25 — Silver Jubilee Year — Nilachal Polytechnic
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| ନୀଳାଚଳ ପଲିଟେକ୍‌ନିକ୍
ଭୁବନେଶ୍ୱର

TEACHING-CUM-LESSON PLAN

1) Subject Code:TH4(AB)
2) Subject Title: BASIC ELECTRICAL ENGG
3) Semester:2nd
4) Branch: Civil/CS/Elect
5) No. of Classes / Week:03
6) Pre Requisite for the Subject: NIL / YES, If YES, give details: NIL
7) Text Book to be referred by students:

Sl No.	Book	Author	Publication	Year (Edition)	Whether available in Library
i	SCTE&VT Course Material	Smt. Preeti Pragyan Smt. Pathavi Padhy	SCTE&VT Odisha	2021	NR

8) Course Coverage Schedule:

Sl No.	Week No.	Ch. No	No. of classes planed	Chapters to be covered	Article From	Article To	Expected Date of Completion	Remark
i	1	1	3	Fundamentals	1.1	1.4	29.03.22	11.4.22
ii	2	1	3	Fundamentals	1.5	1.9	06.04.22	
iii	3	2	3	A.C Theory	2.1	2.4	13.04.22	
iv	4	2	3	A.C Theory	2.5	2.7	11.04.22	
v	5	2	3	A.C Theory	2.7	2.10	29.04.22	
vi	6	3	3	Generation of Electrical Power	3.1	3.1	06.05.22	
vii	7	4	3	Conversion of electrical Energy	4.1	4.5	13.05.22	
viii	8	4	3	Conversion of electrical Energy	4.6	4.9	20.05.22	
ix	9	5	3	Wiring & Power Billing	5.1	5.4	27.05.22	
x	10	5	1	Wiring & Power Billing	5.4	5.4	03.06.22	
xi	10	6	2	Measuring Instruments	6.1	6.5	03.06.22	
Total:			30					

9) Detail Class wise Plan:

Detailed Topic Plan:

1.1 Concept of current flow.
1.2 Concept of source and load.
1.3 State Ohm's law and concept of resistance.
1.4 Relation of V, I & R in series circuit.
1.5 Relation of V, I & R in parallel circuit.
1.6 Division of current in parallel circuit.
1.7 Effect of power in series & parallel circuit.
1.8 Kirchhoff's Law.
1.9 Simple problems on Kirchhoff's law.

Chapter No: 1 Chapter Name: FUNDAMENTALS

CM/22 | CS

Sl No.	Week No.	Lecture No.	Topic to be Covered	Article No.	Date of Completion		Signature
1	1	1	Concept of current flow. Concept of source and load	1.1,1.2	2/A 1.1,1.2	4/A 1.1, 1.2	
2	1	2	State Ohm"s law and concept of resistance.	1.3	4/A 1.3	5/A 1.3	
3	1	3	Relation of V, I & R in series circuit	1.4	6/A 1.4	7/A 1.4	
4	2	4	Relation of V, I & R in parallel circuit. Division of current in parallel circuit. Effect of power in series & parallel circuit.	1.5, 1.6, 1.7	7/A 1.6, 1.6 1.7	8/A 1.5 1.6	
5	2	5	Kirchhoff"s Law. Simple problems on Kirchhoff"s law.	1.8, 1.9	9/A 1.8 1.9		
6	2	6 Last Class	**Teachers Exam./ Doubt Clear/Revision:**	1001			

Review

Detailed Topic Plan:

2.1 Generation of alternating emf.
2.2 Difference between D.C. & A.C.
2.3 Define Amplitude, instantaneous value, cycle, Time period, frequency, phase angle, phase difference.
2.4 State & Explain RMS value, Average value, Amplitude factor & Form factor with Simple problems.
2.5 Represent AC values in phasor diagrams.
2.6 AC through pure resistance, inductance & capacitance
2.7 AC though RL, RC, RLC series circuits.
2.8 Simple problems on RL, RC & RLC series circuits.
2.9 Concept of Power and Power factor
2.10 Impedance triangle and power triangle.

Chapter No: 2 Chapter Name: A.C Theory

Sl No.	Week No.	Lecture No.	Topic to be Covered	Article No.	Date of Completion	Signature
7	3	1	Generation of alternating emf. Difference between D.C. & A.C.	2.1, 2.2		
8	3	2	Define Amplitude, instantaneous value, cycle, Time period, frequency, phase angle,	2.3		
9	3	3	State & Explain RMS value, Average value, Amplitude factor & Form factor with simple problem	2.4		
10	4	4	Represent AC values in phasor diagrams. AC through pure resistance, inductance & capacitance	2.5,2.6		

	4	5	AC through pure resistance, inductance & capacitance AC though RL, RC, RLC series circuits.	2.6,2.7		
12	4	6	AC though RL, RC, RLC series circuits.	2.7		
13	5	7	Simple problems on RL, RC & RLC series circuits	2.8		
14	5	8	Simple problems on RL, RC & RLC series circuits Concept of power and power factor Impedance triangle and power triangle.	2.8 2.9 2.10		
15	5	9 Last Class	**Teachers Exam./ Doubt Clear/Revision:**	2001		

Review

Detailed Topic Plan:

3.1 Give elementary idea on generation of electricity from thermal , hydro & nuclear power station with block diagram

Chapter No: 3 Chapter Name: Generation of Electrical Power

Sl No.	Week No.	Lecture No.	Topic to be Covered	Article No.	Date of Completion	Signature
16	6	1	Give elementary idea on generation of electricity from thermal , hydro & nuclear power station with block diagram	3.1		
17	6	2	Give elementary idea on generation of electricity from thermal , hydro & nuclear power station with block diagram	3.1		
18	6	3 Last Class	**Teachers Exam./ Doubt Clear/Revision:**	3001		

Review

Detailed Topic Plan:

(No operation, Derivation, numerical problems)

4.1 Introduction of DC machines.
4.2 Main parts of DC machines.
4.3 Classification of DC generator
4.4 Classification of DC motor.
4.5 Uses of different types of DC generators & motors.
4.6 Types and uses of single phase induction motors.
4.7 Concept of Lumen
4.8 Different types of Lamps (Filament, Fluorescent, LED bulb) its Construction and Principle.
4.9 Star rating of home appliances (Terminology, Energy efficiency, Star rating Concept)

Chapter No: 4 Chapter Name: Conversion of electrical Energy

Sl No.	Week No.	Lecture No.	Topic to be Covered	Article No.	Date of Completion	Signature
19	7	1	Introduction of DC machines.	4.1,		

			Main parts of DC machines.	4.2		
20	7	2	Classification of DC generator Uses of different types of DC generators & motors	4.3, 4.5		
21	7	3	Classification of DC motor. Uses of different types of DC generators & motors	4.4, 4.5		
22	8	4	Types and uses of single phase induction motors Concept of Lumen Different types of Lamps (Filament, Fluorescent, LED bulb) its Construction and principle	4.6 4.7 4.8		
23	8	5	Different types of Lamps (Filament, Fluorescent, LED bulb) its Construction and principle Star rating of home appliances (Terminology, Energy efficiency, Star rating concept)	4.8 4.9		
24	8	6 Last Class	Teachers Exam./ Doubt Clear/Revision:	1004		

Review

Detailed Topic Plan:

5.1 Types of wiring for domestic installations.
5.2 Layout of household electrical wiring (single line diagram showing all the important component in the system).
5.3 List out the basic protective devices used in house hold wiring.
5.4 Calculate energy consumed in a small electrical installation

Chapter No: 5 Chapter Name: Wiring & Power Billing

Sl No.	Week No.	Lecture No.	Topic to be Covered	Article No.	Date of Completion	Signature
25	9	1	Types of wiring for domestic installations	5.1		
26	9	2	Layout of household electrical wiring (single line diagram showing all the important components List out the basic protective devices used in house hold wiring. Calculate energy consumed in a small electrical installation	5.2 5.3 5.4		
27	9	3	Calculate energy consumed in a small electrical installation	5.4		
28	10	4 (Last Class)	Teachers Exam./ Doubt Clear/Revision:	1005		

Review

Detailed Topic Plan:

6.1 Introduction to measuring instruments.
6.2 Torques in instruments.
6.3 Different uses of PMMC type of instruments (Ammeter & Voltmeter).

