · · · ·	L	Т	Р	1 44	3L	In		CA ,	ESE	Total		¥	
Theory/The	eory with Practical			+			7		* 0					
24EGT21	English for Effective Communication - II	45	. 0	0	45	0	90	3	40	60	100	HS	С	
24MAC21	Multivariable Calculus and Complex Analysis	45	7	16	52	0	120	4	50	50	100	BS	А	
24PHT21	Applied Physics	45	0	0	45	0	90	3	40	60	100	BS	С	
24ITC23	Python Programming	45	0	30	45	0	120	4	100	. 0	100	ES	ОТ	
24MET21	Engineering Mechanics	45	0	0	45	0	90	3	40	60	100	PC	A	
24TAM02	Tamils and Technology	15	0	0	15	0	30	1	100	0	100	HS	ОТ	
Practical /	Employability Enhancement										14			
24PHL21	Applied Physics Laboratory	0	0	30	0	0	30	1	60	40	100	BS		
24GCL11	Foundation Laboratory – Manufacturing, Design and Robotics	0	0	90	0	0	90	3	100	0	100	ES		
24MNT21	Quantitative Aptitude – II	30	0	0	0	0	30	0	100	0	100	MC	e	
24VEC11	Yoga and Values for Holistic Development	15	0	15	0	0	30	1	100	0	100	HS		
:	Total Credits to be earned													

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Type: A – Analytical, D – Design using Hardware, S – Simulation using Coding, C – Concept, OC – Online course, OT - others

Signature of the Chairman Board of Studies - Mechanical





B.E. MECHANICAL ENGINEERING CURRICULUM - R2024 (For the students admitted from the academic year 2024-25 onwards)

SEMESTER	₹ – III		9 0									2.	65
			Н	ours /	Seme	ster		1	Max	imum N	/larks		
Course Code	Course Title	С	ľ	LI	TW	SL	TH	Cre dit	CA	ESE	Total	Cate gory	Туре
-		L	т	Р		SL	10		CA	ESE	Total	,	,
Theory/The	eory with Practical				G.						-		
24MEC31	Engineering Materials and Metallurgy	45	0	30	45	0	120	4	50	50	100	ES	С
24EEC32	Electrical Drives and Industrial Electronics	45	0	30	45	0	120	4	50	50	100	ES	С
24MET31	Engineering Thermodynamics	45	0	0	45	0	90	3	40	60	100	PC	Α
24MET32	Strength of Materials	45	15	0	60	0	120	4	40	60	100	PC	Α
24MET33	Manufacturing Technology	45	0	0	15	30	90	3	40	60	100	PC	ос
24GET31	Universal Human Values	30	0	0	30	0	60	2	100	0	100	HS	ОТ
Practical /	Employability Enhancement		÷						7				
24MEL31	Manufacturing Technology and Material Property Testing Laboratory	0	0	30	0	0	30	1	60	40	100	РС	e
24MEL32	Machine Drawing using AutoCAD Laboratory	0	0	30	0	0	30	1	60	40	100	PC	
24GEP31	Mini Project - I	0	0	30	0	0	30	1	100	0	100	EC	
	Total Credits to be e	arne	ŀ				, .	23		14			

CI - Classroom Instructions, LI - Laboratory Instructions, TW - Term Work, SL - Self Learning, L - Lecture, T -Tutorial, P - Practical, C - Credit, TH - Total Hours, CA - Continuous Assessment, ESE - End Semester Examination.

Type: A - Analytical, D - Design using Hardware, S - Simulation using Coding, C - Concept, OC - Online course, OT - others

Signa

Board of St





		(Common to all Engine	ering and Tech	nnology Brand	hes)					
Programme Branch		All B.E/B.Tech Branches	Sem	Category	L	Т	Р	SL*	Total	Credi
Prerequisit	tes	Nil	1	HS	45	0	0	45	90	3
Preamble		s course is designed to enhance the co various workplace communication and			al apti	ude i	n Eng	lish la	nguage i	required
Unit – I		ammar, Verbal Aptitude, Listening, S Speech – Articles – Determiners –								9
Building a Po Unit – II Grammar: T Prefixes and Asking Ques Strategies: A	Gray ypes of Suffixed tions – n Exce	g: Importance of Good Communication Attitude: An Excerpt from You Can Windermar, Verbal Aptitude, Listening, Soff Sentences – Assertive, Interrogative is – Collocations – Idiomatic Expression Role Play – Reading: Reading for Corpt from You Can Win-Writing: Description	 Writing: Empeaking, Read Imperative and Extension Listening Emprehension 	nail Etiquette - ding & Writin and Exclamato : Identifying r - Verbal and	– Emai g ory – C nain a d Non-	Uuest nd Se Verba	ing – ion T econd	Respo ags- V ary Po mmunic	/erbal A ints – Sp	Emails 9 ptitude peaking Winning
Unit – III Grammar: To from a Disconding: Narra Unit – IV Grammar: P Sentence Correct	Graenses cussion—Sc ative an Graenmelsi annels Graenmels Graenmels Graenmels Graenmels	ermission and Inviting Chief Guest ammar, Verbal Aptitude, Listening, S.— Phrasal Verbs— Verbal Aptitude: Jun — Speaking: Retelling an Incider anning - Motivating Yourself and Other and Compare & Contrast ammar, Verbal Aptitude, Listening, Stions — Transitional Words/Phrases — on — Listening: Listening for Specific of communication — Building Positive ammar, Verbal Aptitude, Listening, Sammar, Verbal Aptitude, Listening, S	peaking, Read mbled Senten nt — Discuss is Every Day: peaking, Read Discourse Mais Information — Self-Esteem as peaking, Read	ding & Writin lices – Senten sing Tourist An Excerpt fr ding & Writin arkers – Verl – Speaking: and Image: And	ice For Destin Com You Ig Bal Ap Small In Exce	matic ations ou Ca otitud Talk erpt fr	e: Oi Teleom Y	istenir Readi n – Wr ne Wo phonic	ng: Takir ng: Pro iting: Pro ord Subs c Conver n Win –	9 ng Note ocess of aragrap 9 titution reations Writing
Unit – III Grammar: To from a Disc Communicati Writing: Narra Unit – IV Grammar: P Sentence Co Reading: Ch Instructions – Unit – V Grammar: S – Cloze Test Speaking: A Excerpt from Specific Voca	Graenses cussion cussion Scative an Preposi pmpleti nannels Recon Gra ubject t using greein you abulary	ermission and Inviting Chief Guest ammar, Verbal Aptitude, Listening, S.— Phrasal Verbs— Verbal Aptitude: Jun — Speaking: Retelling an Incider anning - Motivating Yourself and Other and Compare & Contrast ammar, Verbal Aptitude, Listening, Stions — Transitional Words/Phrases — on — Listening: Listening for Specific of communication — Building Positive ammar, Verbal Aptitude, Listening, Sommar, Verbal Aptitude, Listening, S	peaking, Reambled Sentent — Discusses Every Day: peaking, Reambled Sentential Piscourse Mais Information — Self-Esteem and Peaking, Reambled Self-Esteem and Peaking, Reambled Self-Esteeming — Reading to the Peaking of the Peaking Reading of the Peaking Reading to the Peaking Reading R	ding & Writin ices – Senten sing Tourist An Excerpt fr ding & Writin arkers – Verl – Speaking: and Image: And ding & Writin Aptitude: Hore Listening and to Summarize	ng Destination Young Small n Exceeding The Small of the S	matic ations ou Ca otitud Talk rpt fr	e: Oi Tele om Y	istenir Readi n – Wr ne Wo phonic ou Cal nones a	ng: Takir ng: Pro iting: Pro ord Subs c Conver n Win –	9 ng Note ocess of aragraph 9 titution reations Writing 9 nograph cription
Unit – III Grammar: To from a Disc Communicati Writing: Narra Unit – IV Grammar: P Sentence Co Reading: Ch Instructions – Unit – V Grammar: S – Cloze Test Speaking: A Excerpt from Specific Voca TEXT BOOK	Grannels - Recon - Grannels - Recon - Grannels - Recon - Grannels - Union - Grannels - G	ermission and Inviting Chief Guest ammar, Verbal Aptitude, Listening, S — Phrasal Verbs— Verbal Aptitude: Jun — Speaking: Retelling an Incide anning - Motivating Yourself and Other and Compare & Contrast ammar, Verbal Aptitude, Listening, Stions — Transitional Words/Phrases — on — Listening: Listening for Specific of communication — Building Positive ammar, Verbal Aptitude, Listening, Storm Agreement — Gerunds and Infinitive Forms, Prepositions and Articles and Disagreeing — Reading: Skimmir Can Win — Writing: Transcoding: Identity and N P and Savitha C, English for Technical Can Win — Writing: Transcoding: Identity and N P and Savitha C, English for Technical Can Win — Writing: Transcoding: Identity A Pand Savitha C, English for Technical Can Win — Writing: Transcoding: Identity A Pand Savitha C, English for Technical Can Win — Writing: Transcoding: Identity A Pand Savitha C, English for Technical Can Win — Writing: Transcoding: Identity A Pand Savitha C, English for Technical Can Win — Writing: Identity A Pand Savitha C, English for Technical Can Win — Writing: Identity A Pand Savitha C, English for Technical Can Win — Writing: Identity A Pand Savitha C, English for Technical Can Win — Writing: Identity A Pand Savitha C, English for Technical Can Win — Writing: Identity A Pand Savitha C, English for Technical Can Win — Writing: Identity A Pand Savitha C, English for Technical Can Win — Writing: Identity A Pand Savitha C, English for Technical Can Win — Writing: Identity A Pand Savitha C, English for Technical Can Win — Writing: Identity A Pand Savitha C, English for Technical Can Win — Writing: Identity A Pand Savitha C, English for Technical Can Win — Writing: Identity A Pand Savitha C, English for Technical Can Win — Writing: Identity A Pand Savitha C, English for Technical Can Win — Writing: Identity A Pand Savitha C, English for Technical Can Win — Writing: Identity A Pand Savitha C, English for Technical Can Win — Writing: Identity A Pand Savitha C, English For Technical Can Win — Writing: Identity A Pan	peaking, Reacmbled Sentent — Discuss s Every Day: peaking, Reac Discourse Mail Information Self-Esteem a peaking, Reacyes—Verbal As—Listening: ng — Reading to tifying Trends	ding & Writing Ices – Sentending Tourist An Excerpt from	ice For Destin Tom Young Small In Exceeding Identification of the International Identification of Iden	maticn ation: bu Ca btitud Talk Talk rpt fr	e: Or Y	istenir Readi n – Wr ne Wo phonic ou Car nones a ts from chievin Expres	ng: Takir ng: Pro iting: Pa ord Subs c Conver n Win –	9 ng Notes ocess of aragraph 9 titution reations Writing 9 nograph cription - ioals: Ai h Graph
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^{*} includes Term Work (TW) & Assignments, Tutorials and Case Studies

	SE OUTCOMES: mpletion of the course, the students will be able to	BT Mapped (Highest Level)
CO1	learn and use various aspects of English vocabulary to perform well in verbal aptitude tests of different types	Applying (K3)
CO2	listen and understand different spoken discourses	Applying (K3)
CO3	present ideas clearly and confidently in formal and informal conversations and discussions	Creating (K6)
CO4	comprehend the given text and respond appropriately for technical and professional purposes	Understanding (K2)
CO5	select appropriate words , phrases and grammatical units and apply them in both spoken and written communication	Analyzing (K4)

COs/ POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PS01	PSO2
CO1						1.		1	3	1	.1		
CO2			= ,		-	i i		1	3		1		- 7
CO3								2	3	1	2		
CO4						1			3	1	2		
CO5					. =1				3		2		

1 – Slight, 2 – Moderate, 3 – Substantial, BT- Bloom's Taxonomy

ASSESSMENT PATTERN - THEORY

Test / Bloom's Category*	Remembering (K1) %	Understa nding (K2) %	Applying (K3) %	Analyzing (K4) %	Evaluating (K5) %	Creating (K6) %	Total %
CAT1	-	35	50	=	-	15	100
CAT2		45	35	· - 1	y ee 🛌	20	100
CAT3	-	30	35	35			100
ESE	-	20	40	20	-	20	100

* ±3% may be varied (CAT 1,2& 3 – 50 marks & ESE – 100 marks)

Signature of the Chairman Board of Studies - Sr H (English)



1	(Common to all Engi	neering and T	echnology l	orano	ches)			
Programme & Branch	All B.E/B.Tech Branches	Sem.	Category	L	Т	Р	SL*	Total	Credit
Prerequisites	Nil	1.	BS	45	7	16	52	120	4
Preamble	To provide the skills to the stude and ordinary differential equation	lents for solving	g different re	al tim	ne pr	oblen	ns by a	applying	matrices
Unit – I	Matrices:	C There	Jakob Fer Si	. 170			9	Tell ?	9
and Eigen vector matrices – Ortho	naracteristic equation – Eigen valuors (without proof) – Cayley – Ha gonal transformation of a symmet on of quadratic form to canonical f	amilton theorer tric matrix to dia	m (Statemen agonal form -	t and Qua	d app adrat	olicati	ions or	nly) - Or	thogona
Unit – II	Ordinary Differential Equation				9				9
Introduction – Se	olution of First order differential ed	quations: Exac	t differential	equat	tions	– Le	ibnitz's	Linear I	Equation
Unit – III	ation – Clairaut's equation - Appli Ordinary Differential Equation			wth a	nd d	ecay			
	l equations of second and higher			ents -	Par	ticula	r Inten	rale for th	9
eax - cosax /	$\sin ax - x^n - e^{ax}x^n$, $e^{ax}\sin bx$ and $e^{ax}\cos ax$	eax cosbx – Diff	erential Equa	ations	s with	h vari	able co	pefficient	s: Euler-
Cauchy's equati	on – Legendre's equation.	, , , , , , , , , , , , , , , , , , ,		1.					
Unit – IV	Applications of Ordinary Diffe							k	9
Method of varia	ation of parameters – Simultan differential equations: Simple h	eous first ord	er linear eq	uatio	ns \	with (consta	nt coeffi	cients –
associated cond	itions need to be given).	iarmonic mond	on – ⊏iecuio	CITO	uits	(וווט	erentia	ıı equatio	ons and
Unit – V	Laplace Transform:				-			-	9
Introduction - Co	onditions for existence - Laplace t	transform of ele	mentary fun	at: a =					
and integrals of			silicitially full	Cuon	s – E	Basic	proper	ties – De	rivatives
and integrals of t	ransforms – Transform of periodic	c functions - Inv	erse Laplace	e tran	sfor	m: Inv	verse L	aplace tr	ansform
of elementary fu	nctions – Partial fraction method	c functions - Inv	erse Laplace	e tran	sfor	m: Inv	verse L	aplace tr	ansform
of elementary fu	ransforms – Transform of periodic nctions – Partial fraction method th constant coefficients.	c functions - Inv	erse Laplace	e tran	sfor	m: Inv	verse L	aplace tr	ansform
of elementary fu second order wi	nctions – Partial fraction method	c functions - Inv	erse Laplace	e tran	sfor	m: Inv	verse L	aplace tr	ansform
of elementary fu second order with LIST OF EXPER	nctions – Partial fraction method th constant coefficients.	c functions - Inv	erse Laplace	e tran	sfor	m: Inv	verse L	aplace tr	ansform
of elementary fusecond order with second order w	nctions – Partial fraction method th constant coefficients.	c functions - Inv – Convolution	erse Laplace	e tran	sfor	m: Inv	verse L	aplace tr	ansform
LIST OF EXPER 1. Introduct 2. Compute	nctions – Partial fraction method th constant coefficients. RIMENTS / EXERCISES: ction to MATLAB	c functions - Inv - Convolution /ectors	erse Laplace	e tran	sfor	m: Inv	verse L	aplace tr	ansform
LIST OF EXPER 1. Introduct 2. Comput 3. Solving	nctions – Partial fraction method the constant coefficients. RIMENTS / EXERCISES: etion to MATLAB the transfer of eigen values and eigen values eigen values and eigen values eigen eigen values eigen eig	c functions - Inv - Convolution // Convolution // Convolution	erse Laplace	e tran	sfor	m: Inv	verse L	aplace tr	ansform
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^{*}includes Term Work (TW) & Online / Certification course hours

	SE OUTCOMES: expletion of the course, the students will be able to	BT Mapped (Highest Level)
CO1	Use the matrix algebra methods and MATLAB for solving practical problems.	Applying (K3) Manipulation (S2)
CO2	Identify the appropriate method for solving first order ordinary differential equations.	Applying (K3) Manipulation (S2)
CO3	Solve higher order linear differential equations with constant and variable coefficients.	Applying (K3) Manipulation (S2)
CO4	Apply the concept of ordinary differential equations for modeling and finding solutions to engineering problems.	Applying (K3) Manipulation (S2)
CO5	Apply Laplace Transform to solve complex engineering problems.	Applying (K3) Manipulation (S2)

Mapping	of C	COs	with	POs	and	PSOs
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COs/POs	PO1	PO2	PO3	PO4	PO5	PO6	P07	PO8	PO9	PO10	PO11	PSO1	PSO2
CO1	3	3	2	1	3			1 1 1/10				-j .	
CO2	3	3	2		3	200	arts in vi	Mark Carlo		4.95		1 _ Al	14
CO3	3	3	2		3		- T	F E = 2	= < 1 =				
CO4	3	3	2		3				, 1	T = = =	I =	. 1-	
CO5	3	3	3		3								

1 - Slight, 2 - Moderate, 3 - Substantial, BT- Bloom's Taxonomy

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Test / Bloom's Category*	Remembering (K1) %	Understanding (K2) %	Applying (K3) %	Analyzing (K4) %	Evaluating (K5) %	Creating (K6) %	Total %
CAT1		40	60				100
CAT2		40	60	gereich geit	i amerikan	1 - 1	100
CAT3		30	70				100
ESE		30	70			1	100

* ±3% may be varied (CAT 1, 2 & 3 – 50 marks & ESE – 100 marks)

Signature of the Chairman Board of Studies - \$4 H



	(Common to Mechanical, Mechat	ronics & Auto	mobile branc	hes)					
Programme & Branch	B.E - MECH, MTS & AUTO branches	Sem.	Category	L	Т	Р	SL*	Total	Credi
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	palvanic series- factors influencing rate of corrosion								
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^{*}includes Term Work(TW) & Online / Certification course hours

	SE OUTCOMES: mpletion of the course, the students will be able to	BT Mapped (Highest Level)
CO1	analyze the water quality parameters for suitability of industrial and domestic applications.	Analysing (K4)
CO2	investigate the fundamental principles of electrochemistry and corrosion control measures to prevent corrosion.	Analysing (K4)
CO3	examine the chemistry of energy storing devices and meeting the future prospectus of energy storage.	Analysing (K4)
CO4	investigate the concepts of fuels and combustion for efficient engineering applications.	Analysing (K4)
CO5	examine the needy engineering materials for betterment of industries.	Analysing (K4)

COs/POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PS01	PSO2
CO1	3	2	2	1	A. 6	1	in is a			,		de conse	1010
CO2	3	2	1	1	4 *								I I I'm
CO3	3	2	1	1									rb _{fic}
CO4	3	2	1	1								1.3.7	4 .
CO5	3	2	1	1					y F 1 1 1 1 1 1 1		Ÿ,	or a who	per

1 - Slight, 2 - Moderate, 3 - Substantial, BT- Bloom's Taxonomy

ASSESSMENT PATTERN - THEORY

Test / Bloom's Category*	Remembering (K1) %	Understanding (K2) %	Applying (K3) %	Analyzing (K4) %	Evaluating (K5) %	Creating (K6)	Total %
CAT1		40	50	10			100
CAT2		40	50	10	* [2]	k	100
CAT3		40	50	10			100
ESE	- 0	40	50	10	я		100

* ±3% may be varied (CAT 1, 2 & 3 – 50 marks & ESE – 100 marks)

Signature of the Chairman Board of Studies - CAN CA SERVICO STATE TO SERVICO STATE OF ST

Programme & Branch	All BE/BTech Engineering & Technology branches, except CSE, IT,CSD, Al&ML, Al&DS	Sem	Category	L	т	P	SL*	Total	Credit
Prerequisites	Nil	1	ES	45	0	30	45	120	4
Preamble	The course is designed for use by free deals with the techniques needed to p solve problems and the ways the confocuses on developing programming sk	ractice of mputers	computationa can be use	I thinked to s	ing,	the a	art of u	sing con	nputers t
Unit – I	Introduction to Computer and Proble					- 1	W		9
	omputers: Types, Generations, Charact orithms - Flowcharts – Pseudo codes -								
Unit – II	Introduction to C and Control Statem		7.9 10 37 12 3	100		23.5	THE SH		9
identifiers- Basic looping stateme Unit – III	a C program – Compiling and executing data Types – Variables – constants – Ints Arrays and Functions:	nput / C	oram – C Tok Output statem	ens – ients –	Cha op	erato	er set in rs - de	n C — Ke cision ma	eywords aking an 9
	izing and accessing arrays – operations	on arr	ave - Two d	imenc	iono	larro	We one	thoir o	0.000
Functions: Intro	duction- Using functions, function declara nctions: basic data types and arrays – sto	tion and	definition - f	unctio	n ca	II – re			
Unit – IV	Strings and Pointers:		*						9
character maniparithmetic, point	ction – operations on strings : finding I oulation functions, Arrays of strings. Poi ers and 1D arrays , pointers and strings	nters: d							
Unit – V	User-defined Data Types and File Ha								9
unions - enume	ta types: Structure: Introduction – neste erated data type. File Handling: Introduct ng file position indicator : fseek(), ftell() an	ion - op	ening and cl						
LIST OF EXPE	RIMENTS / EXERCISES:								
1 Writing a	algorithms and drawing flowcharts using Finishers n structures	Raptor T	ool for proble	ms inv	olvi	ng se	quentia	ıl, Select	ion and
	ns for demonstrating the use of different ty	pes of	format Specif	iers	-				
3. Program operator	ns for demonstrating the use of different ty	pes of c	perators like	arithm	etic	, logic	al, rela	itional ar	nd ternar
4. Program	ns for demonstrating using decision maki	ing state	ments	ē		*		и	
5. Program	ns for demonstrating using repetitive sta	tements	, e a						
6. Program	ns for demonstrating one-dimensional arra	ay		17,3				·	- <u>\</u>
7. Program	ns for demonstrating two-dimensional arra	ay			1	-		16	with process
8. Program	ns to demonstrate modular programming of	concepts	s using function	ons				=	
9. Program	ns to demonstrate strings (Using built-in a	nd user-	defined funct	ions)					
10. Program	is to illustrate the use of pointers	*				· ·	*		
11. Program	ns to illustrate the use of structures and ur	nions	162, 24. 51	in i		. 7			
		nions	harish w	ini,		7	8 V.		