Different uses of MI type of instruments (Ammeter & Voltmeter).
Draw the connection diagram of A.C/ D.C Ammeter, voltmeter, energy meter and wattmeter. (Single phase only).

Chapter No: 6 Chapter Name: Measuring Instruments

Sl No.	Week No.	Lecture No.	Topic to be Covered	Article No.	Date of Completion	Signature
29	10	1	Introduction to measuring instruments. Torques in instruments	6.1, 6.2		
30	10	2(Last Class)	Different uses of PMMC type of instruments (Ammeter & Voltmeter). Different uses of MI type of instruments (Ammeter & Voltmeter). Draw the connection diagram of A.C/ D.C Ammeter, voltmeter, energy meter and wattmeter. (Single phase only). **Teachers Exam./ Doubt Clear/Revision:**	6.3 6.4 6.5 1005		

Review

10) Examination Schedule:

Sl No.	Particulars of Test	Schedule	Type
1	Weekly Test (2nd Week onwards)	Wednesday (4th Sem.) & Thursday (6th sem.) Friday (2nd sem.)	10 Short Questions (02 Marks):
2	Internal Exam.-1	4th Week	30 Marks (Long Questions)
3	Internal Exam.-2	8th Week	30 Marks (Long Questions)

11) Assignment Collection/ Evaluation:

Sl No.	Assignment No.	Content	Schedule
1	Assignment-1	Long Questions 7 Nos.(10 Marks) Short Questions 6 Nos. (5 Marks)	3rd Week
2	Assignment-2	Long Questions 8 Nos.(10 Marks) Short Questions 6 Nos. (5 Marks)	6th Week
3	Assignment-3	Long Questions 11 Nos.(10 Marks) Short Questions 8 Nos. (5 Marks)	9th Week
4	Assignment-4	VST 100 Marks	10th/11th Week

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Signature of Faculty

Signature of Asst. HOD

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Signature of HOD

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Principal

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TEACHING-CUM-LESSON PLAN

1) Subject Code: Th.-4(B)
2) Subject Title: Basic Electronics
3) Semester: 1st & 2nd
4) Branch: All
5) No. of Classes / Week : 3
6) Pre Requisite for the Subject: NIL / YES, If YES, give details: Nil
7) Text Book to be referred by students:

Sl No.	Book	Author	Publication	Year (Edition)	Whether available in Library
i	SCTE & VT	Course Material (Ch - All)	SCT& VT ,Odisha	2021	Yes
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8) Course Coverage Schedule:

Sl No.	Week No.	Ch. No	No. of classes planed	Topic to be covered	Article From	Article To	Expected Date of Completion	Remark
i	1	1	3	Electronics Device	1.1	1.3	29.04.22	
ii	2	1	3	Electronics Device	1.4	1.6	06.04.22	
iii	3	1	3	Electronics Device	1.6	1.7	13.04.22	
iv	4	1	1	Electronics Device	1.7	1001	22.04.22	
		2	2	Electronic circuits	2.1	2.2		
v	5	2	3	Electronic circuits	2.3	2.5	29.04.22	
vi	6	2	3	Electronic circuits	2.6	2.9	06.05.22	
vii	7	2	1	Electronic circuits	2.9	1002	13.05.22	
		3	2	Communication System	3.1	3.2		
viii	8	3	2	Communication System	3.3	1003	20.05.22	
		4	1	Transducers & Measuring Instruments	4.1	4.2		
ix	9	4	3	Transducers & Measuring Instruments	4.2	4.3	27.05.22	
x	10	4	3	Transducers & Measuring Instruments	4.4	1004	03.06.22	
Total:		4	30					

9) **Detail Class wise Plan:**

Detailed Topic Plan:

Chapter No: 01 **Chapter Name:** Electronic Devices

1.1 Basic Concept of Electronics and its application.
1.2 Basic Concept of Electron Emission & its types.
1.3 Classification of material according to electrical conductivity (Conductor, Semiconductor & Insulator) with respect to energy band diagram only.
1.4 Difference between Intrinsic & Extrinsic Semiconductor.
1.5 Difference between vacuum tube & semiconductor.
1.6 Principle of working and use of PN junction diode, Zener diode and Light Emitting Diode (LED)
1.7 Integrated circuits (I.C) & its advantages.

Sl No.	Week No.	Lecture No.	Topic to be Covered	Article No.	Date of Completion	Signature
1	01	1	Basic Concept of Electronics and its application. Basic Concept of Electron Emission & its types.	1.1 1.2		
2		2	Basic Concept of Electronics and its application. Basic Concept of Electron Emission & its types.	1.1 1.2		
3		3	Classification of material according to electrical conductivity (Conductor, Semiconductor & Insulator) with respect to energy band diagram only.	1.3		
4	02	4	Difference between Intrinsic & Extrinsic Semiconductor.	1.4		
5		5	Difference between Intrinsic & Extrinsic Semiconductor.	1.4		
6		6	Difference between vacuum tube & semiconductor. Principle of working and use of PN junction diode, Zener diode and Light Emitting Diode (LED)	1.5 1.6		
7	03	7	Principle of working and use of PN junction diode, Zener diode and Light Emitting Diode (LED)	1.6		
8		8	Principle of working and use of PN junction diode, Zener diode and Light Emitting Diode (LED)	1.6		
9		9	Principle of working and use of PN junction diode, Zener diode and Light Emitting Diode (LED) Integrated circuits (I.C) & its advantages	1.6 1.7		
10	04	10 (Last Class)	**Teachers Exam./ Doubt Clear/Revision:**	**1001**		

Review

ed Topic Plan:

hapter No: 02, Chapter Name: Electronic circuits

2.1 Rectifier & its uses.
2.2 Principles of working of different types of Rectifiers with their merits and demerits
2.3 Functions of filters and classification of simple Filter circuit (Capacitor, choke input and π)
2.4 Working of D.C power supply system (unregulated) with help of block diagrams only
2.5 Transistor, Different types of Transistor Configuration and state output and input current gain relationship in CE,CB and CC configuration(No mathematical derivation)
2.6 Need of biasing and explain different types of biasing with circuit diagram.(only CE configuration)
2.7 Amplifiers(concept) , working principles of single phase CE amplifier
2.8 Electronic Oscillator and its classification
2.9 Working of Basic Oscillator with different elements through simple Block Diagram

Sl No.	Week No.	Lecture No.	Topic to be Covered	Article No.	Date of Completion	Signature
1	04	11	Rectifier & its uses. Principles of working of different types of Rectifiers with their merits and demerits	2.1 2.2		
2		12	Principles of working of different types of Rectifiers with their merits and demerits	2.2		
3	05	13	Functions of filters and classification of simple Filter circuit (Capacitor, choke input and π)	2.3		
4		14	Working of D.C power supply system (unregulated) with help of block diagrams only Transistor, Different types of Transistor Configuration and state output and input current gain relationship in CE,CB and CC configuration(No mathematical derivation)	2.4 2.5		
5		15	Transistor, Different types of Transistor Configuration and state output and input current gain relationship in CE,CB and CC configuration(No mathematical derivation)	2.5		
6	06	16	Need of biasing and explain different types of biasing with circuit diagram.(only CE configuration)	2.6		
7		17	Amplifiers(concept) , working principles of single phase CE amplifier	2.7		
8	06	18	Electronic Oscillator and its classification Working of Basic Oscillator with different elements through simple Block Diagram	2.8 2.9		
9	07	19 (Last Class	Teachers Exam./ Doubt Clear/Revision:	1002		

Review

Detailed Topic Plan:

Chapter No: 03, Chapter Name : Communication System

3.1 Basic communication system (concept & explanation with help of Block diagram)
3.2 Concept of Modulation and Demodulation, Difference between them
3.3 Different types of Modulation (AM, FM & PM) based on signal, carrier wave and modulated wave (only concept, No mathematical Derivation)

Sl No.	Week No.	Lecture No.	Topic to be Covered	Article No.	Date of Completion	Signature
1	07	20	Basic communication system (concept & explanation with help of Block diagram) Concept of Modulation and Demodulation, Difference between them	3.1 3.2		
2		21	Concept of Modulation and Demodulation, Difference between them	3.2		
3	08	22	Different types of Modulation (AM, FM & PM) based on signal, carrier wave and modulated wave (only concept, No mathematical Derivation)	3.3		
4		23 (Last Class)	**Teachers Exam./ Doubt Clear/Revision:**	1003		

Review

Detailed Topic Plan:

Chapter No: 04, Chapter Name : TRANSDUCERS AND MEASURING INSTRUMENTS

4.1 Concept of Transducer and sensor with their differences.
4.2 Different type of Transducers & concept of active and passive transducer.
4.3 Working principle of photo emissive, photoconductive, photovoltaic transducer and its application
4.4 Multimeter and its applications
4.5 Analog and Digital Multimeter and their differences
4.6 Working principle of Multimeter with Basic Block diagram
4.7 CRO, working principle of CRO with simple Block diagram

Sl No.	Week No.	Lecture No.	Topic to be Covered	Article No.	Date of Completion	Signature
1	08	24	Concept of Transducer and sensor with their differences. Different type of Transducers & concept of active and passive transducer.	4.1 4.2		
2	09	25	Different type of Transducers & concept of active and passive transducer.	4.2		

		26	Working principle of photo emissive, photo conductive, photovoltaic transducer and its application	4.3		
4		27	Working principle of photo emissive, photo conductive, photovoltaic transducer and its application	4.3		
5	10	28	Multimeter and its applications Analog and Digital Multimeter and their differences	4.4 4.5		
6		29	Working principle of Multimeter with Basic Block diagram CRO working principle of CRO with simple Block diagram	4.6 4.7		
7		30 (Last Class)	**Teachers Exam./ Doubt Clear/Revision:**	**1004**		

Review

10) Examination Schedule:

Sl No.	Particulars of Test	Schedule	Type
1	Weekly Test (2^{nd} Week onwards)	Wednesday (4^{th} Sem.) & Thursday (6^{th} sem.)	10 Short Questions (02 Marks):
2	Internal Exam.-1	4^{th} Week	30 Marks (Long Questions)
3	Internal Exam.-2	8^{th} Week	30 Marks (Long Questions)

11) Assignment Collection/ Evaluation:

Sl No.	Assignment No.	Content	Schedule
1	Assignment-1	Long Questions 7 Nos.(10 Marks) Short Questions 6 Nos. (5 Marks)	3^{rd} Week
2	Assignment-2	Long Questions 8 Nos.(10 Marks) Short Questions 6 Nos. (5 Marks)	6^{th} Week
3	Assignment-3	Long Questions 11 Nos.(10 Marks) Short Questions 8 Nos. (5 Marks)	9^{th} Week
4	Assignment-4	VST 100 Marks	$10^{th}/11^{th}$ Week

Signature of Faculty **Signature of Asst. HOD** **Signature of HOD**

Principal

08/04/2022

Chapter No: 1 Chapter Name: FUNDAMENTALS

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TEACHING-CUM-LESSON PLAN

1) **Subject Code: Th.-1**
2) **Subject Title: Communicative English**
3) **Semester: 1st & 2nd**
4) **Branch: All**
5) **No. of Classes / Week: 5**
6) **Pre Requisite for the Subject: NIL / YES, If YES, give details: Nil**
7) **Text Book to be referred by students:**

Sl No.	Book	Author	Publication	Year (Edition)	Whether available in Library
i	SCTE & VT		SCT& VT ,Odisha		Yes
ii	Invitation to English – 1, 2, 3 & 4		Odisha State Bureau of Text book,Odisha		Yes.
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8) **Course Coverage Schedule:**

Sl No.	Week No.	Ch. No	No. of classes planed	Topic to be covered	Article From	Article To	Expected Date of Completion	Remark
i	1	01	05	Literature Appreciation	1.A.1	1.B.1		
ii	2	01	05	Literature Appreciation	1.B.1	1.B.2		
iii	3	01	05	Literature Appreciation	1.B.2	1.B.4		
iv	4	01	02	Literature Appreciation	1.B.4	1001	15.05.22	
		02	02	Vocabulary Skill	2.1	1002	18.05.22	
		04	01	Formal writing skill	4.1	4.1		
v	5	04	05	Formal writing skill	4.2	4.6		
vi	6	04	05	Formal writing skill	4.7	4.9		
vii	7	04	02	Formal writing skill	4.9	1004	15.05.22	
		05	03	Elements of communicate	5. A.1	5.A.4		
viii	8	05	05	Elements of communicate	5.B.1	5.C.2		
ix	9	05	02	Elements of communicate	5.C.3	1005	03.06.22	
		03	03	Application of Grammar	3.1	3.2		
x	10	03	05	Application of Grammar	3.3	1003	03.06.22	
Total:								

9) **Detail Class wise Plan :**

Detailed Topic Plan:

Chapter No: 01, Chapter Name: Literature Appreciation

1. Reading comprehension

Sub-skills of reading comprehension are to be worked out and tested through an unseen passage in about 200-500 words.