^{*}includes Term Work(TW) & Online / Certification course hours

TEXT BO	OOK:						7 10			F V						
1.	Reema TI	nareja,	"Progra	mming i	n C ", 2	nd Editio	on, Oxfo	ord Unive	ersity Pr	ess, New	Delhi, 20	18	1			
REFERE	NCES/ MA	ANUAL	/ SOFT	WARE:	ette 7	into.		6 (514			1,161	47.5	4-2-1			
1.	Yashavar	t Kanet	tkar, "Le	et us C",	16th Ed	dition, B	PB Pub	lications	, 2018.			te, e se				
2.	Sumitabh	a Das, '	"Compu	ter Fund	damenta	als and	C Progr	amming	", 1st Ed	dition, Mc	Graw Hill,	2018.				
3.	Balagurus	samy E.	., "Progi	amming	in ANS	SI C", 7t	h Editio	n, McGra	aw Hill E	Education	, 2017.		- I			
4.	Behrouz / C", 3 rd Ed				F.Gilbe	erg, "Co	mputer	Science	A Struc	ctured Pro	grammin	g Approac	ch Using			
5.	https://ww	w.cpro	grammi	ng.com/	tutorial/	c-tutoria	ıl.html	1.	17.5	1,11			34.			
	E OUTCOI		urse, th	e stude	nts wil	l be abl	e to					BT Ma (Highest				
CO1	apply pro							ons for t	he real v	world prob	olems.	Applyin Precisio				
CO2	develop s	simple (C progra	ıms usir	ng appr	opriate l	ooping	and con	trol state	ements		Applyin Precisio	g (K3)			
СОЗ	develop s	simple (C progra	ms usir	g the co	oncepts	of array	s and m	nodular į	orogramm	ning	Applyin Precisio				
CO4	apply the	concep	ots of po	inters a	nd deve	elop C p	rograms	s using s	strings a	nd pointe	rs	Applyin Precisio				
CO5	make use	e of use	r-define	d data t	ypes an	d file co	ncepts	to solve	real wo	rld proble	ms	Applyin Precisio				
		2 6		M	anning	of COs	with Po	Os and	PSOs		P 20					
COs/PC	s PO1	PO2	PO3	PO4	PO5	P06	PO7	PO8	PO9	PO10	PO11	PSO1	PSO2			
CO1	3	2	1	1			n te a V	- 1,5%	1	1	1	5.7				
CO2	3	2	2	. 1					1	1	1					
CO3	3	2	2	1					1.	1	1	1 2				
CO4	3	2	2	1					1	1	1	1				
CO5	3	2	2	1	1	. ,		, .	1	1	1					
1 – Sligh	nt, 2 – Mod	erate. 3	B – Subs	stantial.	BT- Blo	om's Ta	xonomy	·		1/4						

Signature of the Chairman
Board of Studies - CSE

CADEMIC CELL

P. Malaivam

right

, !	24MET11 – E	NGINEE	RING DRAW	ING					
	(Common to Civil, Mech, MTS,	Auto, Cl	hem, ECE, E	EE, EI	E, FT	brar	iches)		
Programme & Branch	BE / BTech – Civil, Mech, MTS, Auto, Chem, ECE, EEE, EIE, FT branches	Sem.	Category	L	Т	Р	SL*	Total	Credit
Prerequisites	Nil	1 / 2#	ES	30	15	0	45	90	3
Preamble	To impart knowledge on engineering surfaces, isometric projections and Auto								
Unit – I	nit – I Introduction to Engineering drawing and Engineering Curves 6+3								
dimensioning. P (Eccentricity met	nstruments - BIS conventions and speci rojection of pointsin different quadrants hod). Cycloidal Curves- Cycloids and Inv	. Engine	ering Curves	: Cor	ic se				ola, Hyperbola
Unit – II	Projection of planes and Solids ygonal surface and circular lamina inclin	II	<u> </u>					1	6+3
p)	er and cone when the axis is inclined to o								
to VP - Obtaini	Sectioning of Solids and Developments sms, pyramids, cylinder and cone in simple true shape of section. Development ders and Cones(Cutting planes inclined to	ole verticate	al position by eral Surfaces	cuttin of Si	g plan	es ir	clined		
Sectioning of pri to VP - Obtaini	sms, pyramids, cylinder and cone in simp ng true shape of section. Developmen	ole verticate	al position by eral Surfaces	cuttin of Si	g plan	es ir	clined		perpendicular
Sectioning of pri to VP - Obtaini Pyramids, Cylind Unit - IV Principles of ison	sms, pyramids, cylinder and cone in simp ng true shape of section. Development ders and Cones(Cutting planes inclined to Isometric Projection metric projection - Isometric scale - Isom	ole vertica t of Late o HP and netric pro	al position by eral Surfaces perpendicula	cuttin of Si r to VI	g plan mple only	es ir and).	clined trunca	ted Solids	perpendicular Like Prisms, 6+3
Sectioning of pri to VP - Obtaini Pyramids, Cylind Unit - IV Principles of ison	sms, pyramids, cylinder and cone in simp true shape of section. Developmenters and Cones(Cutting planes inclined to Isometric Projection Isometric projection - Isometric scale - Isometric projection of orthographic in to isometric scale.	ole vertica t of Late o HP and netric pro- views	al position by eral Surfaces perpendicula jections of sir	cuttin of Si r to VI	g plan mple only	es ir and).	clined trunca	ted Solids	perpendicular Like Prisms, 6+3
Sectioning of pri to VP - Obtaini Pyramids, Cylind Unit - IV Principles of iso and cylinders. Counit - V Conversion of is Introduction to Codrawing with din	sms, pyramids, cylinder and cone in simp ng true shape of section. Development ders and Cones(Cutting planes inclined to Isometric Projection metric projection - Isometric scale - Isom	ole vertica t of Late o HP and netric pro- views uction to ection (Fro- design a um 2 exe	al position by eral Surfaces perpendicula jections of sir o AutoCAD eehand sketcland developmercises manda	cuttin of Si r to VI mple a hing onent o	g plan mple only and tru inly). f new	es ir and). uncat	ed soli	ds like pri	perpendicular Like Prisms 6+3 sms, pyramids 6+3 /o-dimensional
Sectioning of pri to VP - Obtaini Pyramids, Cylind Unit - IV Principles of iso and cylinders. Counit - V Conversion of is Introduction to Codrawing with din	sms, pyramids, cylinder and cone in simple true shape of section. Development lers and Cones(Cutting planes inclined to Isometric Projection metric projection - Isometric scale - Isomonversion of orthographic in to isometric orthographic Projection and Introdometric projection into orthographic projection projection into orthographic projection and Introdometric projection into orthographic projection into orthographi	ole vertica t of Late o HP and netric pro- views uction to ection (Fro- design a um 2 exe	al position by eral Surfaces perpendicula jections of sir o AutoCAD eehand sketcland developmercises manda	cuttin of Si r to VI mple a hing onent o	g plan mple only and tru inly). f new	es ir and). uncat	ed soli	ds like pri	perpendicular Like Prisms 6+3 sms, pyramids 6+3 /o-dimensional
Sectioning of pri to VP - Obtaini Pyramids, Cylind Unit – IV Principles of iso and cylinders. Counit – V Conversion of is Introduction to Codrawing with din 3D models of va	sms, pyramids, cylinder and cone in simple true shape of section. Development lers and Cones(Cutting planes inclined to Isometric Projection metric projection - Isometric scale - Isomonversion of orthographic in to isometric orthographic Projection and Introdometric projection into orthographic projection projection into orthographic projection and Introdometric projection into orthographic projection into orthographi	netric proviews uction (Froduction (Froduction) udesign a um 2 exempts software	al position by eral Surfaces perpendicular jections of sire of AutoCAD eehand sketcland developmercises mandare. (Minimum	cuttin of Si r to VI mple a hing onent o eatory) 2 exe	g planmple only only. Inly). In new only only only. Introises	es ir and). uncat proc ducti	ed soli	ted Solids ds like pri Creating two Solid Model).	perpendicular Like Prisms 6+3 sms, pyramids 6+3 /o-dimensional
Sectioning of pri to VP - Obtaini Pyramids, Cylind Unit – IV Principles of iso and cylinders. Counit – V Conversion of is Introduction to Codrawing with din 3D models of va	sms, pyramids, cylinder and cone in simple true shape of section. Development ders and Cones(Cutting planes inclined to a lisometric Projection metric projection - Isometric scale - Isomonversion of orthographic in to isometric orthographic Projection and Introdometric projection into orthographic projection projection and introdometric projection into orthographic projection using suitable software (Minimurious components using suitable modelling	netric proviews uction (Froduction (Froduction) udesign a um 2 exempts software	al position by eral Surfaces perpendicular jections of sire of AutoCAD eehand sketcland developmercises mandare. (Minimum	cuttin of Si r to VI mple a hing onent o eatory) 2 exe	g planmple only only. Inly). In new only only only. Introises	es ir and). uncat proc ducti	ed soli	ted Solids ds like pri Creating two Solid Model).	perpendicular Like Prisms 6+3 sms, pyramids 6+3 /o-dimensional

*includes Term Work(TW) & Online / Certification course hours

#sem1: Cvil, Mech, MTS, Auto, Chem branches & sem 2: ECE, EEE, EIE, FT branches

	SE OUTCOMES: mpletion of the course, the students will be able to	BT Mapped (Highest Level)
CO1	interpret international standards of drawings and sketch the engineering curves	Applying (K3)
CO2	draw the projection of planes and solids	Applying (K3)
CO3	draw sectioning and developing of 3D primitive objects like prisms, pyramids, cylinders, cones	Applying (K3)
CO4	sketch the isometric projections of simple and truncated solids and convert orthographic projection in to isometric drawing	Applying (K3)
CO5	obtain multi view projections and solid models of objects using CAD tools	Applying (K3)

Mapping	of	COs	with	POs	and	DSOc
Mapping	OI	CUS	with	PUS	anu	POUS

COs/POs	PO1	PO2	PO3	PO4	PO5	PO6	P07	PO8	PO9	PO10	PO11	PSO1	PSO2
CO1	3	1		,	2		-			3			
CO2	3	1	1	(8	2	_				3	4 mg -		
CO3	3	1	1		2		9(3			
CO4	3	1	1		2					3	<i>z</i> .		
CO5	3	1	1		2		ps.			3			

1 - Slight, 2 - Moderate, 3 - Substantial, BT- Bloom's Taxonomy

ASSESSMEN	T PATTI	FRN - TI	HEORY
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Test / Bloom's Category*	Remembering (K1) %	Understanding (K2) %	Applying (K3) %	Analyzing (K4) %	Evaluating (K5) %	Creating (K6) %	Total %
CAT1		-	100	- L	-	-	100
CAT2	-	-	100	-	/ -	. Class a	100
CAT3			100	-	-		100
ESE	-	-	100	-	-	P	100

* $\pm 3\%$ may be varied (CAT 1, 2 & 3 – 50 marks & ESE – 100 marks)

Signature of the Chairman



		- HERITAGE OF						11k (1p!	
	(Common to All Eng	gineering and Tec	hnology Brar	nches)		y == 1		1 2 d to 1
Programme & Branch	All B.E/B.Tech Branches	Sem.	Category	L	Т	Р	SL*	Total	Credit
Prerequisites	NIL	1	HS	15	0	0	15	30	
Preamble	The objective of this course is to impararts, heroic games, doctrines, contribu	rt knowledge abo	ut Tamil lang	uage,	liter	ature	, painting	gs, sculptu	ires, folk
UNIT I	Language and Literature	7							3
sangam literatu buddhism & jai	lies in india - dravidian languages – tami ure – distributive justice in sangam litera nism in tamil land - bakthi literature azh nil - contribution of bharathiyar and bhara	ature - managem wars and nayanr	ent principles	s in th	niruk	ural -	tamil ep	oics and in	mpact o
UNIT II	Heritage - Rock Art Paintings to Mo	dern Art – Sculp	ture					: e04	3
sculptures, villa	modern sculpture - bronze icons - tribes age deities, thiruvalluvar statue at kany aswaram - role of temples in social and e	akumari, making	of musical i	temp nstru	le ca	ar ma	king nridhang	massive to am, parai	erracotta , veenai
UNIT III	Folk and Martial Arts	* ·	- 3					-	3
	karagattam - villu pattu - kaniyan kooth	ari e de la compania		- ,					
sports and gam	Thinai Concept of Tamils	n = 1 1	124 TS 1	5.95				1 75 69	3
Sports and gan UNIT IV Flora and faun education and	Thinai Concept of Tamils a of tamils & aham and puram concep literacy during sangam age - ancient cit	ot from tholkappiy ties and ports of	/am and san sangam age	gam l	litera	iture and ir	- aram c	concept of	tamils ·
unit iv Flora and faun	Thinai Concept of Tamils a of tamils & aham and puram concep literacy during sangam age - ancient cit	ties and ports of	sangam age	- exp	ort a	iture and ir	- aram c	concept of ring sanga	tamils -
UNIT IV Flora and faun education and overseas conquents UNIT V Contribution of	Thinai Concept of Tamils a of tamils & aham and puram concep literacy during sangam age - ancient cituest of cholas.	tional Movement	t and Indian e of tamils o	- exp	ire	and in	arts of in	concept of ring sanga andia – sel	tamils am age
UNIT IV Flora and faun education and overseas conquent V Contribution of movement - ro	Thinai Concept of Tamils a of tamils & aham and puram concep literacy during sangam age - ancient cituest of cholas. Contribution of Tamils to Indian Natatamils to indian freedom struggle - the	tional Movement	t and Indian e of tamils o	- exp	ire	and in	arts of in	concept of ring sanga andia – sel	tamils am age
UNIT IV Flora and faund education and overseas conquitation of movement - robooks. TEXT BOOK:	Thinai Concept of Tamils a of tamils & aham and puram concep literacy during sangam age - ancient cituest of cholas. Contribution of Tamils to Indian Natatamils to indian freedom struggle - the	tional Movement cultural influence stems of medicin	sangam age t and Indian e of tamils of the — inscription	- exp Cultu ver th	ire ne ot ma	her p	arts of in	concept of ring sanga ndia – sel int history	tamils am age am age affective for tamils
WNIT IV Flora and faund education and overseas conquitaries UNIT V Contribution of movement - robooks. TEXT BOOK: 1. S.Mu	Thinai Concept of Tamils a of tamils & aham and puram concep literacy during sangam age - ancient cituest of cholas. Contribution of Tamils to Indian Nata tamils to indian freedom struggle - the le of siddha medicine in indigenous systemathuramalingam, M.Saravanakumar, Heritatan description of Tamils to Indian Nata tamils to indian freedom struggle - the le of siddha medicine in indigenous systemathuramalingam, M.Saravanakumar, Heritatan description of Tamils to Indian Nata tamils	tional Movement cultural influence stems of medicin	sangam age t and Indian e of tamils of the — inscription	- exp Cultu ver th	ire ne ot ma	her p	arts of in	concept of ring sanga ndia – sel int history	tamils am age am age affective for tamils
WNIT IV Flora and faund education and overseas conquitation of movement - robooks. TEXT BOOK: 1. S.Mu REFERENCES	Thinai Concept of Tamils a of tamils & aham and puram concep literacy during sangam age - ancient cituest of cholas. Contribution of Tamils to Indian Nata tamils to indian freedom struggle - the le of siddha medicine in indigenous systemathuramalingam, M.Saravanakumar, Heritatan description of Tamils to Indian Nata tamils to indian freedom struggle - the le of siddha medicine in indigenous systemathuramalingam, M.Saravanakumar, Heritatan description of Tamils to Indian Nata tamils	tional Movement cultural influence stems of medicin	t and Indian e of tamils one — inscription	Cultuver thons &	re ot ma	her p nuscr	arts of in ipts – pr	concept of ring sangarandia – sel rint history	f tamils am age of a frespect of tamil
Sports and game UNIT IV Flora and faund education and overseas conquitaries UNIT V Contribution of movement - robooks. TEXT BOOK: 1. S.Mu REFERENCES Historical Instite The Grant of Same and Same	Thinai Concept of Tamils a of tamils & aham and puram concept literacy during sangam age - ancient cituest of cholas. Contribution of Tamils to Indian National States of Stat	tional Movement cultural influence stems of medicin itage of Tamils, Y	t and Indian e of tamils one — inscription es Dee Publi	Culturer thous &	Pvt	her p nuscr	arts of in ipts – pr	concept of ring sanga andia – sel int history Units I,II,I	f tamils am age 3 f-respect of tami

^{*}includes Term Work(TW) & Online / Certification course hours

COUR	SE OUTCOMES:	BT Mapped
படிப்	பை முடித்தவுடன், மாணவர்கள்	(Highest Level)
CO1	explain valuable concepts in language and literature of tamils.	Understanding (K2)
CO2	illustrate about the tamils sculpture and their paintings.	Understanding (K2)
CO3	summarize about the tamils folk and martial arts.	Understanding (K2)
CO4	explain the thinai concept of tamils.	Understanding (K2)
CO5	explain the contribution of Tamils to the Indian National Movement and Indian culture.	Understanding (K2)

COs/POs	PO1	PO2	PO3	PO4	PO5	PO6	P07	PO8	PO9	PO10	PO11	PSO1	PSO2
CO1	s. Fr		No.			2	3	2	2	y	3		
CO2	- 1 - 4					2	3	2	2		3		1 m
CO3						2	3	2	2		3		× ,
CO4						2 .	3	2	2		3		
CO5				2- T- F		2	3	2	2		3		- n - 1

1 - Slight, 2 - Moderate, 3 - Substantial, BT- Bloom's Taxonomy

ASSESSMENT PATTERN - THEORY

Test / Bloom's Category*	Remembering (K1) %	Understanding (K2) %	Applying (K3) %	Analyzing (K4) %	Evaluating (K5) %	Creating (K6)	Total
CAT1	40	60	= = /	44.	v = e, = _ ==	-	100
CAT2	40	60	н — а				100
CAT3	40	60					100
ESE			1 .	NA	. ,	· · · · · · · · · · · · · · · · · · ·	

* $\pm 3\%$ may be varied (CAT 1, 2 & 3 – 50 marks)

Signature of the Chairman



	24TAM01-தமிழ	ுர் மரபு			1			my W	
	(Common to All Engineering and	d Technol	ogy Branches)		-			3 1
Programme & Branch	All B.E/B.Tech Branches	Sem.	Category	L	T	Р	SL*	Total	Credit
Prerequisites	NIL	1	нѕ	15	0	0	15	30	1
Preamble	தமிழர்களின் மொழி, இலக்கியம், ஓவியங் விளையாட்டுக்கள், திணைக் கோட்பாடுகள், ழ பற்றிய அறிவை வழங்குவதே இந்த பாடத்தில்	இந்திய	பண்பாட்டிற			_		கலைகள பங்கள்	
<mark>அ</mark> லகு <i>-</i> ।	மொழி மற்றும் இலக்கியம்								3 2111
இலக்கியத்தி கருத்துக்கள் ஆழ்வார்கள் இலக்கிய வ	ழிக் குடும்பங்கள் - திராவிட மொழிகள் - தமிழ் ன் சமயச் சார்பற்ற தன்மை - சங்க இலக்கியத் - தமிழ் காப்பியங்கள், தமிழகத்தில் சமண மற்றும் நாயன்மார்கள் - சிற்றிலக்கியங்கள் ளர்ச்சியில் பாரதியார் மற்றும் பாரதிதாசன் ஆகி	த்தில் ப பௌத்த - தமிழீ யோரின்	கிர்தல் அற சமயங்கவ இல் நவீன பங்களிப்பு)ம் - ளின் இல	திரு தாச் க்கிய	க்குர கம் பத்தி	றளில் - பச்	மேலான தி இல ளர்ச்சி -	ன்மைச் க்கியம் தமிழ்
அலகு - ॥	மரபு - பாறை ஓவியங்கள் முதல் நவீன ஓவி ல் நவீன சிற்பங்கள் வரை - ஐம்பொன் சிலை								3
குமரிமுனை தமிழர்களின் அலகு - III தெருக்கூத்து	பொருட்கள், பொம்மைகள் - தேர் செய்யும் கணையில் திருவள்ளுவர் சிலை - இசைக் கருவிகள் சமூக பொருளாதார வாழ்வில் கோவில்களின் நாட்டுப்புறக் கலைகள் மற்றும் வீர் விளையார், கரகாட்டம், வில்லுப்பாட்டு, கணியான் கூத்து	ா - மிரு பங்கு. ட்டுக்கள்	நதங்கம், ப ர	றை,	ഖ്ങ	ळ ा,	யாழ்,	நாதஸ்	வரம் 3
	ாட்டம், தமிழர்களின் விளையாட்டுகள்.			in the					
அலகு - IV	தமிழர்களின் திணைக் கோட்பாடுகள்			Fig. 3	-119				3
கோட்பாடுகள் சங்ககால ந	தாவரங்களும், விலங்குகளும் - தொல்காப்பிய ர் - தமிழர்கள் போற்றிய அறக்கோட்பாடு- சங் கரங்களும் துறை முகங்களும் - சங்ககாலத் சாழர்களின் வெற்றி. இந்திய தேசிய இயக்கம் மற்றும் இந்திய பண் தெலைப்போரில் தமிழர்களின் பங்கு - இந்திய	கக்கால் ந்தில் ஏ ரபாட்டி <u>ர</u> ்	த்தில் தமிழ ரற்றுமதி ம ற குத் தமி ழ	ழகத்தி மற்றுட மர்களி	நில் ம் இ ன் ப	எழு இறக் பங்க	த்தறில குமதி ளிப்பு	பும் கல் - கட	வியும் லகடந்த
இந்திய விடு	த இயுக்கும் இக்கிய முகக்குமுக்கில்		•		_				
இந்திய விடு சுயமரியாதை	த இயக்கம் - இந்திய மருத்துவத்தில் ப்படிகள் - தமிழ்ப் புத்தகங்கள்களின் அச்சு வரல	சித்த	மருத்துவ		_	ாங்கு	-	கல்வெ	
இந்திய விடு சுயமரியாதை		சித்த	•		_	I ங்கு	-		
இந்திய விடு சுயமரியாதை கையெழுத்து TEXT BOOK:		சித்த பாறு.	மருத்துவத		_	Iங்கு	-		
இந்திய விடு சுயமரியாதை கையெழுத்து TEXT BOOK: 1. ஆ. பூ	பப்படிகள் - தமிழ்ப் புத்தகங்கள்களின் அச்சு வரல நபாலன், தமிழர் மரபு, VRB Publishers Pvt Ltd, 2022,	சித்த பாறு.	மருத்துவத		_	ப ங்கு			
இந்திய விடு சுயமரியாதை கையெழுத்த TEXT BOOK: 1. ஆ ட REFERENCES நமிழ	பப்படிகள் - தமிழ்ப் புத்தகங்கள்களின் அச்சு வரல பூபாலன், தமிழர் மரபு, VRB Publishers Pvt Ltd, 2022, ச : க வரலாறு- மக்களும் பண்பாடும்- கே கே பிள்ளை கள் கழகம்)	சித்த மாறு. அலகு 1, ர (வெளி	மருத்துவ <u>த</u>	த்தின் 	L))))	கல்வெ	ட்டுகள்
இந்திய விடு சுயமரியாதை கையெழுத்த TEXT BOOK: 1. ஆ ட REFERENCES 1. தமிழ பணி	பப்படிகள் - தமிழ்ப் புத்தகங்கள்களின் அச்சு வரல பாலன், தமிழர் மரபு, VRB Publishers Pvt Ltd, 2022, : நக வரலாறு- மக்களும் பண்பாடும்- கே கே பிள்ளை கள் கழகம்) னித்தமிழ் - முனைவர் இல. சுந்தரம் (விகடன் பிர	சித்த பாறு. அலகு I, I (வெளி! சுரம்)	மருத்துவத் II,III,IV,V. யீடு தமிழ்நா	ந்தின் ரடு பா	ட்டு	ால் ப))))	கல்வெ	ட்டுகள்
இந்திய விடு சுயமரியாதை கையெழுத்த TEXT BOOK: 1. ஆ ட REFERENCES 1. தமிழ பணி	பப்படிகள் - தமிழ்ப் புத்தகங்கள்களின் அச்சு வரல பூபாலன், தமிழர் மரபு, VRB Publishers Pvt Ltd, 2022, ச : க வரலாறு- மக்களும் பண்பாடும்- கே கே பிள்ளை கள் கழகம்)	சித்த பாறு. அலகு I, I (வெளி! சுரம்)	மருத்துவத் II,III,IV,V. யீடு தமிழ்நா	ந்தின் ரடு பா	ட்டு	ால் ப))))	கல்வெ	ட்டுகள்

^{*}includes Term Work(TW) & Online / Certification course hours

SE OUTCOMES:	BT Mapped
ப முடித்தவுடன், மாணவர்கள்	(Highest Level)
தமிழ் மொழி மற்றும் இலக்கியத்தில் மதிப்புமிக்க கருத்துக்களை விளக்க முடியும்.	Understanding (K2)
தமிழர்களின் சிற்பம் மற்றும் அவர்களின் ஓவியங்கள் பற்றி விளக்க முடியும்.	Understanding (K2)
தமிழர்களின் நாட்டுப்புற மற்றும் தற்காப்புக் கலைகளைப் பற்றி சுருக்கமாகக் கூற முடியும்.	Understanding (K2)
தமிழர்களின் திணைக் கோட்பாடுகளைப் பற்றி விளக்க முடியும்.	Understanding (K2)
இந்திய தேசிய இயக்கம் மற்றும் இந்திய பண்பாட்டிற்குத் தமிழர்களின் பங்களிப்பு பற்றி விளக்க முடியும்.	Understanding (K2)
	ப முடித்தவுடன், மாணவர்கள் தமிழ் மொழி மற்றும் இலக்கியத்தில் மதிப்புமிக்க கருத்துக்களை விளக்க முடியும். தமிழர்களின் சிற்பம் மற்றும் அவர்களின் ஓவியங்கள் பற்றி விளக்க முடியும். தமிழர்களின் நாட்டுப்புற மற்றும் தற்காப்புக் கலைகளைப் பற்றி சுருக்கமாகக் கூற முடியும். தமிழர்களின் திணைக் கோட்பாடுகளைப் பற்றி விளக்க முடியும். இந்திய தேசிய இயக்கம் மற்றும் இந்திய பண்பாட்டிற்குத் தமிழர்களின் பங்களிப்பு பற்றி

COs/POs	PO1	PO2	PO3	PO4	PO5	PO6	P07	PO8	PO9	PO10	PO11	PSO1	PSO2
CO1			1			2	3	2	2	=	3		
CO2			18	A		2	3	2	2	2 2	3		
CO3	1 . 1 . 1					2	3	2	2		3		
CO4			_			2	3	2	2		3		
CO5						2	3	2	2		3		

1 - Slight, 2 - Moderate, 3 - Substantial, BT- Bloom's Taxonomy

ASSESSMENT	PATTERN -	THEORY
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Test / Bloom's Category*	Remembering (K1) %	Understanding (K2) %	Applying (K3) %	Analyzing (K4) %	Evaluating (K5) %	Creating (K6) %	Total
CAT1	40	60	1/2 35.	d x			100
CAT2	40	60			1	9	100
CAT3	40	60					100
ESE	_			NA		,	

* $\pm 3\%$ may be varied (CAT 1, 2 & 3 – 50 marks)

Signature of the Chairman
Board of Studies - S& H (Chemistry)



	- 170	-			10	· MEO	LL NATO C	RY FOR M								-
Drogra	mme &			2				k Automob	ile bra	nches)	1					
Branch		E	3.E & ME	CH, MTS	& AUTO	branche	s	Sem.	Cat	egory	L	T	Р	SL*	Total	Credi
Prereq	uisites	1	Nil		£			1		BS	0	0	30	0	30	1
Preaml	ble		meter ex	periment	s for the owledge	estimatio on water	n of give	pts of vol n samples arameters	and	thereby	, to	improv	e the	analy	tical skills	s. It als
LIST O	F EXPER															
1.	Assess carbona	ment ate ar	of the give of total ha	en water ardness b	sample fo y EDTA n	or the suit nethod.	ability of o	drinking / i	ndustr	ial purp	ose I	oy esti	natin	g the c	arbonate,	, non-
2.	Estimat	ion of	f type and	amount o	of alkalinit	y present	in the giv	en river/bo	ore we	ll water	sam	ple.		180	2	
3.	Volume	tric e	stimation	of chromi	um prese	ent in the	given solu	ıtion using	perm	angano	metr	ic meth	od.			
4.	Perform	Win	kler's me	thod for th	e determ	ination of	dissolved	d oxygen ir	n the g	iven wa	stev	ater s	ample	Э.		
5.	Determ	inatio	n of strer	igth and a	mount of	acid in a	given sol	ution using	pH m	neter.			0	700-011-1	5	
6.	Determ	inatio	n of strer	gth and a	mount of	mixture c	of acids p	esent in th	ne give	en solut	ion u	sing C	ondu	ctivity r	neter.	
7.	Determ	inatio	n of COD	in the giv	en water	sample.					2					
8.	Determ	inatio	n of cond	entration	of Nickel	by Specti	rophotom	etric metho	od.							1)
9.	Perform	ing F	ermanga	nometric	titration fo	or the det	erminatio	n of corros	ion ra	te of iro	n in a	acidic i	nediu	ım.		. 75
10.	Estimat	ion of	f sulphur	present ir	the give	n fuel usir	ng electro	-analytical	techn	iques.						
11.	Constru	ction	and worl	king of Zir	nc -Coppe	er Electro	chemical	Cell (Demo	onstra	tion).						
12.	Report	prepa	ration -ba	ased on th	ne data re	eceived fro	om the ar	alysed wa	ter qu	ality pa	rame	ters (E)emo	nstratio	n).	
REFER	RENCES/	MAN	UAL/SO	FTWARE	:		,			2 102				-		-
1.	Palanis Rajaga	amy napat	P.N., M hy Publis	anikanda hers, Ero	n P., Ge de, 2024.	eetha A.	and Ma	njula Rar	ni K.,	"Chem	istry	Labo	ratory	/ Man	ual", 1st	Edition
	SE OUTC											-			ВТ Мар	
On cor		ne th	e amoun					rdness, al	kalinit	y, DO,	COD	prese	nt in		lighest L nalyzing	
	the give			tration of	Nickel h	ov spectro	ophotome	eter and s	sulphu	r by el	ectro	anal	/tical	ļ ļ	Precision nalyzing	(S3)
CO2	method			_				ctivity met				,			Precision	(S3)
CO3	chromit	im us	sing pem	and am	netric met	hod.	iy conau	cuvity met	er and	ρΗ m	eter	iron	and		nalyzing Precision	
			1.10		Ma	apping of	f COs wit	h POs and	d PSO	s				Y	-	
COs/P	POs P	01	PO2	PO3	PO4	PO5	PO6	P07	PO8	PC	9	P01) F	011	PSO1	PSO
CO	1	2	2	3	2	1	2	1						_		
CO2	2	2	2	3	2		2	1						. ,	i .	
COS	3	2	2	3	2		2	1								

1 – Slight, 2 – Moderate, 3 – Substantial, BT- Bloom's Taxonomy
*includes Term Work(TW) & Online / Certification course hours

Signature of the Chairman Board of Studies - Say



									AL, IOT A				02001		
Progra Branc		. &	All BE	/BTech B				Sem.	Categor	y L	Т	Р	SL*	Total	Credit
Prerec		es	Nil				2	1/2	ES	0	0	90	0	90	3
Pream									nowledge		ineeri		th hand	505	-
LIST)F FX	PERIM		house wir		net of Th	ings and	Web Te	echnologie	S.					
LIOT	<i>J</i> 1 LA	LIXIII	LINIO	LALKOR		A – Elec	trical Ins	tallatio	n (30 Hou	rs)			-		
1.	Det	erminat	tion of Ic	ad curren	its and se	elect suita	able comp	onents	for Protec	tion					(4)
2.	Dev	elop a	wiring c	ircuit for in	ncandesc	ent lamp	and fluor	escent	lamp using	Simpl	e and	Stair	case W	/iring	
3.	Dev	elop ar	nd Inves	tigate wiri	ng circuit	ts for Call	ling Bell S	System :	and Dimm	able Li	ght		4		
4.	Cre	ate wiri	ng circu	it for sing	e phase	motor	= 6	e e	- 10.00						
5.	Dev	elopme	ent of IC	T based	energy m	onitoring	and contr	rol		0					=
6.	Меа	asurem	ent and	analysis o	of electric	cal param	eters for l	Photovo	oltaic Sola	r Panel	X.				
	7						ernet of	Things	(30 Hour	s)					
1.	Des	sign a S	lingle la	yer PCB I	ayout des	signing		1	* 1				-		
2.	Fab	ricate S	Single la	yer PCB	printing							ji.	×	D	
3.	Ass	emblin	g, solde	ring and c	lesolderii	ng practio	e on sing	le layer	PCB					- 200	
4.	Ser	sor an	d actuat	or interfac	ing with	internet e	nabled m	icrocon	troller						
5.	Ser	nsor an	d actuat	or calibrat	tion										,
6.	Inte	gration	of micr	ocontrolle	r based s	system wi	th Cloud	platforn	n						
	Т				PAR	TC-We	b Techn	ologies	s (30 Hour	s)					*
1.	Des	sign a s	imple w	eb page ι	sing bas	ic HTML	tags and (CSS pro	perties				*		
2.	Des	sign a re	esponsiv	e webpag	e using E	Bootstrap	framewor	rk		α <					
3.	Des	sign a v	vebpage	e for signu	p and log	gin valida	tion form	using J	avascript a	and PH	Р	-		· · · · · ·	
4.						PHP, M	ySQL and	d host th	ne website	in the	serve	ſ .			***
REFE	RENC	ES/ M	ANUAL	/SOFTW	ARE:										
1.			Manua												
2.		CI.Free Reilly, 2		isabeth R	obson, "I	Head Firs	t JavaScr	ipt Prog	gramming	A Brair	n-Frier	idly G	Buide",	1st Editio	n,
3.	Eric	T.Free	eman,El	isabeth R	obson, "I	Head Firs	t HTML a	ind CSS	6",2nd Edi	ion, O'	Reilly	, 201	2	(4)	, ,
4.	Lyn	ın Beigl	nley,"He	ead First S	QL",1st	Edition, C	Reilly,20	007.							
		UTCO		urse, the	studente	، مطالف	abla ta					2	Ι,	BT Map Highest I	
CO1	1			viring circ				heir rec	uirement					Applying	(K3)
		-												Precision Applying	
CO2	-			d solution:		1		e cases	.	-	<u> </u>			Precision Applying	(S3)
CO3	Des	sign an	a nost a	n interact				h DO-	and Doc					Precision	
COs/F		P01	PO2	PO3	PO4	PO5	PO6	PO7	PO PO	PO9	PO	10	PO11	PSO1	PSO
/PSC	-	3	3	3	2	3		1	3	2	2		2	1.001	1 302
		3	3	3	2	3		1	3	2	2	-	2		+
CO		_		_	_	_		1	"	-			-	1	1





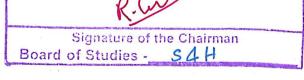


		· · ·		24	4MNT12	- QUAI	NTITATIV	VE AP	TITUDE - I			2	17		
			(C	ommo	n to all E	nginee	ring and	Tech	nology bra	ınche	s)				· · · · · · · · · · · · · · · · · · ·
Program Branch	nme &	All B.	E/B.Tec	h Bran	ches	· ·	Se	em.	Category	L	Т	Р	SL*	Total	Credit
Prerequ	isites	Basic	Mather	natical	skills			1	МС	20	0	0	10	30	0
Preamb	le				lving skil		nhance a	analyti	cal skills.			-		-	
Unit – I	, avatama				Equation		divioibilit	, BO	DMAC Dl	- 11	`F.		20.4	.	6
-Simplif	ication – F	Problem	ıs.						DMAS Rul						
									linear equa	ations	with	ı two ı	/ariabl	les – Ap	plications
Unit - II	aneous li				nd Perce		simple pr	robiem	S.				-		6
Ratio ar	nd Propo	rtion: T	hird, Fo	ourth an	d mean p	proportio			son of ratio			ound	ratio -	Duplica	
									Simple pro						
Unit - II				ss, Inte		ercentag	jes – Pro	biems	on populat	ion –	Pro	biems	on de	preciation	on. 8
Profit ar	nd Loss:	Basic c	oncepts	- Cost	price – S	Selling p	orice – Pr	ofit an	d Loss – S	imple	pro	blems			-
Simple a	and Comp	pound i	interes	t: Conc	epts – Pe	ercentag	e of inter	est – D	Difference b	etwe	en s	imple	intere	st and c	ompound
	- Simple p	orobiem	S.	_						-					1
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1.	limited, 2		Quant	itative /	Aptitude 1	or Com	ipetitive i	=xamır	nations", Re	evised	1 Ec	lition,	S.Cha	ind and	company
REFERE	ENCES/ N	/IANUA	L/SOF	TWAR	E:				-						
1.	Abhijit G 2020.	uha,"Qu	ıantitati	ve Apti	tude for	Compet	titive Exa	aminati	on", 7 th Ed	dition,	Мс	Graw	Hill E	Education	on, India,
2.	https://wv	ww.india	abix.cor	n/aptitu	de/quest	ions-and	d-answer	<u>s</u>							***************************************
3.	https://w	ww.gee	ksforge	eks.org	/aptitude-	-questio	ns-and-a	answer	<u>'S</u>						
	E OUTCO			the etc.	danta:	11 ha ah	la 4a	-	,					ВТ Мар	
CO1					two varia		ile to	17.						lighest	
		1.0												Applying	<u> </u>
CO2					centage									Applying	(K3)
CO3	Solve pr	ofit and	loss, s	imple in	iterest an	nd comp	ound inte	erest p	roblems.				,	Applying	(K3)
	. "				Mappin	g of CC)s with F	Os ar	nd PSOs	·					
COs/PO	s PO1	PO2	PO3	PO4	PO5	PO6	PO7	POS	PO9	PO	10	PO1	1 P	SO1	PSO2
CO1	2	2													
CO2	2	2											7		
CO3	3	3				6			1						
1 – Sligh	nt, 2 – Mo	derate,	3 – Sul	bstantia	l, BT- Blo	oom's T	axonomy	/	11					***	-
	ų, [*]	-0			ASSES	SMENT	PATTE	RN - T	HEORY						(6)
	Bloom's gory*		nember (K1) %		Underst		Apply (K3)		Analyzing (K4) %		alu (K5	ating		eating (6) %	Total %
	.Τ1				30		70				, , ,		\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\	-, ,,	100
CA	T2		0 _		30)	70		tionidade en actividade en actividade						100
CA	T3				30)	70		1				1		100
		1													



 * ±3% may be varied (CAT 1, 2 & 3 – 50 marks & ESE – 100 marks) *includes Term Work (TW) & Online / Certification course hours







	(Common to all E	ingineering and	Technology by	ranches	s)		1 3		
Programme & Branch	All B.E/B.Tech Branches	Sem	Category	L	T	Р	SL*	Total	Credit
Prerequisites	Nil	2	HS	45	0	0	45	90	3
Preamble	This course aims at up skilling students in practicing the langua and academic contexts.	ge skills to acc	quire verbal an	id com	munic	write a	as well proficie	as to fac ncy in pro	ilitate the ofessiona
sUnit – I	Grammar, Verbal Aptitude, List	ening, Speakir	ng. Reading &	Writin	a				9
to a Match Comm Etiquette – Readi <i>Atomic Habit</i> s Wr i	, Compound, and Complex Senten entary and Filling in a Table – List ng: Scanning a Text, Power Point ting: Business Letters: Enquiry and	ening to TED ta Presentations Complaint	alks - Speakin – The Best V	g: Apol Vay to	logizir Start	na – T	alking a	about Mar : An Exc	nners and erpt from
Unit – II	Grammar, Verbal Aptitude, List and Indirect Speech – Verbal Apti	ening, Speakir	ig, Reading &	Writin	g				9
Choices and Profe	ng Information – Career Related ssional Skills – Reading: Reading An Excerpt from <i>Atomic Habits</i> - Wr	for Local and G iting: Job Appl	Blobal Compret lication: Cover	nension	1 – Ho	w to I	Find and	Fix the	auses o
W1116 111	Grammar Verbal Antitude Liet	ening Speaking	na Readina 9	Mritim	~	toour	16 – Sil		
	Grammar, Verbal Aptitude, List	ening, Speakir	ng, Reading &	Writin	q				9
Grammar: Active	and Passive Voice - Verbal Aptitu	de: Error Spotti	ng, Reading & ng – Sentence	Writin	g /emer	nt – A	obreviat	ions and A	9 Acronyms
Grammar: Active - Listening: Liste	and Passive Voice – Verbal Aptitu ning to Podcast Interviews and Nev	de: Error Spotti	ng, Reading & ng – Sentence Speeches – Sr	Writin Improv	g /emer a: Pre	nt – Al	obreviat	ions and A	9 Acronyms
Grammar: Active - Listening: Liste Opinions about P	and Passive Voice – Verbal Aptitu ning to Podcast Interviews and Nev odcast – Reading: Reading a Pr	de: Error Spotti vs/Motivational ocedure – Cro	ng, Reading & ng – Sentence Speeches – Sp ss Cultural Co	Writin Improv peaking	g /emer g: Pre icatio	nt – Al esentii n - H	obreviating a Poi	ions and A	9 Acronyms / – Giving
Grammar: Active – Listening: Liste Opinions about P Inevitable and Bac	and Passive Voice – Verbal Aptitu ning to Podcast Interviews and Nev	de: Error Spotti vs/Motivational ocedure – Cro	ng, Reading & ng – Sentence Speeches – Sp ss Cultural Co	Writin Improv peaking	g /emer g: Pre icatio	nt – Al esentii n - H	obreviating a Poi	ions and A	9 Acronyms / – Giving
Grammar: Active – Listening: Liste Opinions about P Inevitable and Bac based Essays	and Passive Voice – Verbal Aptitu ning to Podcast Interviews and Nev odcast – Reading: Reading a Pr I Habits Impossible: An Excerpt fro	de: Error Spotti vs/Motivational ocedure – Cro m <i>Atomic Habit</i> :	ng, Reading & ng – Sentence Speeches – Sp ss Cultural Co s – Writing: T	Writin Improverse Deaking Ommun Types o	g /emer g: Pre icatio f Essa	nt – Al esentii n - H	obreviating a Poi	ions and Ant of View Make Goo	9 Acronyms / – Giving od Habits d Opinior
Grammar: Active – Listening: Liste Opinions about P Inevitable and Bac based Essays Unit – IV	and Passive Voice – Verbal Aptituning to Podcast Interviews and Newodcast – Reading: Reading a Pril Habits Impossible: An Excerpt from Grammar, Verbal Aptitude, List	de: Error Spotti vs/Motivational ocedure – Cro m Atomic Habiti ening, Speakir	ng, Reading & ng – Sentence Speeches – Sp ss Cultural Co s – Writing: T	Writin Improved the community of the com	g /emer g: Pre icatio f Essa	nt – Al esentii n - H ays: 7	obreviating a Poi ow to I Argumei	ions and Ant of View Make Goo ntative and	9 Acronyms / – Giving od Habits d Opinior
Grammar: Active - Listening: Liste Opinions about P Inevitable and Bace based Essays Unit – IV Grammar: If/Conc	and Passive Voice – Verbal Aptituning to Podcast Interviews and Newodcast – Reading: Reading a Pril Habits Impossible: An Excerpt from Grammar, Verbal Aptitude, List litional Clause – Modals Verbs – Co	de: Error Spotti vs/Motivational ocedure — Cro m Atomic Habits ening, Speakir onversational D	ng, Reading & ng – Sentence Speeches – Sp ss Cultural Co s – Writing: T ng, Reading & evices - Verba	Writin Improved the community of the com	g /emer g: Pre icatio f Essa g ude:	nt – Alesentii n - H ays: /	obreviating a Poi ow to I Argumei	ions and Ant of View Make Goontative and	9 Acronyma
Grammar: Active - Listening: Liste Opinions about P Inevitable and Bac based Essays Unit – IV Grammar: If/Conc Selection – Listen	and Passive Voice – Verbal Aptituning to Podcast Interviews and Newodcast – Reading: Reading a Pril Habits Impossible: An Excerpt from Grammar, Verbal Aptitude, List litional Clause – Modals Verbs – Coing: Listening and Filling a Mind Mind Mind Mind Mind Mind Mind Mind	de: Error Spotti vs/Motivational ocedure — Cro m Atomic Habits ening, Speakir onversational D ap — Listening to	ng, Reading & ng – Sentence Speeches – Sp ss Cultural Co s – Writing: T ng, Reading & evices - Verba o Interviews, C	Writin Improve the seaking of the se	g /emer g: Pre icatio f Essa g ude:	nt – Alesentii n - Hays: /	obreviating a Poi ow to I Argumen nce Cor	ions and Ant of View Make Goontative and	9 Acronym: / – Giving d Habit: d Opinion 9 Sentence
Grammar: Active - Listening: Liste Opinions about P Inevitable and Bac based Essays Unit - IV Grammar: If/Conc Selection - Listen Suggestions - Inte	and Passive Voice – Verbal Aptituning to Podcast Interviews and New odcast – Reading: Reading a Pradict I Habits Impossible: An Excerpt from Grammar, Verbal Aptitude, List litional Clause – Modals Verbs – Coing: Listening and Filling a Mind Merviewing Classmates - Reading: F	de: Error Spotti vs/Motivational ocedure — Cro m Atomic Habits ening, Speakir onversational D ap — Listening to Reading for Info	ng, Reading & ng – Sentence Speeches – Sp ss Cultural Co s – Writing: T ng, Reading & evices - Verba o Interviews, Co mation, Rese	Writin Improve the community of the comm	yemer g: Pre- icatio f Essa g ude: y talks	nt – Alesentii n - Hays: /	obreviating a Poi ow to I Argument nce Coreaking:	ions and Ant of View Make Goontative and	9 Acronyms 7 – Giving 8 d Habits 9 Sentence dvice and
Grammar: Active - Listening: Liste Opinions about P Inevitable and Bac based Essays Unit – IV Grammar: If/Conc Selection – Listen Suggestions – Inte Communication: M	and Passive Voice – Verbal Aptituning to Podcast Interviews and New odcast – Reading: Reading a Pradict I Habits Impossible: An Excerpt from Grammar, Verbal Aptitude, List litional Clause – Modals Verbs – Coing: Listening and Filling a Mind Merviewing Classmates - Reading: Flodes of Technology-based Committed	de: Error Spotti s/Motivational ocedure — Cro m Atomic Habits ening, Speakir onversational D ap — Listening to Reading for Info unication — Ho	ng, Reading & ng – Sentence Speeches – Sp ss Cultural Co s – Writing: T ng, Reading & evices - Verba o Interviews, Co mation, Rese w to Stick with	Writin Improve oeaking ommun ypes o Writin Il Aptit elebrity arching	yemer g: Pre- icatio f Essa g ude: (talks) for S	nt – Alesentiin – Hays: /	obreviating a Poi ow to I Argumen nce Cor eaking: rting Every Day	ions and Ant of View Make Goontative and Greetion — Giving Additions	9 Acronyms 7 – Giving 8 d Habits 9 Sentence dvice and
Grammar: Active - Listening: Liste Opinions about P Inevitable and Bac based Essays Unit - IV Grammar: If/Conc Selection - Listen Suggestions - Inte Communication: M Atomic Habits Wri Unit - V	and Passive Voice – Verbal Aptituring to Podcast Interviews and New odcast – Reading: Reading a Professional Habits Impossible: An Excerpt from Grammar, Verbal Aptitude, List litional Clause – Modals Verbs – Coing: Listening and Filling a Mind Merviewing Classmates - Reading: Flodes of Technology-based Committing: Dialogue Writing – Writing Reformmar, Verbal Aptitude, List	de: Error Spotti s/Motivational ocedure — Cro m Atomic Habits ening, Speakir onversational D ap — Listening to Reading for Info unication — Ho views: Product a ening, Speakir	ng, Reading & ng – Sentence Speeches – Speeches – Speeches – Writing: Tag, Reading & evices - Verbaco Interviews, Commation, Resew to Stick with and Documenting, Reading & Read	Writin Improved the control of the c	g /emer g: Pre icatio f Essa g ude: / talks / for S Habi /s/We	nt – Alesentiin – Hays: A	obreviating a Poi ow to I Argumen nce Cor eaking: rting Every Day es	ions and Ant of View Make Goontative and Trection — Giving Addrice — An Exc	9 Acronyms 7 – Giving 8 d Opinior 9 Sentence dvice and Technica erpt from
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Grammar: Active - Listening: Liste Opinions about P Inevitable and Bac based Essays Unit - IV Grammar: If/Conc Selection - Listen Suggestions - Inte Communication: M Atomic Habits Wri Unit - V Grammar: Comm Listening: Listeni about Gadgets, In Technology-based Habits - Writing: TEXT BOOK:	and Passive Voice – Verbal Aptituming to Podcast Interviews and New odcast – Reading: Reading a Professional Elements of Habits Impossible: An Excerpt from	de: Error Spotti vs/Motivational ocedure — Cro m Atomic Habits ening, Speaking onversational D ap — Listening to Reading for Info unication — Ho views: Product a ening, Speaking Preposition cor New Inventions ng: Categorizing s Rule: How to Study Report	ng, Reading & ng – Sentence Speeches – Sp ss Cultural Co ss – Writing: T ng, Reading & evices - Verba o Interviews, Co rmation, Rese w to Stick with and Document ng, Reading & mbinations – V – Speaking: g Information - Stay Motivate	Writin Improvocation Improvoca	g yemer g: Pre icatio f Essa g ude: y talks y for S Habi is/We g Apti for a nical (e.e.)	Sentes Supports Evide: In Grant Series Supports Evide: In Grant	obreviating a Poi ow to I Argumen nce Cor eaking: rting Every Day es Coding iving Penunication k: An E	ions and Ant of View Make Good Intative and Interesting Action Commission - Interesting and Department on Effective Accerpt from	9 Acronyme 7 – Giving 8 d Habit 9 Sentence dvice and Technica erpt fron 9 coding - Talking we use o
Grammar: Active - Listening: Liste Opinions about P Inevitable and Bac based Essays Unit - IV Grammar: If/Conc Selection - Listen Suggestions - Inte Communication: M Atomic Habits Wri Unit - V Grammar: Comm Listening: Listeni about Gadgets, In Technology-based Habits - Writing: IEXT BOOK:	and Passive Voice – Verbal Aptituming to Podcast Interviews and New odcast – Reading: Reading a Professional Excerpt from Habits Impossible: An Excerpt from Habits Impossible: An Excerpt from Grammar, Verbal Aptitude, List itional Clause – Modals Verbs – Coing: Listening and Filling a Mind Moderviewing Classmates – Reading: Foldes of Technology-based Committing: Dialogue Writing – Writing Reformar, Verbal Aptitude, List on Errors in Tenses – Verb – Ing for key points – Speeches of Newntions and Technology – Reading Communication – The Goldilocks Report Writing: IV Report and Case on N P and Savitha C, English for Tenses – Verb – Ing N P and Savitha C P and P	de: Error Spotti vs/Motivational ocedure — Cro m Atomic Habits ening, Speaking onversational D ap — Listening to Reading for Info unication — Ho views: Product a ening, Speaking Preposition cor New Inventions ng: Categorizing s Rule: How to Study Report	ng, Reading & ng – Sentence Speeches – Sp ss Cultural Co ss – Writing: T ng, Reading & evices - Verba o Interviews, Co rmation, Rese w to Stick with and Document ng, Reading & mbinations – V – Speaking: g Information - Stay Motivate	Writin Improvocation Improvoca	g yemer g: Pre icatio f Essa g ude: y talks y for S Habi is/We g Apti for a nical (e.e.)	Sentes Supports Evide: In Grant Series Supports Evide: In Grant	obreviating a Poi ow to I Argumen nce Cor eaking: rting Every Day es Coding iving Penunication k: An E	ions and Ant of View Make Good Intative and Interesting Action Commission - Interesting and Department on Effective Accerpt from	9 Acronyme 7 – Giving 8 d Habit 9 Sentence dvice and Technica erpt fron 9 coding - Talking we use o
Grammar: Active Listening: Liste Opinions about P Inevitable and Bac based Essays Unit – IV Grammar: If/Conc Selection – Listen Suggestions – Inte Communication: M Atomic Habits Wri Unit – V Grammar: Comm Listening: Listeni about Gadgets, In Technology-based Habits – Writing: I TEXT BOOK: 1. Sudharsha Delhi, 2016	and Passive Voice – Verbal Aptituming to Podcast Interviews and New odcast – Reading: Reading a Professional Excerpt from Habits Impossible: An Excerpt from Habits Impossible: An Excerpt from Grammar, Verbal Aptitude, List itional Clause – Modals Verbs – Coing: Listening and Filling a Mind Moderviewing Classmates – Reading: Foldes of Technology-based Committing: Dialogue Writing – Writing Reformar, Verbal Aptitude, List on Errors in Tenses – Verb – Ing for key points – Speeches of Newntions and Technology – Reading Communication – The Goldilocks Report Writing: IV Report and Case on N P and Savitha C, English for Tenses – Verb – Ing N P and Savitha C P and P	de: Error Spotti vs/Motivational ocedure — Cro m Atomic Habits ening, Speaking onversational D ap — Listening to Reading for Info unication — Ho views: Product a ening, Speaking Preposition cor New Inventions ng: Categorizing s Rule: How to Study Report	ng, Reading & ng – Sentence Speeches – Sp ss Cultural Co ss – Writing: T ng, Reading & evices - Verba o Interviews, Co rmation, Rese w to Stick with and Document ng, Reading & mbinations – V – Speaking: g Information - Stay Motivate	Writin Improvocation Improvoca	g yemer g: Pre icatio f Essa g ude: y talks y for S Habi is/We g Apti for a nical (e.e.)	Sentes Supports Evide: In Grant Series Supports Evide: In Grant	obreviating a Poi ow to I Argumen nce Cor eaking: rting Every Day es Coding iving Penunication k: An E	ions and Ant of View Make Good Intative and Interesting Action Commission - Interesting and Department on Effective Accerpt from	9 Acronyme 7 – Giving 8 d Habit 9 Sentence dvice and Technica erpt fron 9 coding - Talking we use o
Grammar: Active Listening: Liste Opinions about P Inevitable and Bac based Essays Unit – IV Grammar: If/Conc Selection – Listen Suggestions – Inte Communication: M Atomic Habits Wri Unit – V Grammar: Comm Listening: Listeni about Gadgets, In Technology-based Habits – Writing: TEXT BOOK: 1. Sudharsha Delhi, 2016 REFERENCES: 1. Ashraf Rize	and Passive Voice – Verbal Aptituming to Podcast Interviews and New odcast – Reading: Reading a Professional Excerpt from I Habits Impossible: An Excerpt from I I Habits Impossible: An Excerpt from I I I I I I I I I I I I I I I I I I I	de: Error Spotti vs/Motivational ocedure — Cro m Atomic Habits ening, Speakir onversational D ap — Listening to Reading for Info unication — Ho views: Product a ening, Speakir Preposition cor leve Inventions ng: Categorizing s Rule: How to Study Report Fechnical Comm on, 2nd Edition,	ng, Reading & ng – Sentence Speeches – Speeches – Speeches – Writing: Tong, Reading & evices - Verba of Interviews, Commation, Resew to Stick with and Document ng, Reading & mbinations – Speaking: g Information - Stay Motivate munication, 2nd	Writin Improved the community of the com	g yemer g: Pre icatio f Essa g ude: / talks g for S Habi iss/We g Apti for a nical (fe and	Sente Sente Serte Supports Events Events Gomm Wor	obreviating a Poi ow to I Argumen nce Con eaking: rting Every Day es Coding iving Penunication k: An E	ions and Ant of View Make Goothative and Frection — Giving Addidence — An Excompand Deermission — Con: Effective Eff	9 Acronym 7 – Giving 8 d Habit d Opinion 9 Sentence dvice and Technica erpt from 0 Coding - Talking ve use of m Atomic
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^{*} includes Term Work (TW) & Assignments, Tutorials and Case Studies