A student should get acquainted with sub-skills of reading for the purpose of:

- Skimming the gist
- Scanning for necessary information
- Close reading for inference and evaluation
- Main idea and supporting points
- Guessing the meaning of un-familiar words
- Note- making
- Summarizing
- Supplying a suitable title

2. Text

The following chapter from **"Invitation to English", Book-1** for +2 students of CHSE, Odisha.**2016 reprint** to be covered in class room:

- **Standing Up For Yourself** By Yevgeny Yevtushenko
- **The Magic Of Teamwork** By Sam Pitroda
- **Inchcape Rock** By Robert Southey
- **To My True Friend** By Elizabeth Pinard

Sl No.	Week No.	Lecture No.	Topic to be Covered	Article No.	Date of Completion	Signature
1	01	1	What is reading comprehension? Techniques of reading with Principles of Skimming and scanning Scanning the necessary information Close reading for inference and evaluation	1.A.1 1.A.2 1.A.3	28/03	AL.
2		2	Main idea and supporting details Guessing the main idea and of unfamiliar words What is note making ? Understanding the gist of a given paragraph or content to make notes on important on the characters or plot.	1.A.4 1.A.5 1.A.6	31/03	AL.
3		3	Summarizing of the passage Supplying a suitable title	1.A.7 1.A.8	4/4	AL.
4		4	Standing up for yourselfThe detail study of the chapter for proper understanding and vocabulary – building.	1.B.1	7/4	AL.
5		5	Standing up for yourself - The detail study of the chapter for proper understanding and vocabulary – building.	1.B.1	8/4	AL.
6	02	6	Standing up for yourself-The detail study of the chapter for proper understanding and vocabulary – building	1.B.1	8/4	AL.
7		7	Standing up for yourself - The detail study of the chapter for proper understanding and vocabulary – building.	1.B.1		
8		8	The Magic of teamwork - The detail study of the chapter for proper understanding and vocabulary – building.	1.B.2		

9		9	The Magic of teamwork - The detail study of the chapter for proper understanding and vocabulary – building.	1.B.2		
10		10	The Magic of teamwork - The detail study of the chapter for proper understanding and vocabulary – building	1.B.2		
11	03	11	The Magic of teamwork - The detail study of the chapter for proper understanding and vocabulary – building.	1.B.2		
12		12	Inchcape Rock - The detail study of the chapter for proper understanding and vocabulary – building.	1.B.3		
13		13	Inchcape Rock - The detail study of the chapter for proper understanding and vocabulary – building.	1.B.3		
14		14	Inchcape Rock - The detail study of the chapter for proper understanding and vocabulary – building.	1.B.3		
15		15	To my true Friend - The detail study of the chapter for proper understanding and vocabulary – building.	1.B.4		
16	04	16	To my true Friend - The detail study of the chapter for proper understanding and vocabulary – building.	1.B.4		
17		17	Assignment Discussion	1001		
18		**Last Class**	**Teachers Exam./ Doubt Clear/Revision:**			

REVIEW:

Detailed Topic Plan:

Chapter No: 02, Chapter Name: Vocabulary Skll

UNIT- II
VOCABULARY
Use of synonyms, antonyms
- Same word used in different situations in different meaning
- Single word substitute

Sl No.	Week No.	Lecture No.	Topic to be Covered	Article No.	Date of Completion	Signature
1	04	18	Use of synonyms, Antonyms, from subject books and using them in sentences. Same word used in different situations in different meaning	2.1 2.2		
2	04	19	One word substitute from subject books and using them in sentences. Assignment Questions Discussion	2.3 1002		
		Last Class	**Teachers Exam./ Doubt Clear/Revision:**			

REVIEW:

Detailed Topic Plan:

Chapter No: 04, Chapter Name : Formal Writing Skill

1. Paragraph writing
- Meaning
- Features of Paragraph Writing (Topic Statement, Supporting Points and Plot Compatibility)
- Developing Ideas into Paragraphs (Describing Place/ Person/ Object /Situation and any general topic of interest)

2. Notice
3. Agenda
4. Report writing (Format of a Report, Reporting an event / news)
5. Writing personal letter
6. Letter to the Principal, Librarian, Head of the Deptt, and Hostel Superintendent
7. Writing Business letters
- Layout of a Business Letter
- Letter of Enquiry, Placing an Order, Execution of an Order, Complaint, Cancellation of an order(Features, Format and example)

8. Job application and C.V.(Features, Format and example)

Sl No.	Week No.	Lecture No.	Topic to be Covered	Article No.	Date of Completion	Signature
1	04	20	Paragraph writing Features of Paragraph Writing (Topic statement, Supporting points and plot compatibility)	4.1		
2	05	21	Developing Ideas into Paragraphs (Describing Place / Person/Object/Situation and any general topic of interest)	4.2		
3		22	Notice writing, importance and procedure of notice writing.	4.3		
4		23	Agenda writing, importance and procedure of Agenda writing.	4.4		
5		24	Procedure of writing reports, situations like any event or news.	4.5		
6		25	Procedure of writing personal letters & sample of personal letters	4.6		
7	06	26	Procedure of writing letters to Principal, Librarian, HOD and Hostel Superintendent.	4.7		
8		27	Procedure of writing letters to Principal, Librarian, HOD and Hostel Superintendent.	4.7		
9		28	Importance of writing Business letters, procedure of writing inquiry letter, order letters and complaint letter. Execution of an order, complaint, Cancellation of	4.8		

			an order.			
10		29	Importance of writing Business letters, procedure of writing inquiry letter order letters and complaint letter(Features, Format and example)	4.8		
11		30	. Procedure of writing job application and procedure of writing C.V.	4.9		
12	07	31	Sample of job application & C. V. question discussion of 5.1 article.	4.9		
13		32	Assignment Questions discussion.	1004		
14		Last Class	**Teachers Exam./ Doubt Clear/Revision:**			

REVIEW:

Detailed Topic Plan:

Chapter No: 05, Chapter Name: Elements of Communication

A. Introduction to Communication

1. Meaning, Definition and concept of communication
2. Good Communication and Bad Communication
3. Communication model

• One-way Communication Model and Two-way Communication Model with examples

4. Process of communication and factors responsible for it

• Sender, Message, Channel, Receiver / Audience, Feedback, Noise, Context

B. Professional Communication

1. Meaning of professional communication
2. Types of professional communication

2.1. Formal or Systematic Communication

• Upward communication (How it takes place, symbol, merits and demerits)
• Down-ward communication (How it takes place, symbol, merits and demerits)
• Parallel communication (How it takes place, symbol, merits and demerits)

2.2. Informal communication

• Grape vine communication (How it takes place, symbol, merits and demerits)

C. Non- Verbal Communication

1. Meaning of nonverbal Communication
2. Different areas of Non-verbal Communication

• Kinesics or Body Language (Postures and Gestures, Facial Expression and Eye Contact)
• Proxemics or Spatial Language (Private Space, Personal Space, Social Space, Public Space)
• Language of Signs and Symbols(Audio Sign and Visual Sign in everyday life with merits and demerits)

Sl No.	Week No.	Lecture No.	Topic to be Covered	Article No.	Date of Completion	Signature
1	07	33	Definition of communication and concept of communication.	5.A.1		

			Meaning of Good communication & Bad communication Examples of Good communication skills and Bad communication skills.	5.A.2		
2		34	Interrelationship between various components of communication, encoding, decoding describing the process of communication. Oneway communication Model and Two-way communication Model with examples.	5.A.3		
3		35	What is process of communications and factors responsible for it: Sender, Message, Channel, Receiver / Audience, Feedback, Noise, Context.	5.A.4		
4	08	36	Meaning of professional communication & Types of professional communication Formal or Systematic Communication.	5.B.1 5.B.2 5.B.3		
5		37	Upward Communication (How it takes place, symbol, merits and demerits) Down-ward Communication. (How it takes place, symbol, merits and demerits)	5.B.4 5.B.5		
6		38	Parallel Communication (How it takes place, symbol, merits and demerits) Informal Communication: Grape Vine Communication (How it takes place, symbol, merits and demerits)	5.B.6 5.B.7		
7		39	Non- Verbal Communication: Definition and meaning Meaning of nonverbal - graphic communication Kinesics or Body Language (Postures and Gestures, Facial Expression and Eye Contact)	5.C.1		
8		40	Non- Verbal Communication: Definition and meaning Meaning of nonverbal - graphic communication Kinesics or Body Language (Postures and Gestures, Facial Expression and Eye Contact)	5.C.2		
9	09	41	Proxemics or Spatial Languag (Private Space, Personal Space, Social Space, Public Space) Language of Signs and Symbols(Audio Sign and Visual Sign in everyday life with merits and demerits)	5.C.3 5.C.4		
10		42	Assignment Questions Discussion	1005		
11		Last Class	**Teachers Exam./ Doubt Clear/Revision:**			