2020 20 0 0 0 0 0	SE OUTCOMES: upletion of the course, the students will be able to	BT Mapped (Highest Level)
CO1	construct contextual and functional grammar to enhance the linguistic competence	Applying (K3)
CO2	listen, comprehend and infer implied meanings of the given text	Applying (K3)
CO3	speak clearly to develop competence to participate in oral discourses such as discussions / meetings / interviews and deliver presentations	Creating (K6)
CO4	critically read various texts by understanding contextual meanings and respond appropriately	Understanding (K2)
CO5	Analyze different genres of writing and making precise non-technical and technical documents	Analyzing (K4)
, VI (-	Mapping of COs with POs and PSOs	

COs/ POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PS01	PSO2
CO1	a a mystic	ent.			system in	1 1	ومستهاج	1	3	1	1		
CO2	ie i							2	3	-3,	1		E .
CO3					1 42 -		1 7	2	3	1	2	a the large	
CO4						1		. 4.7	3	1	2		er f
CO5	,=								3		2		- 11

1 – Slight, 2 – Moderate, 3 – Substantial, BT- Bloom's Taxonomy

ASSESSMENT PATTERN - THEORY

Test / Bloom's Category*	Remembering (K1) %	Understand ing (K2) %	Applying (K3) %	Analyzing (K4) %	Evaluating (K5) %	Creating (K6) %	Total %
CAT1	-	30	70		The State of the S	<u> </u>	100
CAT2		30	35		67 July 1197 4	35	100
CAT3	- 1, 1-	20	45	35	15 15 15 15 15 15 15 15 15 15 15 15 15 1		100
ESE	-	20	55	10		15	100

* $\pm 3\%$ may be varied (CAT 1, 2& 3 – 50 marks & ESE – 100 marks)

Door.

Signature of the Chairman Board of Studies - SaH (English) J. Region



The second	24MAC21 - MULTIVARIABLE CAL (Common to CIVIL, MECH, MTS						1		
Programme &	B.E – CIVIL, MECH,MTS, ECE,EEE,EIE	Sem.	Category	L	T	Р	SL*	Total	Credit
Branch	& B.Tech - FT								
Prerequisites	Nil	2	BS	45	7	16	52	120	4
Preamble	To impart the knowledge of partial derivati and analytic functions to the students for so								
Unit – I	Functions of Several Variables:	- N				- 1		11. 12.	9
Functions of two	or more variables – Partial derivatives – Tota nima – Lagrange's multiplier method.	l differentia	I – Application	ns: M	axim	a and	l minim	a – Con	straine
Unit – II	Multiple Integrals:							-	9
	on in cartesian coordinates – Change of order	of integrati	on – Applicat	ion: A	Area	hetwe	een two	CUIVES	
integration in ca	rtesian coordinates – Volume as triple integral	s.	, фр. ос.		00	Dom		o our voo	Tilpi
Unit – III	Vector Calculus:		-						9
	ative – Gradient of a scalar point function – Div								
	vectors – Vector Integration: Introduction – e above theorems and evaluation of integrals			verge	ence	theo	rems (without	proof) -
Unit – IV	Analytic Functions:	doing thom							9
Functions of a	complex variable - Analytic functions - Nec	essary and	sufficient co	nditio	ns (exclu	ding pi	roof) – (Cauchy
Riemann equation	ons (Statement only) – Properties of analytic f	unction (Sta	atement only)	– Ha	rmor	nic fur	nction -	- Constr	uction c
	- Conformal mapping: w = z + a, az, 1/z - Bil	linear trans	formation.						T =
Unit – V	Complex Integration:	agral formu	la Cinavilari		Clas	aifi a a	l: (Na	9
	auchy's theorem (without proof) – Cauchy's int it proof) – Applications: Evaluation of definite								
	ordinary and partial derivatives	6 7 · . ·	18 4					1 1 1 1 1	
	ng extreme values of function of two variables	5							2
	ng double and triple integrals	.4	7 2.			it.	0 1		
4. Finding	the area between two curves	-							
5. Computi	ng gradient, divergence and curl of point func	tions					-	<u> </u>	
6. Applying	Milne-Thomson method for constructing anal	lytic function	n						
7. Determin	nation of Mobius transformation for the given s	set of points	3						
8. Finding	poles and residues of an analytic function	F ²							- 1
TEXT BOOK:			5.70	. 7					-
	amy P., Thilagavathy K. and Gunavathy K., " 2016, S.Chand and Co., New Delhi.	Engineering	g Mathematic	s Fo	r Firs	st Yea	ar B.E/	B.Tech",	Reprin
REFERENCES/	MANUAL / SOFTWARE:	F - F	, L			6	-80		
1. Kreyszig	E, "Advanced Engineering Mathematics ", 10) th Edition, c	lohn Wiley, N	ew D	elhi,	India	, 2016.	-	
2. Ramana Delhi, 20	B V, "Higher Engineering Mathematics", 1st	Edition, Ta	nta McGraw-F	Hill Pu	ublisl	hing (Compa	ny Limit	ed, Nev
	ny C., Vengataasalam S., Arun Prakash K. India Education, New Delhi, 2018.	and Sures	sh M., "Engin	eerin	g Ma	athen	natics ·	- II", 2 nd	Edition
4. Grewal E	3.S, "Higher Engineering Mathematics" 44th	dition, Khar	nna Publisher	s, Ne	w De	elhi, 2	018.	121	
5. Multivari	able Calculus and Complex Analysis Laborato	ory Manual.					1		

*includes Term Work (TW) & Online / Certification course hours

tel her seriorses	SE OUTCOMES: npletion of the course, the students will be able to	BT Mapped (Highest Level)
CO1	Compute the total derivatives and extreme values of multivariable functions.	Applying (K3) Manipulation (S2)
CO2	Apply multiple integrals to compute the area and volume of the regions.	Applying (K3) Manipulation (S2)
CO3	Apply the concepts of derivatives and line integrals of point functions in engineering problems.	Applying (K3) Manipulation (S2)
CO4	Construct analytic functions and bilinear transformations and determine the image of given region under the given conformal mapping.	Understanding (K2) Manipulation (S2)
CO5	Apply the techniques of complex integration to evaluate real and complex integrals over closed curves.	Applying (K3) Manipulation (S2)

CO-/DO-	DO4	DOG	DO2	DO4	DOE	DOC	DO7	DOG	DOG	DO40	DO44	D004	2000
COs/POs	PO1	PUZ	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PSO1	PSO2
CO1	3	3	2		3			97 8 ₁₀	-				11.120
CO2	3	3	2		3		- 11	LI T					1501
CO3	3	3		-	3							- 43 ^V	
CO4	3	3			3			- = 8				Y F.	42 7.
CO5	3	3	3		3				1.		. 1		

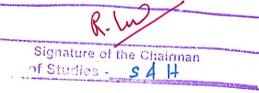
1 - Slight, 2 - Moderate, 3 - Substantial, BT- Bloom's Taxonomy

ASSESSMENT PATTERN - THEORY

Test / Bloom's Category*	Remembering (K1) %	Understanding (K2) %	Applying (K3) %	Analyzing (K4) %	Evaluating (K5) %	Creating (K6) %	Total %
CAT1		40	60		range L	Investigation of	100
CAT2	10	40	60		free will be present take.		100
CAT3		50	50				100
ESE		30	70				100

* ±3% may be varied (CAT 1, 2 & 3 - 50 marks & ESE - 100 marks)







	24PHT21 – APPLIE	ED PHYS	SICS				1.71		
	(Common to CIVIL, MECH, MT	S and A	UTO branch	nes)	1.71	7		7 1	1.15
Programme& Branch	BE - CIVIL, MECH, MTS and AUTO branches	Sem.	Category	L	Т	Р	SL*	Total	Credi
Prerequisites	Nil	2	BS	45	0	0	45	90	3
Preamble	This course aims to impart the knowledge on c fiber optics and select materials characteriaforementioned topics in engineering.	rystal ph zation t	ysics, quanti echniques.	um ph It als	nysic so d	s, aco escrib	ustics, es the	ultrasoni applica	cs, laser
Unit – I	Crystal Physics:			in the	1		5 JH434 6	CORD	9
mperfections: lin Jnit – II Blackbody radiat	packing factor – Body centered cubic– Face center e, surface and volume imperfections. Quantum Physics and Applications: tion – Planck's theory – Compton scattering – Maine-independent and time-dependent wave equation	tter wave	es – Propert	ies –	Heis	senber	g unce	rtainty pr	9 rinciple
Unit – III	Acoustics and Ultrasonics:		1		-0.	1			9
									Cohino
formula for rever remedies – Ult	sound – Characteristics of sound – Reverberation ar beration time – Determination of sound absorption rasonics – Properties of ultrasonic waves – Gene lerator – Non-destructive testing – Flaw detection.	coefficie	nt - Factors	affec	ting	acoust	tics of b	uildings	and the
formula for rever remedies – Ult Piezoelectric ger Unit – IV	beration time – Determination of sound absorption rasonics – Properties of ultrasonic waves – Genemerator – Non-destructive testing – Flaw detection. Laser and Fiber optics:	coefficie eration of	nt – Factors f ultrasonic v	affec waves	ting :	acoust //agne	tics of b tostricti	ouildings ve gener	and the rator an
formula for rever remedies — Ulti Piezoelectric ger Unit – IV Stimulated abso inversion — Pum optical fibers badisplacement ser Unit – V Importance of melectron microsco	beration time – Determination of sound absorption rasonics – Properties of ultrasonic waves – Generator – Non-destructive testing – Flaw detection. Laser and Fiber optics: rption – Spontaneous emission – Stimulated emission – CO ₂ laser – Holography – Fiber optics – I ased on refractive index, modes and materials rasors. Characterization Techniques and Advanced I staterials characterization – X-ray diffraction (powderope – UV-visible spectroscopy – Raman spectroscopy	coefficie eration of sion – E Numerica – Fiber Materials er metho	instein's coe al aperture a optic comr s: od) — Scann	affect waves afficier and ad munic	ting s	nd the tance system	tics of b tostricti eir relat angle - em -	iouildings ve gener ions – P Classifi Tempera	9 opulation cation of ture and 9 asmissio
formula for rever remedies — Ult Piezoelectric ger Unit — IV Stimulated abso inversion — Pum optical fibers badisplacement sel Unit — V Importance of melectron microscadvanced materi	beration time – Determination of sound absorption rasonics – Properties of ultrasonic waves – Generator – Non-destructive testing – Flaw detection. Laser and Fiber optics: reption – Spontaneous emission – Stimulated emission – CO ₂ laser – Holography – Fiber optics – I ased on refractive index, modes and materials rasors. Characterization Techniques and Advanced I atterials characterization – X-ray diffraction (powden)	coefficie eration of sion – E Numerica – Fiber Materials er metho	instein's coe al aperture a optic comr s: od) — Scann	affect waves afficier and ad munic	ting s	nd the tance system	tics of b tostricti eir relat angle - em -	iouildings ve gener ions – P Classifi Tempera	9 opulation cation cation of ture an
formula for rever remedies – Ultrepiezoelectric ger Unit – IV Stimulated absorony – Pumoptical fibers badisplacement ser Unit – V Importance of melectron microsorony divanced materi	beration time – Determination of sound absorption rasonics – Properties of ultrasonic waves – Generator – Non-destructive testing – Flaw detection. Laser and Fiber optics: rption – Spontaneous emission – Stimulated emission – CO ₂ laser – Holography – Fiber optics – I ased on refractive index, modes and materials rasors. Characterization Techniques and Advanced I staterials characterization – X-ray diffraction (powderope – UV-visible spectroscopy – Raman spectroscopy	sion – E Numerica – Fiber Materials er methoscopy –	instein's coe al aperture a optic comr s: od) – Scann Nuclear Ma	affectives afficient and action actio	ting and the second attention	nd the tance system	tics of totostrictics of the t	iouildings ve gener ions – P Classifi Tempera	9 opulation of ture an
formula for rever remedies – Ulti Piezoelectric ger Unit – IV Stimulated abso inversion – Pum optical fibers be displacement sel Unit – V Importance of melectron microso advanced materi TEXT BOOK: 1. Katiyar A	beration time – Determination of sound absorption rasonics – Properties of ultrasonic waves – Generator – Non-destructive testing – Flaw detection. Laser and Fiber optics: rption – Spontaneous emission – Stimulated emission – CO2 laser – Holography – Fiber optics – I ased on refractive index, modes and materials rasors. Characterization Techniques and Advanced I materials characterization – X-ray diffraction (powdrope – UV-visible spectroscopy – Raman spectroscals – Metallic glasses – Shape memory alloys	sion – E Numerica – Fiber Materials er methoscopy –	instein's coe al aperture a optic communication s: od) – Scann Nuclear Ma	affective services afficient and acmunic services afficient acmunic services affects a	ting : s - N Ints a ccep ation Rectro	nd the tance system	tics of totostricti	ouildings ve gener ions – P Classifi Tempera e – Tran tole of p	and the rator and 9 opulation of ture and 9 opulation of 10 opulation
formula for rever remedies — Ult Piezoelectric ger Unit — IV Stimulated abso inversion — Pum optical fibers badisplacement ser Unit — V Importance of melectron microsoladvanced materi TEXT BOOK: 1. Katiyar A 2023(Unit — V 2023(Unit — V 3023)	beration time – Determination of sound absorption rasonics – Properties of ultrasonic waves – Generator – Non-destructive testing – Flaw detection. Laser and Fiber optics: Introduction – Spontaneous emission – Stimulated emission – CO ₂ laser – Holography – Fiber optics – Nased on refractive index, modes and materials ansors. Characterization Techniques and Advanced Interials characterization – X-ray diffraction (powdrope – UV-visible spectroscopy – Raman spectrosals – Metallic glasses – Shape memory alloys. A.K., Pandey C.K., "Engineering Physics: Theory and asan K and Prabu K, "Physics for Engineering I"	sion – E Numerica – Fiber Materials er methoscopy –	instein's coe al aperture a optic communication s: od) – Scann Nuclear Ma	affective services afficient and acmunic services afficient acmunic services affects a	ting : s - N Ints a ccep ation Rectro	nd the tance system	tics of totostricti	ouildings ve gener ions – P Classifi Tempera e – Tran tole of p	and the rator and 9 opulation of ture and 9 opulation of 10 opulation
formula for rever remedies — Ulti Piezoelectric ger Unit — IV Stimulated abso inversion — Pum optical fibers be displacement sel Unit — V Importance of melectron microso advanced materi TEXT BOOK: 1. Katiyar A. Tamilara 2023(Ur REFERENCES: 1. Malik H.	beration time – Determination of sound absorption rasonics – Properties of ultrasonic waves – Generator – Non-destructive testing – Flaw detection. Laser and Fiber optics: Introduction – Spontaneous emission – Stimulated emission – CO ₂ laser – Holography – Fiber optics – Nased on refractive index, modes and materials ansors. Characterization Techniques and Advanced Interials characterization – X-ray diffraction (powdrope – UV-visible spectroscopy – Raman spectrosals – Metallic glasses – Shape memory alloys. A.K., Pandey C.K., "Engineering Physics: Theory and asan K and Prabu K, "Physics for Engineering I"	sion – E Numerica – Fiber Materials er metho scopy – Practica ", 1st Ed McGraw	instein's coe al aperture a optic common Nuclear Ma I", 2 nd edition lition, McGra	affective waves afficier and ac anunic ing el gnetic , Wile aw Hi	lectron Research	nd the tance system on microsonan	croscop nit I, II).	cuildings ve gener ions – P Classifi Tempera e – Tran cole of p	and the rator an 9 opulation octure an 9 asmission hysics i

*includes Term Work (TW) & Online / Certification course hours

	SE OUTCOMES: mpletion of the course, the students will be able to	BT Mapped (Highest Level)
CO1	analyze seven crystal systems, interplanar spacing in cubic lattice, BCC, FCC, HCP crystal systems and the types of crystal imperfections and their impacts.	Analyzing (K4)
CO2	investigate the concepts of quantum mechanics to describe Planck's theory, Compton effect and the behavior of electrons in a metal by solving Schrodinger's wave equations.	Analyzing (K4)
CO3	explore the concepts of growth and decay of sound energy in a hall to compute Sabine's formula and to recognize the requirements of acoustically good buildings and also to describe the production of ultrasonic waves and testing of materials by non-destructive method.	Analyzing (K4)
CO4	examine the concepts of stimulated emission of radiation to explain the working and the applications of laser in engineering and technology. To apply the principle of propagation of light through optical fiber to compute acceptance angle and numerical aperture and also to explain fiber optic communication system and the working of fiber optic sensors.	Analyzing (K4)
CO5	Inspect Raman effect, X-ray diffraction, matter waves, nuclear magnetic resonance, metallic glasses and shape memory alloys.	Analyzing (K4)

COs/POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PSO1	PSO2
CO1	3	2	2					1	1		1		2
CO2	3	2	2		1.0		-	1	1		1		
CO3	3	2	2					1	1	. , -	1		1 =
CO4	3	2	2					1 .	1		1		
CO5	3	2	2					1	1		1		* ,

1 - Slight, 2 - Moderate, 3 - Substantial, BT- Bloom's Taxonomy

ASSESSMENT PATTERN - THEORY

Test / Bloom's Category*	Remembering (K1) %	Understanding (K2) %	Applying (K3) %	Analyzing (K4) %	Evaluating (K5) %	Creating (K6) %	Tota
CAT1	on the second	40	50	10		sa sarias in i	100
CAT2		40	50	10	**************************************		100
CAT3		40	50	10	-		100
ESE		40	50	10	2		100

* ±3% may be varied (CAT 1,2,3 - 50 marks & ESE - 100 marks)

Signature of the Chairman

Board of Studies - S&H, Physics





	Civil, Mechanical, Mechatronics, Chemica	i, Food Tec	nnology& A	utomo	bile	Eng	ineerin	g branc	hes)
Programme & Branch	B. E Civil , Mechanical, Automobile B.Tech Chemical Engineering ,Food Technology	Sem.	Category	L	T	Р	SL*	Total	Credit
Prerequisites	Programming in C	2	ES	45	0	30	45	120	4
Preamble	This course deals with core python programm python constructs and libraries.	ing. It gives	a comprehens	sive in	trodu	ction	to probl	em solvi	ng using
Unit -I	Introduction:							9	F
identifiers - da	ng strategies – program design tools – Types of ata types – input operation – comments – resennents: Introduction – conditional statement – its sein loops.	/ed words -	indentation -	Opera	ators	and I	Express	ions - D	ecision
Unit –II	Lists, Tuples and Dictionary:	×					1 2 3	9	
add and modification unit –III Strings: Conca	ons, assignments, returning multiple values, nes y, delete, sort, looping, nested, built-in methods – Strings and Regular Expressions: atenation, append, multiply on strings – Immutal	list vs tuple ole – formatti	vs dictionary.	- Built-	in str	ing m	nethods	9 and fund	tions –
findall and find	 functions – operators – comparing – iteratiniter functions – flag options. 	g – string m	iodule – Regi	ular Ex	kpres	sions	- mate	ch, searc	h, sub,
Unit –IV	Functions and Modules:							9	
 documentation 	oduction – definition – call – variable scope and l on strings – programming practices recursive fun	itetime – reti	ırn statement	- tunc	tion	argun	nents –	lambda f	unction
function redefin	nition.	ction- Modul	es: Modules -	- раска	ages	– sta	ndard lil	brary met	thods –
Unit –V	nition. Object Orientation:							9	
Unit –V Class and Obje	nition. Object Orientation: ects: Class and objects–class methods and self–	constructor–	class and obje	ct vari	able	s–des	structor-	9 public an	
Unit –V Class and Obje private data me	nition. Object Orientation:	constructor–	class and obje	ct vari	able	s–des	structor-	9 public an	
Unit –V Class and Objectivate data me	nition. Object Orientation: ects: Class and objects–class methods and self– ember. NumPy: NumPy Arrays – Computation o	constructor–	class and obje	ct vari	able	s–des	structor-	9 public an	
Unit –V Class and Objectivate data median LISTOF EXPE	nition. Object Orientation: ects: Class and objects–class methods and self–ember. NumPy: NumPy Arrays – Computation o	constructor–	class and obje	ct vari	able	s–des	structor-	9 public an	
Unit –V Class and Objectivate data median LISTOF EXPE 1. Program 2. Imp	nition. Object Orientation: ects: Class and objects–class methods and selfember. NumPy: NumPy Arrays – Computation of RIMENTS / EXERCISES: grams using conditional and looping statements	constructor–	class and obje	ct vari	able	s–des	structor-	9 public an	
Unit –V Class and Objectivate data median LISTOF EXPE 1. Program 2. Imp 3. Imp	nition. Object Orientation: ects: Class and objects–class methods and self–ember. NumPy: NumPy Arrays – Computation of RIMENTS / EXERCISES: grams using conditional and looping statements lementation of list and tuple operations	constructor–	class and obje	ct vari	able	s–des	structor-	9 public an	
Unit –V Class and Objectivate data media in the control of the con	nition. Object Orientation: ects: Class and objects-class methods and self-ember. NumPy: NumPy Arrays - Computation of RIMENTS / EXERCISES: grams using conditional and looping statements lementation of list and tuple operations	constructor–	class and obje	ct vari	able	s–des	structor-	9 public an	
Unit –V Class and Objectivate data media in the control of the con	nition. Object Orientation: ects: Class and objects—class methods and self—ember. NumPy: NumPy Arrays—Computation of RIMENTS / EXERCISES: grams using conditional and looping statements dementation of list and tuple operations dementation of dictionary operations form various string operations regular expressions for validating inputs monstration of different types of functions and parameters.	constructor- n NumPy Arr	class and obje ays. Matplotli	ct vari	able	s–des	structor-	9 public an	
Unit –V Class and Objectivate data media in the control of the con	Object Orientation: ects: Class and objects—class methods and self—ember. NumPy: NumPy Arrays — Computation of RIMENTS / EXERCISES: grams using conditional and looping statements lementation of list and tuple operations lementation of dictionary operations form various string operations regular expressions for validating inputs monstration of different types of functions and partelop programs using classes and objects	constructor- n NumPy Arr	class and obje ays. Matplotli	ct vari	able	s–des	structor-	9 public an	
Unit –V Class and Objectivate data media in the control of the con	Object Orientation: ects: Class and objects—class methods and self—ember. NumPy: NumPy Arrays—Computation of RIMENTS / EXERCISES: grams using conditional and looping statements dementation of list and tuple operations dementation of dictionary operations form various string operations regular expressions for validating inputs and particular programs using classes and objects form computation on Numpy arrays	constructor- n NumPy Arr	class and obje ays. Matplotli	ct vari	able	s–des	structor-	9 public an	
Unit –V Class and Objectivate data media in the control of the con	Object Orientation: ects: Class and objects—class methods and self—ember. NumPy: NumPy Arrays — Computation of RIMENTS / EXERCISES: grams using conditional and looping statements lementation of list and tuple operations lementation of dictionary operations form various string operations regular expressions for validating inputs monstration of different types of functions and partelop programs using classes and objects	constructor- n NumPy Arr	class and obje ays. Matplotli	ct vari	able	s–des	structor-	9 public an	
Unit –V Class and Objectivate data media in the control of the con	Object Orientation: ects: Class and objects—class methods and self—ember. NumPy: NumPy Arrays—Computation of RIMENTS / EXERCISES: grams using conditional and looping statements dementation of list and tuple operations dementation of dictionary operations form various string operations regular expressions for validating inputs and particular programs using classes and objects form computation on Numpy arrays	constructor- n NumPy Arr	class and obje ays. Matplotli	ct vari	able	s–des	structor-	9 public an	
Unit –V Class and Objectivate data media in the control of the con	Object Orientation: ects: Class and objects—class methods and self—ember. NumPy: NumPy Arrays—Computation of RIMENTS / EXERCISES: grams using conditional and looping statements dementation of list and tuple operations dementation of dictionary operations form various string operations regular expressions for validating inputs and particles programs using classes and objects form computation on Numpy arrays we different types of plots using Matplotlib	constructor— n NumPy Arr manufacture	class and obje	ect vari	ables	s-des	structor- catter P	9 public an Plots	nd
Unit –V Class and Objectivate data media in the control of the con	Object Orientation: ects: Class and objects—class methods and self—ember. NumPy: NumPy Arrays—Computation of RIMENTS / EXERCISES: grams using conditional and looping statements dementation of list and tuple operations dementation of dictionary operations form various string operations regular expressions for validating inputs monstration of different types of functions and particle programs using classes and objects form computation on Numpy arrays we different types of plots using Matplotlib	constructor— n NumPy Arr manufacture	class and obje	ect vari	ables	s-des	structor- catter P	9 public an Plots	nd
Unit –V Class and Objectivate data media in the control of the con	Object Orientation: ects: Class and objects—class methods and self—ember. NumPy: NumPy Arrays—Computation of RIMENTS / EXERCISES: grams using conditional and looping statements lementation of list and tuple operations lementation of dictionary operations form various string operations regular expressions for validating inputs monstration of different types of functions and particle programs using classes and objects form computation on Numpy arrays we different types of plots using Matplotlib	constructor— n NumPy Arr ameter pass	class and objective ays. Matplottiing	ect vari b : Line	ables e plo	s-des	structor- catter P	9 public an Plots	nd
Unit –V Class and Objectivate data media in the control of the con	Object Orientation: ects: Class and objects—class methods and self—ember. NumPy: NumPy Arrays—Computation of RIMENTS / EXERCISES: grams using conditional and looping statements dementation of list and tuple operations dementation of dictionary operations form various string operations regular expressions for validating inputs monstration of different types of functions and particle programs using classes and objects form computation on Numpy arrays we different types of plots using Matplotlib	constructor— n NumPy Arr ameter pass vingapproac	class and objective ays. Matplottiing h",3 rd impress Press, New De	ion, O	ablese ploo	s-des	structor- catter P	9 public an Plots	nd

^{*}includes Term Work(TW) & Online / Certification course hours

	SE OUTCOMES: appletion of the course, the students will be able to	BT Mapped (Highest Level)
CO1	use basic python constructs to build simple programs	Applying(K3), Precision(S3)
CO2	apply list, tuple and dictionary to handle variety of data.	Applying(K3), Precision(S3)
CO3	apply strings and regular expression for searching and retrieval	Applying(K3), Precision(S3)
CO4	solve the problems using functions and modules.	Applying(K3), Precision(S3)
CO5	apply object oriented concepts and perform data science operations using python	Applying(K3), Precision(S3)

COs/Pos	PO1	P02	PO3	PO4	PO5	P06	PO7	PO8	PO9	PO10	PO11	PSO1	PSO2
CO1	3	2	2	2	1				1	1	1	3	1
CO2	3	2	2	2	1	3 N			1	1	1	3	1
CO3	3	2	2	2	1				1	1	1	3	1
CO4	3	2	2	2	1			V	1	1	1	3	1
CO5	3	2	2	2	1				1	1	- 1	3	1

1 - Slight, 2 - Moderate, 3 - Substantial, BT- Bloom's Taxonomy

ASSESSME	NT PATTERN	N – THEORY
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Test / Bloom's Category*	Remembering (K1) %	Understanding (K2) %	Applying (K3) %	Analyzing (K4) %	Evaluating (K5) %	Creating (K6) %	Total %
CAT1		25	75				100
CAT2		25	75	**			100
CAT3		25	75				100
ESE		25	75			7	100

*±3% may be varied (CAT 1,2,3-50marks & ESE-100marks)

Signature of the Chairman Board of Studies - IT



	24MET21 - ENGINEERII		ANICS	- 4	_				
	(Common to Mechanical & Mechatro	onics Eng	ineering bra	nche	s)				
Programme & Branch	B.E Mechanical Engineering, B.E Mechatronics Engineering branches	Sem.	Category	L	Т	Р	SL*	Total	Credi
Prerequisites	Nil	2	PC	45	0	0	45	90	3
Preamble	This course provides introduction to the basic co with their effects. It introduces the phenomenon learning in applied mechanics and develops probl	of friction	and its effect	ia, ce cts. It	ntroic famil	l and iarize	l mome es stud	ent of are lents to o	ea along cognitive
Unit – I	Statics of Particles								9
Jnit – II Moments: Mome	ntation of Forces – Equilibrium of a Particle in Spa Statics of Rigid Bodies Int of a Force about a Point and about an Axis – Vec valent Systems of Forces – Single Equivalent Force	torial Rep	resentation	of Mo	ment	s and	d Coup	les – Va	9 rignon's
Stable Equilibriun	n – Equilibrium of Rigid Bodies in Two Dimensions -	e. Types	or Supports a	ווו טווג	en i	eaci	10115 —	Require	nents o
	n – Equilibrium of Rigid Bodies in Two Dimensions -	– Trusses	: ivietnoa ot	Joint	S.				
Unit – III Determination of	Properties of Surfaces and Solids Areas and Volumes — First Moment of Area and 0	Centroid o	of Sections –	- T Se	ection			- Angle	
Unit – III Determination of - HollowSection 1	Properties of Surfaces and Solids Areas and Volumes — First Moment of Area and Grom Primary Simpler Sections — Second Moment Section - I Section - Angle Section - Hollow Section	Centroid o	of Sections – Areas – Par	- T Se	ection	Theo	rem ar	n - Angle nd Perpe ertia.	Section ndicula
Unit – III Determination of - HollowSection f Axis Theorem - T Unit – IV Friction: Surface Friction – Belt Fr	Properties of Surfaces and Solids Areas and Volumes — First Moment of Area and Officer Primary Simpler Sections — Second Moment	Centroid of Plane of Plane of Plane of Polar of	of Sections – Areas – Par Moment of I	T Serallel Anertia	ection Axis 7 — Pr	Theo oduc	rem ar	n - Angle nd Perpe ertia. 6 riction -	Section ndicular
Unit – III Determination of - HollowSection f Axis Theorem - T Unit – IV Friction: Surface Friction – Belt Fr	Properties of Surfaces and Solids Areas and Volumes — First Moment of Area and Offrom Primary Simpler Sections — Second Moment Section - I Section - Angle Section - Hollow Section Friction and Rectilinear motion of particles Friction — Laws of Dry Friction — Sliding Friction iction. Rectilinear Motion of Particles: Displacement ar Motion — Projectile Motion.	Centroid of Plane of Plane of Plane of Polar of	of Sections – Areas – Par Moment of I	T Serallel Anertia	ection Axis 7 — Pr	Theo oduc	rem ar	n - Angle nd Perpe ertia. 6 riction — onship —	Section ndicular +3 Wedge Relative
Unit – III Determination of - HollowSection I Axis Theorem - T Unit – IV Friction: Surface Friction – Belt Fr Motion- Curvilinea Unit – V	Properties of Surfaces and Solids Areas and Volumes — First Moment of Area and Offrom Primary Simpler Sections — Second Moment Section - I Section - Angle Section - Hollow Section Friction and Rectilinear motion of particles Friction — Laws of Dry Friction — Sliding Friction iction. Rectilinear Motion of Particles: Displacement ar Motion — Projectile Motion. Dynamics of Particles rticles: Newton's Law, Work - Energy and Impurity of Particles: Newton's Law, Work - Energy and Impurity of Particles.	Centroid of Plane of Plane of Plane of Polar of	of Sections – Areas – Par Moment of I and Kinetic and Accele	- T Se rallel / nertia - Frict ration	ection Axis 7 — Pr tion - and	Theo roduce - Lac their	rem ar ct of Ind dder F Relation	n - Angle nd Perpe ertia. 6 riction — onship —	Section sectin section section section section section section section section
Unit – III Determination of HollowSection of Axis Theorem - T Unit – IV Friction: Surface Friction – Belt Fr Motion- Curvilinea Unit – V Dynamics of Pa General Plane Mo	Properties of Surfaces and Solids Areas and Volumes — First Moment of Area and Offrom Primary Simpler Sections — Second Moment Section - I Section - Angle Section - Hollow Section Friction and Rectilinear motion of particles Friction — Laws of Dry Friction — Sliding Friction iction. Rectilinear Motion of Particles: Displacement ar Motion — Projectile Motion. Dynamics of Particles rticles: Newton's Law, Work - Energy and Impurity of Particles: Newton's Law, Work - Energy and Impurity of Particles.	Centroid of Plane of Plane of Plane of Polar of	of Sections – Areas – Par Moment of I and Kinetic and Accele	- T Se rallel / nertia - Frict ration	ection Axis 7 — Pr tion - and	Theo roduce - Lac their	rem ar ct of Ind dder F Relation	n - Angle nd Perpe ertia. 6 riction — onship —	Section Sectin Section Section Section Section Section Section Section Section
Unit – III Determination of HollowSection of Axis Theorem - T Unit – IV Friction: Surface Friction – Belt Fr Motion- Curvilinea Unit – V Dynamics of Pa General Plane Mo	Properties of Surfaces and Solids Areas and Volumes — First Moment of Area and Offrom Primary Simpler Sections — Second Moment Section - I Section - Angle Section - Hollow Section Friction and Rectilinear motion of particles Friction — Laws of Dry Friction — Sliding Friction iction. Rectilinear Motion of Particles: Displacement of Motion — Projectile Motion. Dynamics of Particles Tricles: Newton's Law, Work - Energy and Imputation.	Centroid c of Plane n – Polar n – Static t - Velocity	of Sections – Areas – Par Moment of I and Kinetic and Accele	- T Se rallel / nertia ration nciple	ection Axis 7 — Pr tion - and	Theo roduce - Lac their Imp	rem ar et of In- dder F Relation	n - Angle nd Perpe ertia. 6 riction — onship — 6 Elastic	Section sectin section section section section section section section section
Unit – III Determination of HollowSection of Axis Theorem - T Unit – IV Friction: Surface Friction – Belt Fr Motion- Curvilinea Unit – V Dynamics of Pa General Plane Motions	Properties of Surfaces and Solids Areas and Volumes — First Moment of Area and Offrom Primary Simpler Sections — Second Moment Section - I Section - Angle Section - Hollow Section Friction and Rectilinear motion of particles Friction — Laws of Dry Friction — Sliding Friction iction. Rectilinear Motion of Particles: Displacement ar Motion — Projectile Motion. Dynamics of Particles rticles: Newton's Law, Work - Energy and Impurity of Particles: Newton's Law, Work - Energy and Impurity of Particles.	Centroid c of Plane n – Polar n – Static t - Velocity	of Sections – Areas – Par Moment of I and Kinetic and Accele	- T Se rallel / nertia ration nciple	ection Axis 7 — Pr tion - and	Theo roduce - Lac their Imp	rem ar et of In- dder F Relation	n - Angle nd Perpe ertia. 6 riction — onship — 6 Elastic	Section Sectin Section Section Section Section Section Section Section Section
Unit – III Determination of Formula Hollow Section of Axis Theorem - To Theorem - Theorem - To	Properties of Surfaces and Solids Areas and Volumes — First Moment of Area and Offrom Primary Simpler Sections — Second Moment Section - I Section - Angle Section - Hollow Section Friction and Rectilinear motion of particles Friction — Laws of Dry Friction — Sliding Friction iction. Rectilinear Motion of Particles: Displacement of Motion — Projectile Motion. Dynamics of Particles Tricles: Newton's Law, Work - Energy and Imputation.	Centroid c of Plane n – Polar n – Static t - Velocity	of Sections – Areas – Par Moment of I and Kinetic and Accele	- T Se rallel / nertia ration nciple	ection Axis 7 — Pr tion - and	Theo roduce - Lac their Imp	rem ar et of In- dder F Relation	n - Angle nd Perpe ertia. 6 riction — onship — 6 Elastic	Section Sectin Section Section Section Section Section Section Section Section
Unit – III Determination of - Hollow Section of Axis Theorem - T Unit – IV Friction: Surface Friction – Belt Fr Motion- Curvilinea Unit – V Dynamics of Pa General Plane Mo TEXT BOOK: 1. Dubey N. REFERENCES:	Properties of Surfaces and Solids Areas and Volumes — First Moment of Area and Offrom Primary Simpler Sections — Second Moment Section - I Section - Angle Section - Hollow Section Friction and Rectilinear motion of particles Friction — Laws of Dry Friction — Sliding Friction iction. Rectilinear Motion of Particles: Displacement of Motion — Projectile Motion. Dynamics of Particles Tricles: Newton's Law, Work - Energy and Imputation.	Centroid of of Plane on — Polar n — Station t - Velocity ulse - Mo	of Sections – Areas – Par Moment of I and Kinetic and Accele omentum Pri	- T Se rallel / nertia	ection Axis 1 — Pr ition - and	Theo roduce - Lac their Imp	rem ar et of In- dder F Relation	n - Angle nd Perpe ertia. 6 riction — onship — 6 Elastic	Section Sectin Section Section Section Section Section Section Section Section

^{*}includes Term Work(TW) & Online / Certification course hours

	SE OUTCOMES: mpletion of the course, the students will be able to	BT Mapped (Highest Level)
CO1	represent the forces in vector components (both 2D and 3D) and apply equilibrium conditions	Applying (K3)
CO2	calculate the moment produced by various force systems and conclude the static equilibrium equations for rigid body system	Analyzing (K4)
CO3	compute the centroid, centre of gravity and moment of inertia of geometrical shapes and solids respectively	Applying (K3)
CO4	manipulate the effect of dry friction and its applications	Applying (K3)
CO5	apply the different principles to study the motion of a body and analyse their constitutive equations	Analyzing (K4)

Mapping of	COs with	POs and	PSOs
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							25						
COs/POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PSO1	PSO2
CO1	3		2		-						1	-, = < 40	3
CO2	3	3	2					*			1		3
CO3	3		2		-						1		3
CO4	3	3	2		43						1		3
CO5	3		2			-	- 2				1		3

1 – Slight, 2 – Moderate, 3 – Substantial, BT- Bloom's Taxonomy

ACCECCMENT	DATTEDAL	THEODY
ASSESSMENT	PALIFRN -	THEORY

Test / Bloom's Category*	Remembering (K1) %	Understanding (K2) %	Applying (K3) %	Analyzing (K4) %	Evaluating (K5) %	Creating (K6)	Total %
CAT1		20	50	30			100
CAT2		20	50	30		. 11 2 2 1	100
CAT3		20	50	30			100
ESE		10	60	30			100

 * ±3% may be varied (CAT 1, 2 & 3 – 50 marks & ESE – 100 marks)

Signature of the Chairman and of Studies - Mechanical





	24TAM02 - TAMILS								
	(Common to All Engineerin	ng and Techn	ology Branc	hes)				. 12 EF5	
Programme & Branch	All BE/BTech Branches	Sem.	Category	L	Т	Р	SL*	тот	Credit
Prerequisites	Nil	2	HS	15	0	0	15	30	1
Preamble	This course aims to impart the essential know	ledge on the t	tamil culture a	nd rel	ated	techn	ology		
UNIT – I	WEAVING AND CERAMIC TECHNOLOGY					. 7			3
Weaving Industr	y during Sangam Age – Ceramic technology – B	lack and Red	Ware Potterie	es (BF	RW) -	- Graf	fiti on P	otteries.	es la
UNIT – II	DESIGN AND CONSTRUCTION TECHNOLO	GY	1 3243	25-4	4	_	PuP	12/9	3
stones of Sanga Temples of Cho	Structural construction House & Designs in hous am age – Details of Stage Constructions in Sila las and other worship places – Temples of Naya – Chetti Nadu Houses, Indo – Saracenic archited	ppathikaram aka Period –	 Sculptures Type study (M 	and T ladura	Гетр ai Ме	les of	Mama	llapuram	- Grea
UNIT – III	MANUFACTURING TECHNOLOGY	, -	T = 3			a -		-	3
Minting of Coin	ding – Metallurgical studies – Iron industry – Iron is – Beads making – industries Stone beads vidences – Gem stone types described in Silappa	- Glass bea							
UNIT – IV	AGRICULTURE AND IRRIGATION TECHNO	LOGY	Let 1	*			71		3
	lds, Sluice, Significance of Kumizhi Thoompu of Agro Processing – Knowledge of Sea – Fisho cific Society.								
UNIT – V	SCIENTIFIC TAMIL & TAMIL COMPUTING								3
	Scientific Tamil – Tamil computing – Digitalizationil Digital Library – Online Tamil Dictionaries – Sc			pmer	nt of	Tamil	Softwa	re – Tan	nil Virtua
TEXT BOOK:			· .			, r.			
1. Social Life	e of Tamils (Dr.K.K.Pillay) A joint Publication of T	NTB & ESC a	ınd RMRL – (i	n prin	t)		> -		
2. Social Life	e of the Tamils – The Classical Period (Dr.S.Siga	ravelu) (Publi	shed by: Inter	natior	nal In	stitute	of Tan	nil Studie	s).
REFERENCES:				w did	W.	9			
1 1.	வரலாறு - மக்களும் பண்பாடும் - கே ே ில் பணிகள் கழகம்), உலகத் தமிழாராட்				U	ாடு ட	ாடநூ	ல் மற்ற	றும்
	ந்தமிழ் முனைவர் இல. சுந்தரம், விகட							11111	
3. கீழடி ை	வகை நதிக்கரையில் சங்ககால நகர நா	ாகரிகம்.(தெ	ால்லியல் த	துறை	၅ ရ	വണി	பீடு)		
	ந ஆற்றங்கரை நாகரிகம் (தொல்லியல்	துறை வெ	பளியீடு	1				t/	
	ற் அற்றியால்லர் நாலர்மா (அவர்வளை			ublich	ed b	v : Inte			
4. பொருன ₅ Historical	Heritage of the Tamils (Dr.S.V.Subatamanian, D	r.K.D. Thiruna	avukarasu) (Pi	ublisii		,	ernatior	nal Institu	ite of
4. பொருன 5. Historical Tamil Stu 6. The Contr	Heritage of the Tamils (Dr.S.V.Subatamanian, D dies) ribution of the Tamils to Indian Culture (Dr.M.Vala	armathi)(Pupli	shed by Interr	nation	al Ins	stitute	of Tam	il Studie:	
4. G山爪仮の 5. Historical Tamil Stu 6. The Contr Keeladi –	Heritage of the Tamils (Dr.S.V.Subatamanian, D dies)	armathi)(Pupli aigai; (Jointly	shed by Interr	nation	al Ins	stitute	of Tam	il Studie:	
4. GUIT(頂の 5. Historical Tamil Stu 6. The Contr 7. Keeladi – Tamilnadi 8. Studies in	Heritage of the Tamils (Dr.S.V.Subatamanian, D dies) ribution of the Tamils to Indian Culture (Dr.M.Vala 'Sangam City Civilzation on the banks of river Vala Text Book and Educational Services Corporation the History of India with Special Reference to Ta	armathi)(Pupli aigai; (Jointly on, Tamilnadu amilnadu (Dr.l	shed by Interr Published by:) K.K.Pillay) (Pu	nation Depa	al Ins	stitute nt of	of Tam Archae Autho	nil Studie: ology & r)	s).
4. GUIT(頂面 5. Historical Tamil Stu 6. The Contr 7. Keeladi — Tamilnadi 8. Studies in	Heritage of the Tamils (Dr.S.V.Subatamanian, Ddies) ribution of the Tamils to Indian Culture (Dr.M.Vala Sangam City Civilzation on the banks of river Vala Text Book and Educational Services Corporation	armathi)(Pupli aigai; (Jointly on, Tamilnadu amilnadu (Dr.l	shed by Interr Published by:) K.K.Pillay) (Pu	nation Depa	al Ins	stitute nt of	of Tam Archae Autho	nil Studie: ology & r)	s).