REVIEW:

Detailed Topic Plan:

Chapter No: 03, Chapter Name: Application of Grammar

APPLICATION OF ENGLISH GRAMMAR

- Countable an Uncountable Noun
- Articles and Determiners
- Modal Verbs
- Tenses
- Voice-change
- Subject-verb Agreement

Sl No.	Week No.	Lecture No.	Topic to be Covered	Article No.	Date of Completion	Signature
1	9	43	Countable an Uncountable Noun Its meaning with examples same noun used both as countable noun & uncountable noun	3.1		
2		44	Article -- Definition of articles, its members, user of a, an, the with examples. Determines- Its types and uses with examples	3.2		
3		45	Article -- Definition of articles, its members, user of a, an, the with examples. Determines- Its types and uses with examples	3.2		
4	10	46	Verbs- Classification of verbs and different forms of verb. Auxiliary system- The three forms of primary auxiliary with its uses with examples. Definition of modal and its uses with examples	3.3		
5		47	Tense Forms – The sequence of tense - past, present and future. Forms of verb for present tense, Forms of verb for past tense. Forms for verb future tense.	3.4		
6		48	Tense Forms – The sequence of tense - past, present and future. Forms of verb for present tense, Forms of verb for past tense. Forms for verb future tense.	3.4		
7		49	What is the meaning of voice change? Different of forms of voice change. Making of voice changes with examples.	3.5		
8		50	Subject verb agreement - its meaning, the general rule of agreement of verb with subject. Agreement of verb with subject and number with example. Assignment Questions Discussio	3.6 1003		
9		Last Class	**Teachers Exam./ Doubt Clear/Revision:**			

10) **Examination Schedule:**

Sl No.	Particulars of Test	Schedule	Type
1	Weekly Test (2^{nd} Week onwards)	Wednesday (4^{th} Sem.) & Thursday (6^{th} sem.)	10 Short Questions (02 Marks):
2	Internal Exam.-1	4^{th} Week	30 Marks (Long Questions)
3	Internal Exam.-2	8^{th} Week	30 Marks (Long Questions)

11) **Assignment Collection / Evaluation:**

Sl No.	Assignment No.	Content	Schedule
1	Assignment-1	Long Questions 7 Nos.(10 Marks) Short Questions 6 Nos. (5 Marks)	3^{rd} Week
2	Assignment-2	Long Questions 8 Nos.(10 Marks) Short Questions 6 Nos. (5 Marks)	6^{th} Week
3	Assignment-3	Long Questions 11 Nos.(10 Marks) Short Questions 8 Nos. (5 Marks)	9^{th} Week
4	Assignment-4	VST 100 Marks	$10^{th}/11^{th}$ Week

Signature of Faculty

Signature of HOD

Principal

— Silver Jubilee Year —
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ନୀଳାଚଳ ପଲିଟେକ୍‌ନିକ୍
ଭୁବନେଶ୍ୱର

TEACHING-CUM-LESSON PLAN

1) **Subject Code: Th-1 b**

2) **Subject Title:** COMPUTER APPLICATION

3) **Semester:2nd**

4) **Branch: CSE/EE/CIVIL**

5) **No. of Classes / Week: 05**

6) **Pre Requisite for the Subject: NIL**

7) **Text Book to be referred by students:**

Sl No.	Book	Author	Publication	Year (Edition)	Whether available in Library
i	Computer Fundamentals	P K.Sinha	BPB publication	3RD	YES

8) **Course Coverage Schedule:**

Sl No.	Week No.	Ch. No	No. of classes planed	Topic to be covered	Article From	Article To	Expected Date of Completion	Remark
i	1	01	05	Computer Organisation	1.1	1.6		
ii	2	01	01	Computer Organisation	1.7	1001	08-04-2022	
iii		02	04	Computer Software	2.1	2.8		
iv	3	02	04	Computer Software	2.9	2.12,1002	19-04-2022	
v		03	01	Computer Network and Internet	3.1	3.1		
vi	4	03	05	Computer Network and Internet	3.2	3.7		
vii	5	03	02	Computer Network and Internet	3.7	1003	28-04-2022	
viii		04	03	File Management and Data Processing	4.1	4.5,1004	02-05-2022	
ix	6	05	03	Problem Solving Methodology	5.1	5.4,1005	05-05-2022	
x		06	02	Overview of C Programming language	6.1	6.2		
xi	7	06	05	Overview of C Programming language	6.2	6.3		
xii	8	06	05	Overview of C Programming language	6.4	6.5,1006	19-05-2022	
xiii	9	07	05	Advanced features of C	7.1	7.4		
xiv	10	07	05	Advanced features of C	7.5	7.8,1007	31-05-2022	
Total:		08	50					

9) **Detail Class wise Plan:**

Detailed Topic Plan:

Chapter No: 01_ **Chapter Name:-** Computer Organisation

1.1Introduction to Computer
1.2Evolution of Computers
1.3Generation of Computers
1.4 Classification of Computers
1.5Basic Organisation of Computer (Functional Block diagram)
1.6Input Devices, CPU & Output Devices.
1.7Computer Memory and Classification of Memory

Sl No.	Week No.	Lecture No.	Topic to be Covered	Article No.	Date of Completion	Signature
01	01	01	Introduction to Computer Evolution of Computers	1.1,1.2	02.04.22	Bplaxmi
02		02	2Evolution of Computers Generation of Computers	1.2,1.3	04.04.22	Bplaxmi
03		03	Generation of Computers	1.3	05.04.22	Bplaxmi
04		04	Classification of Computers Basic Organisation of Computer (Functional Block diagram)	1.4,1.5	06.04.22	Bplaxmi
05		05	Input Devices, CPU & Output Devices. Computer Memory and Classification of Memory	1.6,1.7	07.04.22	Bplaxmi
06	02	06	**Teachers Exam./ Doubt Clear/Revision:**	1001	8-04-2022	

REVIEW:-

Detailed Topic Plan:

Chapter No: __02___ Chapter Name: Computer Software

2.1Software concept,
2.2 System software,
2.3 Application software
2.4Overview of Operating System
2.5 Objectives and Functions of O.S ,
2.6 Types of Operating System (Batch Processing, Multiprogramming, Time Sharing OS)
2.7Features of DOS, Windows and UNIX Programming Languages
2.8Compiler, interpreter
2.9 Computer Virus
2.10 Different Types of computer virus
2.11Detection and prevention of Virus
2.12 Application of computers in different Domain

Sl No.	Week No.	Lecture No.	Topic to be Covered	Article No.	Date of Completion	Signature
1		01	Software concept, System software,	2.1,2.2		
2		02	Application software Overview of Operating System	2.3,2.4		