*includes Term Work (TW) & Online / Certification course hours

	SE OUTCOMES: mpletion of the course, the students will be able to	BT Mapped (Highest Level)
CO1	explain weaving and ceramic technology in tamil culture and tamil society.	Understanding (K2)
CO2	Illustrate about the design and construction technology.	Understanding (K2)
CO3	summarize about the manufacturing technology.	Understanding (K2)
CO4	explain the agriculture and irrigation technology.	Understanding (K2)
CO5	explain the significance of tamil in scientific and computing.	Understanding (K2)
000	Oxplain the digitileaned of tariii in edicitatio and compating.	Onderstanding

COs/POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PSO1	PSO2
CO1	was wide			S. E.A.Te.	-1	3		3	2	2			
CO2	เล้ากรณ์	le de co		· - ×	18 71	3	in-	3	2	2		Tuest II	al section
CO3	THE STATE OF					3		3	2	2			
CO4						3		3	2	2			
CO5						3		3	2	2		. 0	

1 - Slight, 2 - Moderate, 3 - Substantial, BT- Bloom's Taxonomy

ASSES	SMENT PA	ATTERN -	- THEORY
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Test / Bloom's Category*	Remembering (K1) %	Understanding (K2) %	Applying (K3) %	Analyzing (K4) %	Evaluating (K5) %	Creating (K6) %	Total %
CAT1	40	60					100
CAT2	40	60	2	- 1			100
CAT3	40	60					100
ESE				NA	f		

* ±3% may be varied (CAT 1,2,3 - 50 marks)

Signature of the Chairman

Board of Studies - 5 & H (Physia)



	(Common to All Engineering and I	Technolog	y Branches)			(·			
Programme & Branch	All BE/BTech Branches	Sem.	Category	Ĺ	Т	P S	SL*	TOT	Cred
Prerequisites	Nil	2	HS	15	0	0	15	30	104
முன்னுரை	தமிழ் கலாச்சாரத்தோடு ஒன்றிய தொழில் நு	பட்பங்கன	ள பற்றிப்	எடுத்	துரை	ரத்த	ல்	F) C G	
அலகு - ।	நெசவு மற்றும் பானை தொழில்நுட்பம்					HEV.		3	12
சங்க காலத்த கீறல் குறியீடு	ில் நெசவு தொழில் – பானைத் தொழில்நுட்ட }கள்	பம் கரு	ப்பு சிவப்பு	- ЦП	ன் ∟ர்	பகள்	lm÷,l M, L,	பாண்ட	_களி
அ லகு - II	வடிவமைப்பு மற்றும் கட்டிடத் தொழில்நுட்ப	ம்	1500 p. r. n.	l bei		1 5	W.	3	Fa E
– சங்க கால விவரங்கள் – வழிபாட்டுத் மீனாட்சி அப	ில் வடிவமைப்பு மற்றும் கட்டுமானங்கள் & சா ந்த்தில் கட்டுமான பொருட்களும் நடுகல்லும் மாமல்லபுரச்சிற்பங்களும், கோவில்களும் – ம தலங்கள் – நாயக்கர் காலக் கோயில்கள் மமன் ஆலயம் மற்றும் திருமலை நாயக்கர்	– சிலம் சோழர் (–மாதிரி	ப்பதிகாரத்தி காலத்து டெ கட்டமைப்பு	ல் (பருங் கள்	மேடை கோய பற்றீ	ار الفرا الفرا	அடை கள் அறித	மப்பு ப மற்று நல், ப	பற்றிட ம் பிர மதுை
	சன்னை இந்தோ-சாரோசெனிக் கட்டிடக் கலை.								- 1
<u>அலகு - III</u>	<mark>உற்பத்தித் தொழில்நுட்பம்</mark> ம் கலை – உலோகவியல் – இரும்புத் தெ							3	1
வரலாற்றுச்ச உருவாக்கும்		ıங்கள் ₊ மணிக	- நாணயா ள் – சுடும	ங்கள் ன் ப	அ ெணிக	ச்சடி ள் -	த்த ச	ა –	மன
						oii.	NE_"	Charles and the	
அணை, ஏரி,	வேளாண்மை மற்றும் நீர்ப்பாசனத் தொழில்ந குளங்கள், மதகு – சோழர்கால குமிழித் தூட தக்காக வடிவரைக்கப்பட்ட திணமுகள் – வேளான்	ம்பின் பூ			- впе	ல்நஎ			
அணை, ஏரி, கால்நடைகளு – கடல்சார் அ அறிவுசார் சமூ	குளங்கள், மதகு – சோழர்கால குமிழித் தூட நக்காக வடிவமைக்கப்பட்ட கிணறுகள் – வேளான் 4றிவு – மீன்வளம் – முத்து மற்றும் முத்துக்குவ	ம்பின் பு ன்மை மர	ற்றும் வேள	ाळा	- கா மை ச	ல்நஎ ார்ந் ₂	த செ	பராம் சயல்ப	ாடுக
கால்நடைகளு – கடல்சார் ச அறிவுசார்சளு அலகு - v அறிவியல் த மென்பொருட் தமிழ் அகராத	குளங்கள், மதகு – சோழர்கால குமிழித் தூட நக்காக வடிவமைக்கப்பட்ட கிணறுகள் – வேளான் புறிவு – மீன்வளம் – முத்து மற்றும் முத்துக்குவ நகம்.	ம்பின் பு னமை மர ரித்தல் — — தமிழ்	ற்றும் வேள பெருங்கட நூல்களை	ாண் ல் கு மில்	- காஎமை ச மை ச மித்த பதிப்	ல்நன ார்ந் பன்	த செ ன்னை செய்	பராம் சயல்ப டய அ 3 தல் –	ாடுக் பறிவு தமிழ
அணை, ஏரி, கால்நடைகளு – கடல்சார் ச அறிவுசார்சமூ அலகு - v அறிவியல் த மென்பொருட் தமிழ் அகராத	குளங்கள், மதகு – சோழர்கால குமிழித் தூடி தக்காக வடிவமைக்கப்பட்ட கிணறுகள் – வேளான் புறிவு – மீன்வளம் – முத்து மற்றும் முத்துக்குவ றகம். அறிவியல் தமிழ் மற்றும் கணினித்தமிழ் மிழின் வளர்ச்சி – கணினிதத்தமிழ் வளர்ச்சி கள் உருவாக்கம் – தமிழ் இணையக் கல்விச் திகள் சொற்குவைத் திட்டம்.	ம்பின் பு ன்மை மர ரித்தல் – – தமிழ் ககழகம்	ற்றும் வேள பெருங்கட நூல்களை – தமிழ் மி	ாண் ல் கு மின்	் கான மை ச றித்த பித்த	ல்நன ார்ந்த பென் பபு செ	த செ ன்னை செய்	பராம் சயல்ப டய அ 3 தல் – ணைய	ாடுக பறிவு தமிழ பத்தி
அணை, ஏரி, கால்நடைகளு – கடல்சார் உ அறிவுசார்ச்சூ அலகு - V அறிவியல் த மென்பொருட் தமிழ் அகராத TEXT BOOK:	குளங்கள், மதகு – சோழர்கால குமிழித் தூடி தக்காக வடிவமைக்கப்பட்ட கிணறுகள் – வேளான் புறிவு – மீன்வளம் – முத்து மற்றும் முத்துக்கு வ நகம். அறிவியல் தமிழ் மற்றும் கணினித்தமிழ் மிழின் வளர்ச்சி – கணினிதத்தமிழ் வளர்ச்சி கள் உருவாக்கம் – தமிழ் இணையக் கல்விச் திகள் சொற்குவைத் திட்டம்.	ம்பின் பு ன்மை மர ரித்தல் – – தமிழ் ககழகம்	ற்றும் வேள பெருங்கட நூல்களை – தமிழ் மி	ாண் ல் சூ மின் ழநா	் கான மை ச றித்த பித்த	ல்நன ார்ந்த பென் பபு செ	த செ ன்னை செய்	பராம் சயல்ப டய அ 3 தல் – ணைய	ாடுக பறிவு தமிழ பத்தி
அணை, ஏரி, கால்நடைகளு – கடல்சார் அ அறிவுசார்ச்டூ அலகு - V அறிவியல் த மென்பொருட் தமிழ் அகராத TEXT BOOK: தமிழக கல்வியி	குளங்கள், மதகு – சோழர்கால குமிழித் தூடி தக்காக வடிவமைக்கப்பட்ட கிணறுகள் – வேளான் புறிவு – மீன்வளம் – முத்து மற்றும் முத்துக்குவ றகம். அறிவியல் தமிழ் மற்றும் கணினித்தமிழ் மிழின் வளர்ச்சி – கணினிதத்தமிழ் வளர்ச்சி கள் உருவாக்கம் – தமிழ் இணையக் கல்விச் திகள் சொற்குவைத் திட்டம்.	ம்பின் பு ன்மை மர ரித்தல் – – தமிழ் ககழகம் ளை (வெ	ற்றும் வேள பெருங்கட நூல்களை – தமிழ் மி	ாண் ல் சூ மின் ழநா	் கான மை ச றித்த பித்த	ல்நன ார்ந்த பென் பபு செ	த செ ன்னை செய்	பராம் சயல்ப டய அ 3 தல் – ணைய	ாடுக பறிவு தமிபு பத்தி
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அணை, ஏரி, கால்நடைகளு – கடல்சார் உ அறிவுசார்ச்சூ அலகு - V அறிவியல் த மென்பொருட் தமிழ் அகராத TEXT BOOK: 1. தமிழக கல்வியி 2. கணினித REFERENCES: 1. கீழடி-ை 2. பொருன 3. Social Life	குளங்கள், மதகு – சோழர்கால குமிழித் தூடி தக்காக வடிவமைக்கப்பட்ட கிணறுகள் – வேளான் புறிவு – மீன்வளம் – முத்து மற்றும் முத்துக்குள தகம். அறிவியல் தமிழ் மற்றும் கணினித்தமிழ் மிழின் வளர்ச்சி – கணினிதத்தமிழ் வளர்ச்சி கள் உருவாக்கம் – தமிழ் இணையக் கல்விக் திகள் சொற்குவைத் திட்டம். வரலாறு - மக்களும் பண்பாடும் - கே கே பிள்ள ல் பணிகள் கழகம்), உலகத் தமிழாராய்ச்சி நிற தமிழ் முனைவர் இல. சுந்தரம், விகடன் பிரசு வகை நதிக்கரையில் சங்ககால நகர நாகரிகம். (ந-ஆற்றங்கரை நாகரிகம் (தொல்லியல் துறை e of Tamils (Dr.K.K.Pillay) A joint Publication of TNTB & Es	ம்பின் பு ன்மை மர ரித்தல் — — தமிழ் க்கழகம் இவனம், ரம், 2016 (தொல்லி வெளியீ(SC and RI	ற்றும் வேள பெருங்கட நூல்களை – தமிழ் மி சென்னை, 2 யல் துறை நி) /RL — (in print	ாண் ல் கு மின் பின் ! ம்நா 002	் கால மை ச ஹித்த ாபதிப் நூலக டூ பா	ல்நன ார்ந் _ர பண பபு செ டநூ	த செய் செய் – இ	பராம் சயல்ப 3 தல் – ணைய	ாடுக பறிவு தமிழ பத்தி
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தமிழர்களின் வடிவமைப்பு மற்றும் கட்டிடத் தொழில்நுட்ப ஆற்றல் பற்றி விளக்க முடியும்.												விளக்க	Understanding (K2)		
CO3 தமிழர்களின் உற்பத்தித் தொழில்நுட்பம் பற்றி சுருக்கமாகக் கூற முடியும்.													Understandi	ng (K2)	
CO4 தமிழர்களின் வேளாண்மை மற்றும் நீர்ப்பாசனத் தொழில்நுட்பம் பற்றி விளக்க முடியும்											Understandi	Understanding (K2)			
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Signature of the Chairman
Board of Studies - 5 & H (Physics

* ±3% may be varied (CAT 1,2,3 – 50 marks)



					24	IPHL21	- APP	LIED P	HYSIC	S LABO	RATORY						
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LIST O	F EXP	ERIN	IENTS	EXER	CISES:												
1.	Deter	rmina	tion of t	he You	ng's mo	dulus o	f the ma	aterial o	f a give	n beam	using unifor	m be	endir	ng me	thod.		
2.	Deter	Determination of the thermal conductivity of a bad conductor using Lee's disc.															
3.	Deter	rmina	tion of t	he frequ	uency o	f alterna	ating cu	rrent us	ing ele	ctrically	vibrating tun	ing f	ork ((Meld	e's app	paratus)	
4.	Deter	rmina	tion of t	he wav	elength	of the g	jiven se	micond	luctor la	ser.	9						*
5.	Deter	rmina	tion of t	he parti	icle size	of the	given p	owder u	sing la	ser.	=		5)				
6.	Deter	rmina	tion the	accept	ance ar	ngle and	l numer	ical ape	erture o	f the giv	en optical fib	er.					
7.	Deter	rmina	tion of t	he spec	cific res	istance	of the g	iven me	etallic w	ire usin	g Carey Fost	ter's	brid	ge.	_		
8.	Deter	rmina	tion of t	he band	d gap o	f a giver	n semic	onducti	ng mate	erial usi	ng post-office	e box	ζ.	-			-
9.	Deter	rmina	tion of t	he thick	kness o	f a thin t	ilm usir	ng air-w	edge a	rrangem	nent.			-		-	-
10.	Writin	ng co	ding for	any on	e of the	above	experin	nents / d	develop	ing a pr	oject / a prod	duct.					
REFER	RENCE	S/ M	ANUAL	/SOFT	WARE	. a. o			<i>y</i>		×					**	
1.	Labo	ratory	/ Manua	al	-				14								
COUR	SE OU	TCO	MES:											T	E	ВТ Мар	oed
On cor						ents wi										ghest L	
CO1					odulus nating c		terial, th	ne thern	nal con	ductivity	of a bad co	nduc	tor a	and		alyzing ecision	
CO2	deter	mine	the wa	velengt	h of a						e of a powd	er m	ater	ial,	An	alyzing ecision	(K4),
CO3	deter	mine	the sp	pecific	resistar	nce of	a meta	allic wir	re, the	band	gap of sem product.	icon	duct	ing	An	alyzing	(K4),
								f COs v								3.011	
COs/P	Os F	201	PO2	PO3	PO4	PO5	PO6	P07	PO8	PO9	PO10	T	PO	11	PSC	01	PSO2
CO1		3	2	2	3				3	1				2			4
CO2		3	2	2	3				3	1			2	2			
CO3	3	3	2	2	3,				3	1	5		2	2			
1 – Sliç	ght, 2 -	- Mod	erate, 3	- Subs	stantial,	BT- Blo	oom's T	axonon	ny								- 1

*includes Term Work (TW) & Online / Certification course hours

Signature of the Chairman
Board of Studies - 5 & H. (Physics)



CPC

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Programme Branch	&		All BE/	BTech	Branch	es	Se	m. C	ategory	L	ТР	SL*	Total	Credi
Prerequisite	s			Nil			. 1.	/2	ES	0	0 90	0	90	3
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LIST OF EXF	PERIM	ENTS /	EXER	CISES:		,			· .		* 7			
				PART	A – Ma	nufactı	iring La	borato	ory (30 H	ours)				
1 Selection	n of pr	oduct, fr	ee han	d sketch	ning and	detailir	ng		o A			4		
2 Constru	ction o	f model	using A	rc/TIG/	MIG/Ga	s/Spot	welding	operati	ions				ui)	
3 Enhanci	ng the	model	with she	eet meta	al									
4 Creating	the pa	arts of tl	ne mod	el using	lathe						i			
5 Creating	the pa	arts of tl	ne mod	el using	milling	and dril	ling mad	chines	a .					
		P	ART B	– Produ	uct Des	ign and	l Develo	pmen	t Labora	tory (30	Hours)			
1 Free ha	nd ske	tching a	nd deta	iling of	the com	ponent	}					r.		
2 3D part	modell	ling of th	ne comp	onent u	using CA	AD softv	vare	7			-	_	7.1	_
3 Enginee	ring A	nalysis	of the c	ompone	ent mode	el			is a					
4 Generat	e the o	compon	ent usir	ıg 3D pr	inter	4.						4.		
				PA	RT C -	Roboti	cs Labo	ratory	(30 Hou	rs)				i i
Design o	of elec	tronic ci	rcuit an	d its de	bugging									
2 Assemb	ly and	interfac	ing of s	ensors,	actuato	ors and	wireless	comm	union mo	odules w	ith audr	no UNC)	-
3 Develop	ment o	of embe	dded p	rogramr	ning and	d interfa	cing for	motion	control	and obs	tacle av	oidance		
4 Demons	stration	and te	sting of	robot in	static e	environn	nent							
				R	EFERE	NCES/	MANUA	AL /SO	FTWARE	: :	24	ž.		1
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COURSE OI			ırse, th	e stude	ents wil	l be abl	e to		R 5	2 4			Γ Mappe thest Lev	
CO1	develo		rototype	model	using m			ations	like weldi	ing,		Ap	plying (Ka	3),
CO2	sketch	3D mo	del and	develo	p the pr	ototype	using 3	D printe	er	*			plying (K ecision (S	
CO3	desigr	and de	evelop t	he auto	nomous	robot fo	or real-ti	me apı	olications	· .			plying (K ecision (S	
					Mappin	g of C	Os with	POs a	nd PSOs	S		, ,	_	
COs/POs /PSOs	PO1	PO2	PO3	PO4	PO5	PO6	P07	PO8	PO9	PO10	PO11	PSO ²	1 - F	PSO2
CO1	3	3	3	2				3	2		2			1
CO2	3	3	3	3				3	2		2			
CO3	3	3	3	2				3	2		2			

20%

Starre

Signature of the Chairman Board of Studies - Mechanical

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				24	MNT21	- QUAN	VITATIT	E AP	TITUDE - II					
9 0			(C	ommon	to all E	nginee	ring and	Techi	nology bra	nches).			_
Progra Branch	mme & 1	All B.	E/B.Tec	h Branc	ches		Se	em.	Category	L	ТР	SL*	Total	Credit
Prereq	uisites	Basic	Mather	natical	skills			2	MC	20	0 0	10	30	0
Preaml	ble	To imp	art prob	olem sol	ving skil	Is and e	enhance a	analytic	cal skills.			1	-	,
Unit – I					s, Time				3					6
Mixture	rule – App nd Work:	olication Concep	s – Pro	blems. ork and v					i – Simple Simple prob		ns on	averag	jes – All	
Time a		ce: Tim	e, spee	d and d				Avera	ige speed -	Relat	ve spe	ed – P	roblems	on boat
Unit – I							bability:		K.					8
	tation and											-,		
TEXT E	pility: Bas	ic Conce	epis – P	фрисац	ons – Si	mpie pri	obiems.							
1.	Dr.R.S.A limited, 2		"Quant	itative A	ptitude 1	for Com	petitive E	xamin	nations", Re	vised	Edition	, S.Ch	and and	compan
		·												•
REFER	RENCES/		L/SOF	TWARE	:									
REFER		MANUA				Compe	titive Exa	minati	on", 7 th Ed	ition, I	/lcGrav	w Hill	Education	on, India
	Abhijit G 2020.	uha,"Qu	ıantitati	ve Aptiti	ude for		titive Exa		on", 7 th Ed	ition, I	/IcGra	w Hill	Educatio	on, India
1.	Abhijit G 2020. https://w	MANUA uha,"Qu ww.india	iantitati	ve Aptitu	ude for le/quest	ions-and		<u>s</u>		ition, I	/lcGra	w Hill	Educatio	on, India
1. 2. 3.	Abhijit G 2020. https://w	MANUA uha,"Qu ww.india ww.geel	uantitativabix.com	ve Aptitud	ude for le/quest aptitude	ions-and	d-answers	<u>s</u>		ition, I	/IcGrav		Education BT Map	pped
1. 2. 3. COURS	Abhijit G 2020. https://w https://w	ww.india ww.geel	abix.con	ve Aptituden/apt	ude for le/quest aptitude	ions-and questio	d-answers	<u>s</u> inswer	<u>s</u>	ition, I	/IcGra	(1	ВТ Мар	ped Level)
1. 2. 3.	Abhijit G 2020. https://ww https://ww SE OUTCO npletion of Solve av	ww.india ww.geel DMES: of the coverages he prob	abix.con ssforges ourse, t , alligation	n/aptitudeks.org/sithe stud	ude for le/quest aptitude lents wi	ions-and -question II be ab	d-answers ons-and-a ole to ond work p	s inswer	<u>s</u>			(1	BT Mar Highest	pped Level)
1. 2. 3. COURS On cor	Abhijit G 2020. https://ww https://ww SE OUTCO mpletion of Solve av Solve t applicat	ww.india ww.geel OMES: of the co	abix.con esforged burse, t , alligation blems oblems.	n/aptitudeks.org/siche stud	ude for de/quest aptitude lents wi mixtures and d	ions-and question II be ab time and istance,	d-answers ons-and-a ole to ond work p upstrea	s nswer problen m and	ns.	eam o		(1)	BT Map Highest Applying	pped Level) (K3)
1. 2. 3. COURS On con CO1	Abhijit G 2020. https://ww https://ww SE OUTCO mpletion of Solve av Solve t applicat	ww.india ww.geel OMES: of the co	abix.con esforged burse, t , alligation blems oblems.	n/aptitudeks.org/sine studions or ron time	de/quest aptitude lents wi nixtures and d utation,	ions-and question II be ab , time and istance, combina	d-answers ons-and-a ole to ond work p upstrea	s inswer problen m and proba	ns. d downstre	eam o		(1)	BT Map Highest Applying Applying	pped Level) (K3)
1. 2. 3. COURSON COT	Abhijit G 2020. https://w https://w SE OUTCO npletion of Solve av Solve t applicat Solve pi	ww.india ww.geel OMES: of the co	abix.con esforged burse, t , alligation blems oblems.	n/aptitudeks.org/sine studions or ron time	de/quest aptitude lents wi nixtures and d utation,	ions-and question II be ab , time and istance, combina	d-answers ons-and-a ole to ond work p one upstrea ation and	s inswer problen m and proba	ns. d downstre	eam o	riented	(1)	BT Map Highest Applying Applying	pped Level) (K3)
1. 2. 3. COURSON COT	Abhijit G 2020. https://ww https://ww SE OUTCO mpletion of Solve av Solve t applicat Solve pi	ww.india ww.geel DMES: of the coverages he problems	abix.con ksforged burse, t , alligation blems of blems. involvir	n/aptitudeks.org/sche stude ions or report time	de/quest aptitude lents wi nixtures and d utation, Mappin	ions-and- question II be ab , time and istance, combinating of CC	d-answers ons-and-a ole to ond work p upstrea ation and Os with P	s nswer problen m and proba	ns. d downstre	eam o	riented	(1)	BT Map Highest Applying Applying	pped Level) (K3) (K3)
1. 2. 3. COURSON CON CON CO1 CO2 CO3	Abhijit G 2020. https://ww https://ww SE OUTCO mpletion of Solve at applicat Solve pi Os PO1 2	ww.india ww.geel OMES: of the co verages he problems roblems	abix.con ksforged burse, t , alligation blems of blems. involvir	n/aptitudeks.org/sche stude ions or report time	de/quest aptitude lents wi nixtures and d utation, Mappin	ions-and- question II be ab , time and istance, combinating of CC	d-answers ons-and-a ole to ond work p upstrea ation and Os with P	s nswer problen m and proba	ns. d downstre	eam o	riented	(1)	BT Map Highest Applying Applying	pped Level) (K3) (K3)

ASSESSMENT PATTERN - THEORY

Test / Bloom's Category*	Remembering (K1) %	Understanding (K2) %	Applying (K3) %	Analyzing (K4) %	Evaluating (K5) %	Creating (K6) %	Total %
CAT1		30	70	ž.			100
CAT2		30	70			2	100
CAT3	-	30	70		-		100

 * ±3% may be varied (CAT 1, 2 & 3 – 50 marks & ESE – 100 marks)

*includes Term Work (TW) & Online / Certification course hour

Signature of the Chairman Board of Studies - \$4 H





Sermath Are	24VEC11 - YOGA AND VALUES	FOR H	OLISTIC DE	VELO	OPM	ENT			
e. Action	(Common to All Engineering	ng and Te	chnology B	ranch	es)				
rogramme & Branch	All B.E./B.Tech. Branches	Sem.	Category	L	Т	P.	SL*	Total	Credit
Prerequisites	Nil	1	HS	15	0	15	0	30	1
E + 3130m (F) + 1		Maddal	March 1274	-	-171	1.57		e a l	H. 150 H
Preamble	Yoga or yogasanas are considered as is method to bring harmony of body a of the greatest gifts to the world benefitted by learning yoga.	nd mind	for general v	wellbe	ing.	Yoga	is cor	sidered	as one
Unit – I	Introduction:	5 925 15	almen evo.	(F = 1 = 5 =	ele i e		No age		2
and Regulatior & Bandhas - Sl	Yoga – Definitions - Concepts - Aims ar as of Asanas – Classifications of Yogasa hatkarma (Cleansing Practice) - Streams	anas – Pa	atanjali's As	htang	a Yo	ga –			Mudras
Unit – II	Yoga and Mind:								2
	Mind - Five Elements and the Mind - M								Role of
Unit – III	ological problems: Mood Disorders, Major Yoga and Values, Diet:	or Depres	Sive Disorde	er, Cy	ciotn	ymic	Disord	ler.	
	- Social Values - Role of Yoga in Person	nality Int	ogration C	00000	oto o	f Nloti	ural Di	t Not	2
	ve Diet – Soothing Diet – Constructive D		egration - C	oncer	วเร บ	ı wall	irai Die	et - Matt	ıropatny
Unit – IV	Asanas:	1 -			-				2
Prayer - Startin	ng & Closing - Preparatory practices - L	oosening	Practices -	- Mea	ning,	Defi	nitions	and Ob	jectives
of Asanas - Pri	nciples of Practicing Asanas. Asanas: Si	tanding –	Sitting - Pr	one –	Sup	ine –	Surya	namask	ar.
Unit – V	Pranayama and Meditation:								2
Pranayama. P Techniques – N	ctices for awareness - Definitions an ranayama: Nadi Shuddhi - Kapalaba Meditation.								
TEXT BOOK:									
1. Swami 1969.	satyananda saraswathi, "Asana prana	yama mu	dra bandha	a", Bih	nar s	choo	l of yo	oga, 4 th	Edition,
2. Swami	mukthi Bodhanandha, "Hatha yoga prad	ipika", Bi	nar school o	f yoga	a, 4 th	Editi	on, 19	85.	
REFERENCES	S:	> *		7.					
1. B.K.S. I	yenkar, "Yoga the path of holistic health	", DK Lim	ited, 2 nd Ed	ition, 1	1969				
2. Selvara	su, "Kriya cleansing in yoga", Aruvi yoga	a, 3 rd Edit	ion, 2002.	-7			× , , 2	- f	-
Z. Selvara	isu, "Kriya cleansing in yoga", Aruvi yoga	a, 3° Edit	ion, 2002.	24	-	-		2	-

	SE OUTCOMES: npletion of the course, the students will be able to	BT Mapped (Highest Level)
CO1	realize the importance of yoga in physical health.	Applying (K3)
CO2	realize the importance of yoga in mental health.	Applying (K3)
CO3	realize the role of yoga in personality development and diet.	Applying (K3)
CO4	do the loosening practices, Asanas and realize its benefits.	Applying (K3)
CO5	do the practice of Pranayama, meditation and realize its benefits	Applying (K3)

Map	oing of	COs with	POs	and PSOs	
					•

COs/POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	P011
CO1	4 9 80 1			- , .	6-	3		2	1		
CO2						3		2		4-5	
CO3	1		7			3	a .	3	- / -	Townships	
CO4						3		2	3		
CO5	T ABOUT					3		. 3			

1 - Slight, 2 - Moderate, 3 - Substantial, BT- Bloom's Taxonomy

ASSESSMENT	PATTERN -	THEORY
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Test / Bloom's Category*	Remembering (K1) %	Understanding (K2) %	Applying (K3) %	Analyzin g (K4) %	Evaluati ng (K5) %	Creating (K6) %	Total %
CAT1	e le mari	- <u>-</u>			r - Emily		=
CAT2	,		-	-		<u>.</u>	
CAT3	20	30	50	-	-	-	100
ESE		<u>-</u> }			-	-	-

* ±3% may be varied (CAT3 - 100 marks)

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U Unature of the Chairman
Board of Studies - SAH (modfs)





	24MEC31 - ENGINEERING MAT			e e e e e e e e e e e e e e e e e e e			0		
Programme & Branch	B.E. & Mechanical Engineering	Sem.	Category	L	Т	Р	SL*	Total	Credi
Prerequisites	Physics for Mechanical Engineering	3	ES	45	0	30	45	120	4
Preamble	This course deals with the physics, structure-p non-ferrous metals, alloys, polymers, ceramics describes the different heat treatment processe metals.	s, bio-mater	ials, composi	te ma	terial	s and	nano	materials	. It also
Unit – I	Ferrous Metals							1	9
Alloy Formation Peritectic and F Microstructure - F Unit - II Effect of Alloying Technical Proper	Engineering Materials - Comparison between M - Substitutional and Interstitial - Phase Diagretietoid Reactions - Iron - Iron Carbide Ecoroperties and Applications - Ferrite and Austenit Ferrous and Non-Ferrous Alloys Gelements - Manganese - Silicon - Chromium ties of Steel - Stainless and Tool Steels - High	rams - Leg quilibrium D te Stabilize - Molybde Strength Leg	ver Rule - Diagram - C rs. enum - Vana ow Alloy Ste	Isomo lassifi dium els -	cation - Tit Mara	ous - n of aniun ging	Euted Steel n and Steels	tic - Eur and Cas Tungster - Alumin	tectoid it Iron 9 n on th ium an
	bitation Strengthening Treatment - Copper and it	s Alloys - N	lagnesium a	nd its	Alloy	's - H	igh En		Prince
Unit – III Definition - Purpo	Heat Treatment se of Heat Treatments - Nucleation, Grain Growt	h and Kinel	tics - Full Ani	nealin	a - S	tress	Relief		9 allizatio
and Spheroidizin Cooling Curves	 g - Normalizing - Quenching - Hardening and Superimposed on Time Temperature Transfortal Hardenability - Jominy End Quench Test. Case H 	Tempering ormation D	g of Steel - Diagram - Ci	Isothe ritical	ermal Coo	Trar	sform. Rate -	ation Dia Austem	grams pering
Unit – IV	Polymers and Ceramics				-				9
Compression mol Properties and Ap Unit – V Introduction - Pro Metallurgy - Pro Implantable Mate	er ether ketone - Polytetrafluroethylene - Urea - P lding - Transfer molding - Extrusion blow molding polications of Alumina - Silicon Carbide - Silicon Ni Powder Metallurgy and Introduction to New poduction of Metallic Powders - Processing Meth poducts. Anisotropic materials - Composites - perials - Temporary and Permanent Implants flaterials - Hybrid Nanomaterials.	r Rotationa itride - Parti r Materials nods - Com Fiber and	al molding - ally Stabilized paction Methodology	Therm d Zirco nods - Reinf	onia a	ning. and Si sign C	Engin alon. conside terials	eration in	9 Powde aterials
	MENTS / EXERCISES:							Harmon Libe	
1. Microstru	uctural Analysis of Low Carbon and Eutectoid Stee	el.							
2. Microstru	uctural Analysis of Grey Cast Iron and Spheroidal (Cast Iron.	* = _	=				. 4	0 F E
3. Microstru	uctural Analysis of Copper, Bronze and Tin.	,							
4. Microstru	uctural Analysis of Aluminium and its Alloys.		2			_ '			-
5. Microstru	uctural Analysis of Magnesium and its Alloys.							in Sa	
6. Microstru	uctural Analysis of Aluminium based Composites.	8	_ =		-	25"		* .	
7. Microstru	uctural Analysis of Magnesium based Composites.						T _e		
8. Test the	mechanical properties of Polyethylene and Polypro	opylene. Ma	ake a compa	ative	analy	sis or	stress	s-strain b	ehaviou
9. Test the	mechanical properties of Epoxy and Polyester res	in. Make a	comparative	analys	sis on	stres	s-strai	n behavio	ur
	mechanical properties of non-biodegradable and brelationship.	oiodegradal	ole materials.	Make	a co	mpar	ison or	their stru	icture-
TEXT BOOK:			•						,
	D. Callister Jr., David G. Rethwisch. "Callister's Ma lia Pyt Ttd. 2019	terials Scie	nce and Engi	neerir	ng". G	Slobal	Edition	n, 10 th Ed	ition,

Wiley India Pvt. Ltd., 2019.

*includes Term Work(TW) & Online / Certification course hours





/la

	SE OUTCOMES: mpletion of the course, the students will be able to	BT Mapped (Highest Level)
CO1	interpret the microstructure, composition and properties of ferrous metals through conceptual and experimental study	Applying (K3), Precision (S3)
CO2	interpret the effect of alloying elements on the microstructure and technical properties of metals through conceptual and experimental study	Applying (K3), Precision (S3)
CO3	apply the principles of heat-treatment processes	Applying (K3), Precision (S3)
CO4	demonstrate the structure-property relationship and allied applications of polymers and ceramics	Applying (K3), Precision (S3)
CO5	reveal the principles of metal-forming process and infer the development of new materials	Applying (K3), Precision (S3)

COs/POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PSO1	PSO2
CO1	3		2	- ×		10 e					2	3	
CO2	3		2								1	3	
CO3	3		2				P 1				2	3	
CO4	3								-		1 4	3	
CO5	3		2							×	2	3	

1 – Slight, 2 – Moderate, 3 – Substantial, BT- Bloom's Taxonomy

ASSESSMENT PATTERN - THEORY

Test / Bloom's Category*	Remembering (K1) %	Understanding (K2) %	Applying (K3) %	Analyzing (K4) %	Evaluating (K5) %	Creating (K6)	Tota
CAT1		60	40	4			100
CAT2	4 7	60	40			4.5	100
CAT3	-	60	40	•			100
ESE		60	40	, i	-		100

* $\pm 3\%$ may be varied (CAT 1, 2 & 3 – 50 marks & ESE – 100 marks)

Signature of the Chairman

Board of Studies - Mechanical





Programme & Branch	B.E. & Mechanical Engineering	Sem.	Category	L	Т	Р	SL*	Total	Credit
Prerequisites	Physics for Mechanical Engineering	3	ES	45	0	30	45	120	4
Preamble	This course imparts knowledge about the	selection of	alactrical drives	for AC	and I	DC of	orting o	f A C 0 D C	
	Students learn about the speed control of v	arious moto	ors.	5 101 AC	anu i	DO, SI	arting 0		
Unit – I	Electrical DrivesTypes of Electric Drives – Factors influence	a tha abaica	of plantrical dri	11					9
conditions and	classes of duty – Selection of power rating the classes of duty – Selection of power rating the classes of duty – Speed-Torque characteristics – Speed-Torque characteristics	for drive mo	tors with regard	to ther	mal c	verloa	ding ar	d Load	Loading variation
Unit – II	Motor Characteristics								9
DC Machine -C	Construction-Working principle-Torque Equa	tion, Speed	-Torque Charac	cteristics	of [OC M	otors-Se	eries, Sh	unt and
Characteristics.	otors -Three Phase Induction Motor-Co	onstruction-V	Vorking princip	ole-Torqu	ue E	quatio	on and	Speed	l-Torque
Unit – III	Solid State Speed Control of DC Drives				9				9
Fed DC Drive a Mill.	of DC Series and Shunt Motors – Armature and Chopper Based DC Drive (First and Seco	and Field Co nd Quadran	ontrol, Ward-Leo t Operation) – S	nard Co Selection	ntrol of D	Syster C Driv	m – Cor es for C	ntrolled F ranes an	Rectifiers d Pape
Unit – IV	Solid State Speed Control of AC Drives								9
Speed Control of Inverter and AC	of Three Phase Induction Motor – Voltage (Voltage Controller Based Induction Drives –	Control, Volt Selection of	age / Frequence AC Drives for T	cy Contro extile Mi	ol, Si Il and	ip Pov Ceme	ver Recent Mill.	overy So	cheme -
Unit – V	Basic Electronics							,	9
	unction Diode - Operation of Rectifiers (Half	wave Full y	wave) and Filter	rs - Zene	er Dic	ndes -	Zener I		
	RIMENTS / EXERCISES: est on DC Shunt Motor.								
	Control of DC Shunt Motor (Armature control		ntrol).		GV.		7	1 -1	
	est on Three-Phase Slip Ring Induction Motor	<u>.</u>	*	-	-	-		157	
	Control of Three-Phase Induction Motor.					Part of			
	teristics of Half wave and full wave rectifier.							1	
	onal Analysis of Choppers (Step Up and Step	Down).			1	-	^	- 5	-14
	acteristics of PN junction diode.					n"	-		
	regulator using Zener diode.							-	
TEXT BOOK:	O.K. "Fundamentals of Floatists Disc." Only	E-SSS No-	D. L.C. L.C.						
	G.K, "Fundamentals of Electrical Drives", 2nd	Edition, Nar	osa Publishing	House, M	New L	Delhi, 1	1994, R	eprint – 2	022.
Vedam	MANUAL / SOFTWARE: Subrahmanyam—Electric Drives: Concepts	and Applica	tions, Tata McG	raw Hill I	Publis	shina (Compan	v. New D	elhi. 2 ^{no}
. Edition	, 2001, Reprint – 2017.								
Muthus	S. K, —A First Course on Electric Drives, 2nd ubramanian R. and Salivahanan S., "Basics of					15	99		aw
5. Hill, 20	14.						- (2111.1-4		
Labora	tory Manual								
	Work(TW) & Online / Certification course hou								

	SE OUTCOMES: mpletion of the course, the students will be able to	BT Mapped (Highest Level)
CO1	Categorize and explain the operation of electrical drives.	Understanding (K2), Manipulation (S2)
CO2	Classify and interpret the operation of AC and DC machines.	Understanding (K2), Manipulation (S2)
CO3	Apply the appropriate speed control techniques for AC and DC motor drives.	Applying (K3), Precision (S3)
CO4	Identify suitable DC and AC drive systems for specific industrial applications.	Understanding (K2), Precision (S3)
CO5	Demonstrate the basic functions of semiconductor devices.	Understanding (K2), Precision (S3)

Mapping	of	COS	with	POs	and	PSOs.
mapping	U	003	AAICII	. 03	anu	1 003

COs/PO s	PO 1	PO2	PO3	PO4	PO5	PO6	P07	PO8	PO9	PO10	PO11	PS01	PSO2
CO1	3	2	2	2				1			1	2	
CO2	3	2	2	2	*			1		-ci .a.	1	2	neid.
CO3	3	2	2	2		-11		1		196	1	2	- 75
CO4	3	2	2	. 2			,	1			1	2	-5-
CO5	3	2	2	2		- 1		1			1	2	

1 - Slight, 2 - Moderate, 3 - Substantial, BT- Bloom's Taxonomy

ASSESSMENT PATTERN - THEORY

Test / Bloom's Category*	Rememberin g (K1) %	Understandin g (K2) %	Applying (K3) %	Analyzing (K4) %	Evalu ating (K5) %	Creating (K6) %	Total %
CAT1		80	20	- 5	. 4		100
CAT2	0	80	20				100
CAT3		80	20				100
ESE		80	20	-		as a mark of the stand	100

* ±3% may be varied (CAT 1, 2 & 3 – 50 marks & ESE – 100 marks)







	24MET31 - ENGINEER	RING THERMOD	YNAMICS			-			
(U	se of Steam Tables and Psychrometric Char	t are permitted f	or the End S	Seme	ster	Exa	minatio	on)	
Programme & Branch	B.E Mechanical Engineering	Sem.	Category	L	Т	Р	SL*	Total	Credi
Prerequisites	Nil	3	PC	45	0	0	45	90	3
Preamble	This course is designed to impart essential applications. It also delves into the character							ir practic	al
Unit – I	Basic Concepts and First Law of Thermo	odynamics	To an in the second	=-					9
Thermodynamics Systems.	Properties - State - Path - Process - Q - Concept of Temperature and Heat. First							Closed a	nd Ope
Unit – II	Second Law of Thermodynamics atement - Clausius Statement - Efficiency - C								9
Diagram - h-s Dia	Properties of Pure Substances Properties of Pure Substances in Solid Phase agram - pvT Surfaces. Steam - Formation of S - Calculations of Work Done - Heat Transfer in	team - Thermod	ynamic Prop	erties				-T Diagr	
Unit – IV	Ideal and Real Gases		·						9
- Dalton's Law o	and Real Gases and their Properties - Equatior f Partial Pressure - Gas Mixtures. Thermodyr sius-Clapeyron Equation – Joule Kelvin Coeffic	namic Relations -	adro's Law - – Exact Diffe	Comperentia	oress als -	sibilit TdS	y - Cor Equat	npressibi ions - N	lity Char //axwell'
Unit – V	Psychrometry					0.	0		9
	erties of Atmospheric Air - Calculations of Properible Heat Exchange Processes - Latent Heat E								
TEXT BOOK:		71.						1	1
1. Nag P.K.	. "Engineering Thermodynamics". 6 th Edition, M	1cGraw Hill Educa	ation Pvt. Ltd	., Che	enna	i, 20	18.	7.	
REFERENCES:		- 1							: :
	Cengel, Michael A. Boles and Mehmet kanog Hill Education Pvt. Ltd., New Delhi, 2024	lu "Thermodynar	mics: An Eng	ineeri	ng A	ppro	ach". 1	0 th Editio	n,

McGraw Hill Education Pvt. Ltd., New Delhi, 2024
*includes Term Work(TW) & Online / Certification course hours



	SE OUTCOMES: mpletion of the course, the students will be able to	BT Mapped (Highest Level)
CO1	solve the open and closed system problems using first law of thermodynamics.	Applying (K3)
CO2	apply the second law of thermodynamics to solve the problems on heat engines, refrigerator and heat pumps.	Applying (K3)
CO3	utilize steam tables in determination of the thermodynamic properties of pure substances.	Applying (K3)
CO4	differentiate the behaviors of real and ideal gases and derive thermodynamic relations.	Applying (K3)
CO5	apply the psychrometric concepts in heat exchange processes	Applying (K3)

COs/POs	PO1	PO2	PO3	PO4	PO5	PO6	P07	PO8	PO9	PO10	PO11	PSO1	PSO2
CO1	3	- 5 A	2			0					2	3	A. 1
CO2	3		2				1 .		mue 3 i		1	3	enet)
CO3	3		2						E 11		2	3	
CO4	3					_ =			- 91			3	
CO5	3		2								2	3	

1 - Slight, 2 - Moderate, 3 - Substantial, BT- Bloom's Taxonomy

ASSESSMENT PATTERN - THEORY

Test / Bloom's Category*	Remembering (K1) %	Understanding (K2) %	Applying (K3) %	Analyzing (K4) %	Evaluating (K5) %	Creating (K6)	Total
CAT1	4.	. 30	70				100
CAT2		30	70	g			100
CAT3		30	70	,			100
ESE .		30	70		*	* = 17	100

^{* ±3%} may be varied (CAT 1, 2 & 3 – 50 marks & ESE – 100 marks)

Signature of the Chairman

Board of Studies - Mechanica





Programme & Branch	B.E Mechanical Engineering	Sem.	Category	L	Т	Р	SL*	Total	Credi
Prerequisites	Engineering Mechanics	3	PC	45	15	0	60	120	4
Preamble	The course provides the various properties thick Cylinders, spherical shells, types of bea design of Columns, torsion on circular shaft a	ams, bending							
Unit – I	Deformation of Solids							9	+3
Strain diagrams	erties -Concept of Resistance and deformation - for brittle and ductile materials - working stress us - Relation between elastic constants - Therr	Young's mod	ulus of elasti	city, F	Poisso	on's	ratio, N	1odulus d	of rigidit
Unit – II	Thin Cylinders and Biaxial State of Stresse	es						9	+3
	spherical shells subjected to internal fluid press and Stresses – Mohr's Circle for Biaxial Stress- M			esses	at a	Poi	nt on I	nclined F	Planes -
Unit – III Types of support diagrams. Point of	Transverse Loading on Beams and Stresses - Types of beams - Types of loads - point load of Theory of Simple Bending: Assumptions –Bending	and uniformly	distributed lo	oad - S tandai	Shear d cro	Foress S	ce and ections	Bending	+3 Momen
Types of support diagrams. Point of Unit – IV Slope and deflect	s - Types of beams - Types of loads - point load	and uniformly ing stresses in ruts aulay's method	n beams of st	tandar	rd cro	ss S	ections	Bending	Momen
Types of support diagrams. Point of Unit – IV Slope and deflect	s - Types of beams - Types of loads - point load of Theory of Simple Bending: Assumptions –Bending: Deflection of Beams and Columns and Stration of beams - Double Integration method - Macaondition – Equivalent Length of Column – Euler's I	and uniformly ing stresses in ruts aulay's method	n beams of st	tandar	rd cro	ss S	ections	Bending 9	Momen +3 lumns.
Types of support diagrams. Point of the support of	s - Types of beams - Types of loads - point load of Theory of Simple Bending: Assumptions –Bending: Deflection of Beams and Columns and Stration of beams - Double Integration method - Maca	and uniformly ing stresses in uts aulay's method Equation – Slesses shaft – Torsi	n beams of st d. enderness Ra	atio –	rd cro	ss S	Formu	Bending 9 la for Co	+3 lumns.
Types of support diagrams. Point of the support of	s Types of beams - Types of loads - point load of Theory of Simple Bending: Assumptions –Bending: Assumptions –Bending: Assumptions – Bending: Assumptions – Bending: Assumption of Beams and Columns and Street et al. (2015) Deflection of Beams and Columns and Street et al. (2015) Deflection of Beams and Columns and Street et al. (2015) Torsion on Circular shafts and Springs	and uniformly ing stresses in uts aulay's method Equation – Slesses shaft – Torsi	n beams of st d. enderness Ra	atio –	rd cro	ss S	Formu	Bending 9 la for Co	+3 lumns.
Types of support diagrams. Point of the columns: End Colu	s Types of beams - Types of loads - point load of Theory of Simple Bending: Assumptions –Bending: Assumptions –Bending: Assumptions – Bending: Assumptions – Bending: Assumption of Beams and Columns and Street et al. (2015) Deflection of Beams and Columns and Street et al. (2015) Deflection of Beams and Columns and Street et al. (2015) Torsion on Circular shafts and Springs	and uniformly ing stresses in uts aulay's method Equation – Slesshaft – Torsigy on spring.	d. enderness Ra	atio –	Rank	ine's	Formu	Bending 9 la for Col 9 Axial I	+3 lumns.
Types of support diagrams. Point of the columns: End Colu	s Types of beams - Types of loads - point load of Theory of Simple Bending: Assumptions –Bending Deflection of Beams and Columns and Stretion of beams - Double Integration method - Macaondition – Equivalent Length of Column – Euler's Interest of Column – Euler's Interest Distribution – Hollow and Solid Circular springs - stresses and deformations - strain energy	and uniformly ing stresses in uts aulay's method Equation – Slesshaft – Torsigy on spring.	d. enderness Ra	atio –	Rank	ine's	Formu	Bending 9 la for Col 9 Axial I	+3 lumns.
Types of support diagrams. Point of the lives of support of the lives	s Types of beams - Types of loads - point load of Theory of Simple Bending: Assumptions –Bending Deflection of Beams and Columns and Stretion of beams - Double Integration method - Macaondition – Equivalent Length of Column – Euler's Interest of Column – Euler's Interest Distribution – Hollow and Solid Circular springs - stresses and deformations - strain energy	and uniformly ing stresses in uts aulay's method Equation – Sle shaft – Torsi gy on spring.	d. enderness Ra	atio – – To	Rank rrsiona	ss Sinne's	Formuliffness	Bending 9 la for Col 9 Axial I	+3 lumns.
Types of support diagrams. Point of diagrams. Point of the color of th	Deflection of Beams and Columns and Streetion of beams - Double Integration method - Macandition - Equivalent Length of Column - Euler's I Torsion on Circular shafts and Springs Stress Distribution - Hollow and Solid Circular springs - stresses and deformations - strain energy	and uniformly ing stresses in uts aulay's method Equation – Sle shaft – Torsi gy on spring.	d. enderness Ra onal Rigidity and Company	andardardardardardardardardardardardardard	Rank rsiona , New	ss S ine's Delli	Formulations Formulation Formu	Bending 9 Ila for Col 9 Axial I	+3 lumns. +3 oad an