	02	03	Objectives and Functions of O.S , Types of Operating System: (Batch Processing, Multiprogramming, Time Sharing OS)	2.5,2.6		
		04	Features of DOS, Windows and UNIX Programming Languages Compiler, interpreter	2.7,2.8		
5	03	05	Computer Virus Different Types of computer virus	2.9,2.10		
6		06	Detection and prevention of Virus	2.11		
7		07	Application of computers in different Domain	2.12		
8		08	**Teachers Exam./ Doubt Clear/Revision:**	1002	19-04-2022	

REVIEW:-

Detailed Topic Plan:

Chapter No: __03___ Chapter Name: Computer Network and Internet

3.1Networking concept, Protocol, Connecting Media,
3.2Date Transmission mode
3.3Network Topologies,
3.4Types of Network
3.5Networking Devices like Hub, Repeater, Switch, Bridge, Router, Gateway & NIC
3.6Internet Services like E-Mail, WWW, FTP, Chatting, Internet Conferencing, Electronic Newspaper & Online Shopping
3.7 Different types of Internet connectivity and ISP

Sl No.	Week No.	Lecture No.	Topic to be Covered	Article No.	Date of Completion	Signature
1	03	01	Networking concept, Protocol, Connecting Media,	3.1		
2	04	02	Date Transmission mode	3.2		
3		03	Network Topologies,	3.3		
4		04	Types of Network	3.4		
5		05	Networking Devices like Hub, Repeater, Switch, Bridge, Router, Gateway & NIC	3.5		
6		06	Internet Services like E-Mail, WWW, FTP, Chatting, Internet Conferencing, Electronic Newspaper & Online Shopping Different types of Internet connectivity and ISP	3.6,3.7		
7	05	07	Different types of Internet connectivity and ISP	3.7		
8		08	**Teachers Exam./ Doubt Clear/Revision**	1003	28-04-2022	

REVIEW:-

Detailed Topic Plan:

Chapter No: __04___ Chapter Name: File Management and Data Processing

4.1Concept of File and Folder

4.2File Access and Storage methods.

4.3Sequential, Direct,

4.4ISAM Data Capture,

4.5Data storage Data Processing and Retrieval

Sl No.	Week No.	Lecture No.	Topic to be Covered	Article No.	Date of Completion	Signature
1	05	01	Concept of File and Folder File Access and Storage methods. Sequential, Direct,	4.1,4.2,4.3		
2		02	ISAM Data Capture, Data storage Data Processing and Retrieval	4.4,4.5		
3		03	Teachers Exam./ Doubt Clear/Revision:	1004	02-05-2022	

REVIEW:-

Detailed Topic Plan:

Chapter No: __05___ Chapter Name: Problem Solving Methodology

5.1Algorithm, Pseudo code and Flowchart

5.2 Generation of Programming Languages

5.3Structured Programming Language

5.4Examples of Problem solving through Flowchart

Sl No.	Week No.	Lecture No.	Topic to be Covered	Article No.	Date of Completion	Signature
1	06	01	Algorithm, Pseudo code and Flowchart Generation of Programming Languages	5.1,5.2		
2	06	02	Structured Programming Language Examples of Problem solving through Flowchart	5.3,5.4		
3		03	Teachers Exam./ Doubt Clear/Revision)	1005	05-05-2022	

EVIEW:-

Detailed Topic Plan:

Chapter No: __06___ Chapter Name: Overview of C Programming language

6.1Constants, Variables and Data types in C
6.2 Managing Input and Output operations.
6.3Operators, Expressions, Type conversion & Typecasting
6.4Decision Control and Looping Statements (If, If-else, If-else-if, Switch, While, Dowhile, For, Break, Continue & Goto)
6.5Programming Assignments using the above features

Sl No.	Week No.	Lecture No.	Topic to be Covered	Article No.	Date of Completion	Signature
1	06	01	Constants, Variables and Data types in C	6.1		
2		02	Managing Input and Output operations.	6.2		
3	07	03	Managing Input and Output operations	6.2		
4		04	Operators, Expressions, Type conversion & Typecasting	6.3		
5		05	Operators, Expressions, Type conversion & Typecasting	6.3		
6		06	Operators, Expressions, Type conversion & Typecasting	6.3		
7		07	Operators, Expressions, Type conversion & Typecasting	6.3		
8	08	08	Decision Control and Looping Statements (If, If-else, If-else-if, Switch, While, Dowhile, For, Break, Continue & Goto)	6.4		
9		09	Decision Control and Looping Statements (If, If-else, If-else-if, Switch, While, Dowhile, For, Break, Continue & Goto)	6.4		
10		10	Programming Assignments using the above features	6.5		
11		11	Programming Assignments using the above features	6.5		
12		12	**Teachers Exam./ Doubt Clear/Revision:**	1006	19-05-2022	

REVIEW:-

Detailed Topic Plan:

Chapter No: __07___ Chapter Name: Advanced features of C

7.1 Functions and Passing Parameters to the Function (Call by Value and Call by Reference)

7.2 Scope of Variables and Storage Classes

7.3Recursion Function and Types of Recursion

7.4 One Dimensional Array and Multidimensional Array

7.5String Operations and Pointers

7.6 Pointer Expression and Pointer Arithmetic

7.7Programming Assignments using the above features.

7.8Structure and Union (Only concepts, No Programming)

Sl No.	Week No.	Lecture No.	Topic to be Covered	Article No.	Date of Completion	Signature
1	09	01	Functions and Passing Parameters to the Function (Call by Value and Call by Reference)	7.1		
2		02	Scope of Variables and Storage Classes	7.2		
3		03	Recursion Function and Types of Recursion	7.3		
4		04	Recursion Function and Types of Recursion	7.3		
5		05	One Dimensional Array and Multidimensional Array	7.4		
6	10	06	String Operations and Pointers	7.5		
7		07	Pointer Expression and Pointer Arithmetic	7.6		
8		08	Programming Assignments using the above features.	7.7		
9		09	Structure and Union (Only concepts, No Programming)	7.8		
10		10	**Teachers Exam./ Doubt Clear/Revision:**	1007	31-05-2022	

IEW:-

10) **Examination Schedule:**

Sl No.	Particulars of Test	Schedule	Type
1	Weekly Test (2^{nd} Week onwards)	Wednesday (4^{th} Sem.) & Thursday (6^{th} sem.)	10 Short Questions (02 Marks):
2	Internal Exam.-1	4^{th} Week	30 Marks (Long Questions)
3	Internal Exam.-2	8^{th} Week	30 Marks (Long Questions)

11) **Assignment Collection/ Evaluation:**

Sl No.	Assignment No.	Content	Schedule
1	Assignment-1	Long Questions 7 Nos.(10 Marks) Short Questions 6 Nos. (5 Marks)	3^{rd} Week
2	Assignment-2	Long Questions 8 Nos.(10 Marks) Short Questions 6 Nos. (5 Marks)	6^{th} Week
3	Assignment-3	Long Questions 11 Nos.(10 Marks) Short Questions 8 Nos. (5 Marks)	9^{th} Week
4	Assignment-4	VST 100 Marks	$10^{th}/11^{th}$ Week

Signature of Faculty **Signature of Asst. HOD** **Signature of HOD**

08/04/2022

Principal

TEACHING-CUM-LESSON PLAN

1) **Subject Code:** TH-2(B)
2) **Subject Title:** Engg Chemistry
3) **Semester:** 2nd
4) **Branch:** Mechanical Engg
5) **No. of Classes / Week:** 05
6) **Pre Requisite for the Subject: NIL / YES, If YES, give details:** Nil
7) **Text Book to be referred by students:**

Sl No.	Book	Author	Publication	Year (Edition)	Whether available in Library
i	Engineering Chemistry for Diploma Engg by	Y.R. Sharma and P. Mitra,	Kalyani Publishers	2020	No
ii	SCTE&VT learning material for Engg Chemistry	SCTE &VT, Odisha	SCTE &VT, Odisha	2021	Yes

8) **Course Coverage Schedule:**

Sl No.	Week No.	Ch. No	No. of classes planed	Name of the Chapter	Article From	Article To	Expected Date of Completion	Remark
i	1	1	5	Atomic structure	1.1	1.5	06.04.22	
ii	2	1	2	Atomic structure	1.6	1.7		
		2	3	Chemical bonding	2.1	2.4	13.04.22	
iii	3	9	5	Hydrocarbons	9.1	9.4	22.04.22	
iv	4	13	3	Polymers	13.1	13.5		
		14	2	Chemicals in Agriculture	14.1	14.2	29.04.22	
v	5	11	2	Lubricants	11.1	11.1		
		12	3	Fuels	12.1	12.3	06.05.22	
vi	6	3	4	Acid base theory	3.1	3.5		
		4	1	Solutions	4.1	4.1	13.05.22	
vii	7	4	5	Solutions	4.2	4.4	20.05.22	
viii	8	5	4	Electrochemistry	5.1	5.4		
		6	1	Corrosion	6.1	6.2	27.05.22	
ix	9	7	4	Metallurgy	7.1	7.2		
		8	1	Alloys	8.1	8.1	03.06.22	
x	10	10	5	Water treatment	10.1	10.3	08.06.22	
Total:			50					

9) **Detail Class wise Plan:**

Detailed Topic Plan:

Chapter No: 01 **Chapter Name:** Atomic Structure

Fundamental particles (electron, proton & neutron Definition, mass and charge). Rutherford's Atomic model (postulates and failure), Atomic mass and mass number, Definition, examples and properties of Isotopes, isobars and isotones. Bohr's Atomic model (Postulates only), Bohr-Bury scheme, Aufbau's principle, Hund's rule, Electronic configuration (up to atomic no 30).

Sl No.	Week No.	Lecture No.	Topic to be Covered	Article No.	Date of Completion	Signature
1	1	1	• Definitions of matter, atom, molecule, elements, compound and mixture with examples.. • Definition of symbol with examples.. • Definition of valency (old & modern) with examples. • Definition of Variable valency with example	1.1		
2		2	• Radical : Definition of radical, Types of radicals with examples(simple radicals, compound radicals). • Definition of formula. Processes to write formulae with examples	1.1		
3		3	• Discovery of electron, proton , neutron & their properties. • Atomic number & atomic mass number. • Definition, examples and properties of Isotopes, isobars and isotones.	1.1 1.2 1.4		
4		4	• Rutherford's atomic model : • Experiment. • Observation, • Conclusion • Limitations or failure. • Achievements of the model	1.3		
5		5	• Planck's Quantum theory of radiations. • Quantization of energy and definition of spectrum. • Bohr's atomic model : postulates, merits & limitations.	1.5		
6	2	6	• Bohr –Bury model of arrangement of electrons with example. • Definition of quantum nos like Principal, Azimuthal, Magnetic & Spin with example. • Definition & explanation of Aufbau's principle	1.6		

		7	• Hund's rule of maximum multiplicity (definition with example). • Electronic configuration of elements with examples (from H to Zn) • **Teachers Exam./ Doubt Clear/Revision for ch 1**	**1.7 , 1001**		

Review

Detailed Topic Plan:

Chapter No: 02 **Chapter Name:** Chemical Bonding

: Definition, types (Electrovalent, Covalent and Coordinate bond with examples (formation of NaCl, MgCl2, H2, Cl2, O2, N2, H2O, CH4, NH3 NH4+, SO2).

Sl No.	Week No.	Lecture No.	Topic to be Covered	Article No.	Date of Completion	Signature
1	2	8	• Definition of chemical bond and reason of bonding. • Types of chemical bonds with definition. • Formation of ionic bond with examples.(NaCl, $MgCl_2$). • The properties of ionic compounds.	2.1 2.2		
2		9	• Formation of covalent bond with examples , • The conditions for covalent bond • The properties of covalent compounds.. • Explanation of the formations of H_2,Cl2, O_2, N_2, CH_4,H_2O, CO_2, NH_3	2.3		
3		10	• Formation co- ordinate bond with examples and their properties. • Explanation of the formations of H_2O_2, SO_2,NH_4^+, • **Teachers Exam./ Doubt Clear/Revision for ch 2**	2.4,1002		

Review

Detailed Topic Plan:

Chapter No: 09 **Chapter Name: Hydrocarbons**

Saturated and Unsaturated Hydrocarbons (Definition with example) Aliphatic and Aromatic Hydrocarbons (Huckle's rule only). Difference between Aliphatic and aromatic hydrocarbons. IUPAC system of nomenclature of Alkane, Alkene, Alkyne, alkyl halide and alcohol (up to 6 carbons) with bond line notation. Uses of some common aromatic compounds (Benzene, Toluene, BHC, Phenol, Naphthalene, Anthracene and Benzoic acid) in daily life.

Sl No.	Week No.	Lecture No.	Topic to be Covered	Article No.	Date of Completion	Signature
1	3	11	• Introduction to organic chemistry. • Definition and types of hydrocarbons with example. • Classification of hydrocarbons : **Saturated & Unsaturated** hydrocarbons	9.1		
2		12	• Classification of organic compounds (**Aliphatic, Acyclic, Aromatic , Heterocyclic.** – definition with examples) • Explanation **of Huckel's rule** with example • Difference between **Aliphatic and aromatic** hydrocarbons	9.2		
3		13	• Definition of Functional group. Functional groups with examples. • **IUPAC system of nomenclature** : Word root, suffix, prefix • Rules for Nomenclature of org. compounds with example	9.3		
4		14	• Nomenclature of alkanes , alkenes , alkynes , alcohols and alkyl halides up to 6 carbon atom with bond line notation.	9.3		
5		15	• Uses of some common aromatic compounds (Benzene, Toluene, BHC, Phenol, Naphthalene,	9.4,1009		

			Anthracene and Benzoic acid) in daily life. • **Teachers Exam./ Doubt Clear/Revision for ch 9**			

Review

Detailed Topic Plan:

Chapter No: 13 **Chapter Name: Polymers**:

Definition of Monomer, Polymer, Homo-polymer, Co-polymer and Degree of polymerization. Difference between Thermosetting and Thermoplastic, Composition and uses of Polythene, & Poly-Vinyl Chloride and Bakelite. Definition of Elastomer (Rubber). Natural Rubber (its drawbacks). Vulcanisation of Rubber. Advantages of Vulcanised rubber over raw rubber