^{*}includes Term Work(TW) & Online / Certification course hours



	COURSE OUTCOMES: On completion of the course, the students will be able to				
CO1	apply the concepts of stress and Strain on ductile and brittle materials.	Applying (K3)			
CO2	estimate the stresses and deformations induced in thin, thick and spherical shells.	Analyzing (K4)			
СОЗ	construct the shear force and bending moment diagrams of loaded beams and analyze the bending stresses.	Analyzing (K4)			
CO4	analyze the slope and the deflection of beams and strengths of the columns	Analyzing (K4)			
CO5	evaluate the torsional behavior of circular shafts and helical springs	Applying (K3)			
DE .	Manning of COs with POs and PSOs	T'R La. N' ani			

COs/POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PSO1	PSO2
CO1	3	2	1						* = = .		. 1	* 1	3
CO2	3	2	1								1		3
CO3	3	3	1								1		3
CO4	3	3	1	Ŷ	- 4						1	÷	3
CO5	3	2	1							- 7	1		3

1 - Slight, 2 - Moderate, 3 - Substantial, BT- Bloom's Taxonomy

ASSESSMENT PATTERN - THEORY

Test / Bloom's Category*	Remembering (K1) %	Understanding (K2) %	Applying (K3) %	Analyzing (K4) %	Evaluating (K5) %	Creating (K6)	Total %
CAT1		20	55	25			100
CAT2		15	45	40			100
CAT3		15	45	40			100
ESE		15	45	40			100

^{* ±3%} may be varied (CAT 1, 2 & 3 - 50 marks & ESE - 100 marks)

Signature of the Chairman

60 and of Studies -



	24MET33 - MANUFACT	URING TECH	NOLOGY						
	*	e .	,.						
Programme & Branch	B.E Mechanical Engineering	Sem.	Category	L	Т	Р	SL*	Total	Credit
Prerequisites	Physics for Mechanical Engineering	3	PC	45	0	0	45	90	3
Preamble	To provide the basic concepts and techniques welding processes and fundamentals of plasti	s of metal casti ic processes.	ng processes	, defo	rma	tion ¡	orocess	ses, spec	ial
Unit – I	Metal Casting Processes								9
Sand Casting - F	ssification - Types of Casting Processes - Patter Properties - Cores: Types - Applications - Heatin fication - Design: Runner - Riser - Gate.	n: Types - Mat ng - Pouring -	erial - Allowa Cooling - Sol	nces lidifica	- Mo	olding of F	g Sand Pure Me	Preparetals and	ation for Alloys -
Unit – II	Special Casting Processes			11					9
Plastic Mold Cast	d Casting Processes – Shell Molding – Vacuum I ting – Ceramic Mold Casting – Permanent Mold C – Slush Casting – Defects in Casting.	Molding – Expa Casting – Die C	anded Polyst asting – Cent	yrene trifuga	Pro al Ca	cess	– Inve j – Con	stment C tinuous C	Casting – Casting –
Unit – III	Welding Processes								9
Beam Welding -	sion Welding Processes: Arc Welding – Gas Wel Electro Slag Welding – Thermit Welding – Solid g – Explosive Welding – Friction Welding – Ultraso	State Welding	Processes: F	rictio	n Sti	r We	n Beam elding –	Welding Forge W	– Laser /elding –
Unit – IV	Metal Forming Processes								9
Forging – Upse Hydrostatic Extru Sheet Metal Ope	n Processes – Hot Working and Cold Working tting - Swaging – Radial forging – Roll Forgin usion. Drawing Process – Wire Drawing – Deep D erations: Shearing – Blanking - Punching – Slo ging – Hemming – Seaming – Curling – Ironing –	ng. Extrusion F Prawing – Rod I Otting – Perfor	Process – Di Drawing – Tu ating – Notcl	irect be Dr	Extru awin	usion a.	– Ind	irect Extr	rusion –
Unit – V	Plastic Processing	5.75							9
Introduction – Promoulding – Type Design.	operties of Plastics – Plastic Materials – Thermopes – Blow Moulding – Thermoforming – Types	olastics –Therm – Compressio	nosetting mat n moulding -	erials - Trai	– E: nsfer	ktrus Mo	ion of p ulding	olastics – – Plastic	Injection Product
TEXT BOOK:									
1. Serope Limited,	Kalpakjian, Steven R. Schmid. "Manufacturing New Delhi, 2023.	Engineering	and Technol	logy",	8 th	Edit	ion, Pe	earson E	ducation
REFERENCES:						4			
1 Rao P.N									

*includes Term Work(TW) & Online / Certification course hours



	SE OUTCOMES: mpletion of the course, the students will be able to	BT Mapped (Highest Level)
CO1	Make use of metal casting processes for product manufacturing	Applying (K3)
CO2	Select suitable special casting process for specific application	Applying (K3)
CO3	Experiment different principles involved in various welding techniques	Applying (K3)
CO4	Compare the mechanisms involved in different kinds of metal forming processes	Analyzing (K4)
CO5	Identify the principles and processes involved in plastic moulding methods.	Applying (K3)
	Marrian of COa with DOa and DCOa	

					20 (00) 2.500								
COs/POs	PO1	PO2	PO3	PO4	PO5	PO6	P07	PO8	PO9	PO10	PO11	PSO1	PSO2
CO1	3	1			7 - 17	2					1		1
CO2	3	1				2			n		1	2	1
CO3	3	1-				2		1			1	3	. 1
CO4	3	1				2					1	8	1
CO5	3				Ca.	2		- 1			1	3	1

1 - Slight, 2 - Moderate, 3 - Substantial, BT- Bloom's Taxonomy

ASSESSMENT PATTERN - THEORY

Test / Bloom's Category*	Remembering (K1) %	Understanding (K2) %	Applying (K3) %	Analyzing (K4) %	Evaluating (K5) %	Creating (K6)	Total %
CAT1		60	40	= .		5.0	100
CAT2		60	40			- 1	100
CAT3		60	40	-			100
ESE		60 .	40		<i>J</i>		100

^{* ±3%} may be varied (CAT 1, 2 & 3 – 50 marks & ESE – 100 marks)

Signature of the Chairman 1 of Studies -

	24GET31- UNIV (Common to All Engine					129			
Programme & Branch	All B.E & B.Tech Branches	Sem.	Category	L	T	P	SL*	Total	Credit
Prerequisites	Nil.	3/6	HS	30	0	0	30	60	0
At a series of	on to an about the greation of					de to			
Preamble	To make the student to know what t	hey 'rea	ally want to	be' in	their	life a	nd profess	ion, unde	erstand the
	meaning of happiness and prosperit	ty for a	human bein	g. Als	so to	acilita	te the stud	dents to u	ınderstand
	about harmony at all the levels of hu	ıman liv	ing, and live	e acc	ording	gly			
Unit – I	Introduction						2 9	19-6	6
of self-Exploration	Guidelines of Value Education – Content and Process of Self explossing the Content and Process of Self explosions – Continuous Happiness of Fulfillment of Human Aspirations – References	oration - and Pro	– Natural A osperity – E	ccept Explo	ance ring I	– Rea Tappii	alization an ness and	nd Under Prosperit	standing - ty – Basi
Unit – II	Harmony in the Self and Body					18			6
Human Being a	nd Body - Understanding Myself as C	o-exist	ence of Se	lf ('l')	and	Body,	Needs of	the Self	and Body
Activities in the	Self and Body, Self ('I') as the Conscious	us Entity	y, the Body	as th	e Mat	erial E	ntity – Ex	ercise – E	Body as ar
Instrument Har	mony in the Self ('I) - Understanding N	Augolf					-		
motiument– nat	mony in the Sell (1) - Onderstanding is	nysen –	· Harmony w	/ith B	ody.				
Unit – III	Harmony in the Family and Socie		Harmony w	/ith B	ody.	Maria I		1 H EL	6
Unit – III		ty		1-62		lation	ship from	Family to	
Unit – III Harmony in the	Harmony in the Family and Socie	ty in Huma	an Relations	1-62		lation	ship from	Family to	
Unit – III Harmony in the Identification of I	Harmony in the Family and Socie Family – Justice – Feelings (Values)	ty in Huma nan Enc	an Relations	1-62		lation	ship from	Family to	
Unit – III Harmony in the Identification of I Unit – IV Order of Nature	Harmony in the Family and Societies Family – Justice – Feelings (Values) in Human Goal – Five dimensions of Human Goal – Nature and Existence – Interconnectedness – Understanding	ty in Huma nan Ence ng the F	an Relations deavour.	ships - Inna	- Re	ss – N	Natural Ch	aracterist	Society - 6 tic – Basic
Unit – III Harmony in the Identification of I Unit – IV Order of Nature Activity – Confo	Harmony in the Family and Socie Family – Justice – Feelings (Values) is Human Goal – Five dimensions of Hum Harmony in Nature and Existence – Interconnectedness – Understandir rmance – Introduction to Space – Co–	ty in Huma nan Ence ng the F	an Relations deavour.	ships - Inna	- Re	ss – N	Natural Ch	aracterist	Society - 6 tic – Basic
Unit – III Harmony in the Identification of I Unit – IV Order of Nature Activity – Conford No-activity – Ex	Harmony in the Family and Socie Family – Justice – Feelings (Values) is Human Goal – Five dimensions of Hum Harmony in Nature and Existence – Interconnectedness – Understandir rmance – Introduction to Space – Co- istence is Co-existence.	ty in Huma nan End e ng the F existend	an Relations deavour. Four order - ce of units o	ships - Inna of Spa	– Re	ss – N Limite	Natural Ch	aracterist	Society - 6 tic – Basic Active and
Unit – III Harmony in the Identification of I Unit – IV Order of Nature Activity – Confor No–activity – Ex Unit – V	Harmony in the Family and Socie Family – Justice – Feelings (Values) is Human Goal – Five dimensions of Hum Harmony in Nature and Existence – Interconnectedness – Understandir rmance – Introduction to Space – Co- istence is Co-existence. Implications of the above Holistic Professional Ethics	ty in Huma nan End e ng the F existen c Under	an Relation: deavour. our order - ce of units o	ships Inna of Spa	– Reatene	ss – N Limite	Natural Ched and un	aracterist	6 tic – Basic Active and
Unit – III Harmony in the Identification of I Unit – IV Order of Nature Activity – Confor No-activity – Ex Unit – V Values in differe Living – Identific	Harmony in the Family and Socie Family – Justice – Feelings (Values) is Human Goal – Five dimensions of Hum Harmony in Nature and Existence – Interconnectedness – Understandir rmance – Introduction to Space – Co- cistence is Co-existence. Implications of the above Holistic	ty in Huma nan End ng the F existend Under	an Relations deavour. Four order - ce of units of estanding of	ships - Inna of Spa f Har	- Reatene	ss - N Limite / on	Natural Ched and un	paracterist	6 tic – Basic Active and
Unit – III Harmony in the Identification of I Unit – IV Order of Nature Activity – Confor No-activity – Ex Unit – V Values in differe Living – Identific	Harmony in the Family and Socie Family – Justice – Feelings (Values) is Human Goal – Five dimensions of Hum Harmony in Nature and Existence – Interconnectedness – Understandir rmance – Introduction to Space – Co- istence is Co-existence. Implications of the above Holistic Professional Ethics Int dimensions of Human Living – Definition of Comprehensive Human Goal	ty in Huma nan End ng the F existend Under	an Relations deavour. Four order - ce of units of estanding of	ships - Inna of Spa f Har	- Reatene	ss - N Limite / on	Natural Ched and un	paracterist	6 tic – Basic Active and
Unit – III Harmony in the Identification of I Unit – IV Order of Nature Activity – Confor No–activity – Ex Unit – V Values in differe Living – Identificand Issues in Pr TEXT BOOK: Gaur	Harmony in the Family and Socie Family – Justice – Feelings (Values) is Human Goal – Five dimensions of Hum Harmony in Nature and Existence – Interconnectedness – Understandir rmance – Introduction to Space – Co- istence is Co-existence. Implications of the above Holistic Professional Ethics Int dimensions of Human Living – Definition of Comprehensive Human Goal	ty in Huma nan End e ng the F existend tunder itivenes - Huma	an Relations deavour. Four order - ce of units or estanding or	ships Inna of Spa f Har Hum	- Reatene ace - mony an Co	ss – N Limite / on onductiversal	Natural Ched and unle t –Implicat Human C	iaracterist	6 tic – Basic Active and 6 alue based
Unit – III Harmony in the Identification of I Unit – IV Order of Nature Activity – Confor No–activity – Ex Unit – V Values in differe Living – Identific and Issues in Pr TEXT BOOK: 1. Gaur editic	Harmony in the Family and Socie Family – Justice – Feelings (Values) is Human Goal – Five dimensions of Hum Harmony in Nature and Existence — Interconnectedness – Understanding rmance – Introduction to Space – Co- cistence is Co-existence. Implications of the above Holistic Professional Ethics ant dimensions of Human Living – Definition of Comprehensive Human Goal- cofessional Ethics. R.R., Sangal R., Bagaria G.P., "A Foundar, Excel Books Pvt. Ltd., New Delhi, 2	ty in Huma nan End e ng the F existend tunder itivenes - Huma	an Relations deavour. Four order - ce of units or estanding or	ships Inna of Spa f Har Hum	- Reatene ace - mony an Co	ss – N Limite / on onductiversal	Natural Ched and unle t –Implicat Human C	iaracterist	6 tic – Basic Active and 6 alue based
Unit – III Harmony in the Identification of I Unit – IV Order of Nature Activity – Confor No–activity – Ex Unit – V Values in differe Living – Identificand Issues in Pr TEXT BOOK: 1. Gaure edition REFERENCES:	Harmony in the Family and Socie Family – Justice – Feelings (Values) is Human Goal – Five dimensions of Hum Harmony in Nature and Existence — Interconnectedness – Understanding rmance – Introduction to Space – Co- cistence is Co-existence. Implications of the above Holistic Professional Ethics ant dimensions of Human Living – Definition of Comprehensive Human Goal- cofessional Ethics. R.R., Sangal R., Bagaria G.P., "A Foundar, Excel Books Pvt. Ltd., New Delhi, 2	ty in Huma nan End e ng the F existend titivenes - Huma undation	an Relations deavour. Four order - ce of units or estanding or es of Ethical enistic Educa	ships Inna of Spa f Har Hum	- Reatene ace - mony an Co	ss – N Limite / on onductiversal	Natural Ched and unle t –Implicat Human C	iaracterist	6 tic – Basic Active and 6 alue based

^{*}includes Term Work(TW) & Online / Certification course hours

	E OUTCOMES: pletion of the course, the students will be able to	BT Mapped (Highest Level)
CO1	identify the meaning of happiness and prosperity and do a correct appraisal of the current scenario in the society	Applying (K3)
CO2	interview between the Self and the Body, understand the meaning of Harmony in the Self, the Co–existence of Self and Body	Applying (K3)
CO3	build harmonious relationship based on trust, respect and other naturally acceptable feelings in human-human relationships and explore their role in ensuring a harmonious society	Applying (K3)
CO4	experiment with themselves to co-exist with nature by realising interconnectedness and the four orders of nature	Applying (K3)
CO5	identify the differences between ethical and unethical practices, and apply ethical and moral practices for a better living	Applying (K3)

COs/POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PSO1	PSO2
CO1	3	2	2	2	L 11 ==	1	2	16		<i>y</i> 1 -	2	3	2
CO2	3	2	2	2		1	2	LK 1 TENS	e praeki.	Le sessions	2	3	2
CO3	3	2	2	2		1	2	1		- 61	2	3	2
CO4	3	2	2	2		1	2		. *	- 1	2	3	2
CO5	3	2	2	2	e ence	1	2			- Ocsi-	2	3	2

1 – Slight, 2 – Moderate, 3 – Substantial, BT- Bloom's Taxonomy

ASSESSMENT PATTERN – THEORY

Test / Bloom's Category*	Remembering (K1) %	Understanding (K2) %	Applying (K3) %	Analyzing (K4) %	Evaluating (K5) %	Creating (K6) %	Total
CAT1		80	20	12		टचे अनुनामाः र	100
CAT2	7 41 7 144	80	20	rpcg re in a con-	in the second of the	n 2	100
CAT3	-	80	20				100
ESE	6			۱A			

* ±3% may be varied (CAT 1, 2 & 3 – 50 marks)

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Signature of the Chairman

Board of Studies -

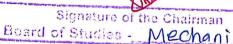


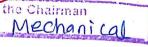
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Programme & Branch		- J.E	B.E. & Mechanical Engineering				Sem.	Categor	/ L	Т	Р	SL*	Total	Credit	
Prereq	uisites	1	Vil					3	HS	0	0	30	0	30	1
Preamb	ole								etal joining ent materia		forming	g pro	cesses	s, as well	as the
LIST O	F EXPE	RIME	NTS / EXE	RCISES:				Ä							
	1			N	IANUFA	CTURING	TECHNO	DLOGY L	ABORATO	RY					
1.	Prepare a Mold by using Solid /Split/Loose-piece Patterns and Mold for Hollow Objects with the help of Core. Produce Different Weld by Gas Tungsten Arc Welding (GTAW) / Gas Metal Arc Welding (GMAW) Operations.														
2.	Produ	ce Diff	erent Wel	d by Gas	Tungsten	Arc Weld	ding (GTA	W) / Gas	Metal Arc V	Velding	(GMA	W) C	peratio	ons.	
3.	Perfor	m Gas	Cutting a	nd Produ	ce Differe	ent Weld t	oy Gas W	elding and	Spot Weld	ling Op	eration	ıs.			
4.	Make	a Squa	are/Rectar	ngular Ro	d by Han	d Forging	Operatio	n.							
5.	Demo	nstrate	the Injec	tion Moldi	ng Opera	ation by P	roducing l	Different F	Plastic Com	ponent	s.				g.
-					MATERIA	AL PROP	ERTY TE	STING LA	ABORATO	RY	V				
1.	Tensi	on Tes	t of Mild S	iteel and A	Aluminiun	n Specim	ens.	_						/a	
2.	Doubl	e Shea	ar Test of	Mild Steel	and Alur	minium S _l	pecimens		¥					-	
3.	Torsio	n Test	of metalli	c materia	s.										
4.	Defle	ction Te	est of Can	tilever Be	am and S	Simply Su	pported E	Beam (Met	als / Wood	s).					
5.	Testin	g of o	pen and c	losed coil	helical S	Springs.					123-1-14-1-2-2			я	
				× ×										-)	
REFER	RENCES	S/ MAN	IUAL /SO	FTWARE	:										
1.	Rajpu	t R.K. '	'Strength	of Materia	als". 7th E	Edition, S.	Chand &	Co., New	Delhi, 2018						\$0
2.	Labor	atory N	/lanual.				,		PI .						
COLIB	SE OUT	COME	· ·			,								BT Mapp	
			e course,	, the stud	ents will	be able	to						(1	Highest L	evel)
CO1	perform metal forming operations using foundry, forging and injection moulding. Applying (K3) Manipulation (S2)														
CO2	produce welding joints using Arc, Gas and Spot-welding principles Applying (K3) Manipulation (S2)											(K3)			
CO3	test the strength of two materials with the help of standard procedures Applying (K3)											(K3)			
10.5%] IVI	anipulatio	n (52)
			1		Ma	apping of	f COs wit	h POs an	d PSOs						
COs/F		PO1	PO2	PO3	PO4	PO5	PO6	PO7		PO9	PO1	0 F	2011	PSO1	PSO2
CO	1	1	2	1	3	3			2					2	
CO	_	1	2		3	3	5.	1	2		1			2	

1 – Slight, 2 – Moderate, 3 – Substantial, BT- Bloom's Taxonomy

*includes Term Work(TW) & Online / Certification course hours











Programme & B.E. &		B.E. & Me	E. & Mechanical Engineering			Sem.	Categor	y L	Т	Р	SL*	Total	Credit
Prereq	uisites	Nil			Tr.	3	PC	0	0	30	0	30	1
Preamb	ble			the knowled									unicate
LIST O	F EXPERI	MENTS / EXE	RCISES:	1									
1.	Study of	GD&T Syster	ns with BIS	Standards a	nd Types of	Keys, Pins	used in Ma	achines			2		é
2.	Draw the	Conversion	of Isometric	View to Orth	ographic Vie	w of Simpl	e Machine	Compo	nents.				
3.	Draw Or	thographic vie	ws of Squa	are and Hexa	onal Bolt an	d Nut.							
4.	Draw the	Assembled S	Sectional vi	iews of Gib a	d Cotter Joi	nt.							
5.	Draw the	Assembled S	Sectional vi	ews of Knuck	e Joints.	11	4	11					
6.	Draw the	Assembled S	Sectional vi	ews of Flang	coupling.							-	
7.	Draw the	Assembled S	Sectional vi	iews of Simple	Eccentric.								
8.	Draw the	Assembled S	Sectional vi	iews of Machi	ne Vice								
9.	Draw the	Flange Coup	oling front v	view, side viev		w using Au	utoCAD.						
9.	-	Flange Cour			and top vie	· · · · · · · · · · · · · · · · · · ·							
	-				and top vie	· · · · · · · · · · · · · · · · · · ·		-					
10.	Draw the	Knuckle Joir	t front view	v, side view a	and top vie did top view ι	using Auto	CAD.						
10.	Draw the	e Knuckle Joir	FTWARE:	v, side view a	and top vie did top view ι	using Auto	CAD.	ion, Ne	w Age	Interna	ational	l Publishe	ers
10. REFEF	Draw the	MANUAL /SO a K. L., Kann NewDelhi, 20	FTWARE:	v, side view a	and top vie did top view ι	using Auto	CAD.	ion, Ne	w Age	Interna			
10. REFEF 1. COUR	Draw the RENCES/ I Narayar Limited,	MANUAL /SO a K. L., Kann NewDelhi, 20	FTWARE: aiah P., and	v, side view a	nd top view u	using Auto	CAD.	ion, Ne	w Age	Interna		BT Map _l lighest L	ped _evel)
10. REFEF 1. COUR	Draw the RENCES/ I Narayar Limited,	MANUAL /SO a K. L., Kann: NewDelhi, 20	FTWARE: aiah P., and 19.	v, side view a d Reddy K.Ve	and top view under the manner of the manner	using Auto0	CAD.	ion, Ne	w Age	Interna	(H	ВТ Мар	ped _evel)
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Slight, 2 – Moderate, 3 – Substantial, BT- Bloom's Taxonomy

*includes Term Work(TW) & Online / Certification course hours

Signature of the Chairman of Studies - Mechanical Board of Studies -



B.E. – Mechanical Engineering, Regulation, Curriculum and Syllabus – R2024