Sl No.	Week No.	Lecture No.	Topic to be Covered	Article No.	Date of Completion	Signature
1	4	16	• Introduction to polymer. • Definition of monomer, polymer, homo-polymer, copolymer & degree of polymerization with example. • Types of polymerization • Definition of thermoplastics & thermosetting plastics with examples	13.1,13.2		
2		17	• Composition and uses of Poly Ethylene • Composition and uses of PVC & Bakelite	13.3		
3		18	• Definition of Elastomer (Rubber). And types rubber with examples. • Natural Rubber (Composition and it's draw backs). • Vulcanization of Rubber: Definition, process . • Properties of Vulcanized rubber and its advantages over raw rubber.	13.4, 13.5, 1013		

Review

Detailed Topic Plan:

Chapter No: 14 **Chapter Name: Chemicals in Agriculture:**

Pesticides: Insecticides, herbicides, fungicides Examples and uses. Bio Fertilizers: Definition, examples and uses

Sl No.	Week No.	Lecture No.	Topic to be Covered	Article No.	Date of Completion	Signature
1	4	19	• Definition of Pesticides and its types with examples and uses of each of the following i) Insecticides ---**DDT, BHC , NAPTHOL,** ii) Herbicides --- VINEGAR,SALT WATER,D-limonene iii) Fungicides ---- CARBAMATE,	14.1		
2		20	• Bio Fertilizers: Definition, examples and uses (Bacteria, Fungi, Cyano bacteria) • **Teachers Exam./ Doubt Clear/Revision: for chapter 13 & 14**	14.2 1014		

Review

Detailed Topic Plan:

Chapter No: 11 **Chapter Name: Lubricants**: Definition of lubricant, Types (solid, liquid and semisolid with examples only) and specific uses of lubricants (Graphite, Oils, Grease), Purpose of lubrication

Sl No.	Week No.	Lecture No.	Topic to be Covered	Article No.	Date of Completion	Signature
1	5	21	• Definition of lubricant • Purpose of lubrication. • Type of lubricants with examples.	11.1		
2		22	• Specific uses of lubricants (Graphite, Oils, Grease) • Preparation of grease	1011		

Review

Detailed Topic Plan:

Chapter No: 12 **Chapter Name: Fuel**:

Definition and classification of fuel, Definition of calorific value of fuel, Choice of good fuel. Liquid: Diesel, Petrol, and Kerosene --- Composition and uses. Gaseous: Producer gas and Water gas (Composition and uses). Elementary idea about LPG, CNG and coal gas (Composition and uses only).

Sl No.	Week No.	Lecture No.	Topic to be Covered	Article No.	Date of Completion	Signature
1	5	23	◦ Definition of fuel, types of fuels with examples and its industrial applications. ◦ Classification of fuels with examples. ◦ Definition and units of calorific value of fuel. ◦ Characteristics of a good fuel.	12.1		
2		24	• Composition and uses of liquid fuels (like petrol, diesel, and kerosene) • Composition and uses of gaseous fuels like water gas, producer gas and coal gas.	12.2,12.3		
3		25	◦ Elementary idea about LPG, CNG. ◦ Comparison between LPG & CNG. ◦ **Teachers Exam./ Doubt Clear/Revision for chapters 11 & 12**	12.3 , 1012		

Review

Detailed Topic Plan:

Chapter No: 03 **Chapter Name: Acid base theory**

Concept of Arrhenius, Lowry Bronsted and Lewis theory for acid and base with examples (Postulates and limitations only). Neutralization of acid & base. Definition of Salt, Types of salts (Normal, acidic, basic, double, complex and mixed salts, definitions with 2 examples from each).

Sl No.	Week No.	Lecture No.	Topic to be Covered	Article No.	Date of Completion	Signature
1	6	26	• Arrhenius theory of Acid, Base Definition with examples • Limitations of Arrhenius theory	3.1		
2		27	• Lowry-Bronsted theory of Acid, base (Definition with	3.2		

			examples) • Definition of Conjugate acid-base pair with examples. • Limitations of Lowry-Bronsted theory			
3		28	• Lewis theory of Acid, base (definition with examples) • Limitations of Lewis theory. • Types of acid and base with examples.	3.3		
4		29	• Neutralization of acid & base with example. • Definition of Salt, • Types of salts (Normal, acidic, basic, double, complex and mixed salts, definitions with 2 examples from each).	3.4 3.5 1003		

Review

Detailed Topic Plan:

Chapter No: 04 **Chapter Name: Solutions**

: Definitions of atomic weight, molecular weight, Equivalent weight. Determination of equivalent weight of Acid, Base and Salt. Modes of expression of the concentrations (Molarity, Normality & Molality) with Simple Problems. pH of solution (definition with simple numerical) Importance of pH in industry (sugar, textile, paper industries only)

Sl No.	Week No.	Lecture No.	Topic to be Covered	Article No.	Date of Completion	Signature
1	6	30	• Definition of atomic weight & molecular weight. • Definition of equivalent weight . • Examples of calculation of molecular weight and equivalent weights. • Relation between atomic weight, equivalent weight and valency.	4.1		
2	7	31	• Determination of equivalent weight of acid, base & salt with examples.	4.2		

3		32	• Definition of normal solution, Molar solution. • Definition of Normality & Molarity with simple problems	4.3		
4		33	• Definition of molal solution. Molality with simple problems	4.3		
5		34	• Ionization of water • Definition of pH of a solution. • pH scale. • Effect of temperature on pH, • Importance of pH (Sugar , textile & paper industries). • Simple problems on pH.	4.4		
6		35	• **Previous year Exam questions** • **Teachers Exam./ Doubt Clear / Revision for chapters 3 & 4**	1004		

Review

Detailed Topic Plan:

Chapter No: 05 **Chapter Name: Electrochemistry**

: Definition and types (Strong & weak) of Electrolytes with example. Electrolysis (Principle & process) with example of NaCl (fused and aqueous solution). Faraday's 1st and 2nd law of Electrolysis (Statement, mathematical expression and Simple numerical) Industrial application of Electrolysis- Electroplating (Zinc only).

Sl No.	Week No.	Lecture No.	Topic to be Covered	Article No.	Date of Completion	Signature
1	8	36	• Introduction to electrochemistry. • Definition of electrolytes. Strong electrolytes & weak electrolytes with example. • Definition & process of electrolysis with example. (NaCl)	5.1 , 5.2		
2		37	• Faraday's laws of electrolysis (1^{st} & 2^{nd}):- Statement, mathematical expression	5.3		

			• Simple numerical problems.			
3		38	• Application of electrolysis like Electroplating. • Explanation of . Zn Plating (principle & process)	5.4, 1005		

Review

Detailed Topic Plan:

Chapter No: 06 **Chapter Name: Corrosion:**

Definition of Corrosion, Types of Corrosion- Atmospheric Corrosion, Waterline corrosion. Mechanism of rusting of Iron only. Protection from Corrosion by (i) Alloying and (ii) Galvanization.

Sl No.	Week No.	Lecture No.	Topic to be Covered	Article No.	Date of Completion	Signature
1	8	39	• Definition of corrosion. • Types of corrosion like Atmospheric corrosion and Water line corrosion. • Mechanism of rusting of Iron with an example • Methods to protect corrosion such as Alloying of metals and Galvanization	6.1 6.2,		
2		40	**Teachers Exam./ Doubt Clear/Revision: for chapters 5 & 6**	1006		

Review

Detailed Topic Plan:

Chapter No: 07 **Chapter Name: Metallurgy:**

Definition of Mineral, ores, gangue with example. Distinction between Ores and Minerals. General methods of extraction of metals,

i) Ore Dressing

ii) Concentration (Gravity separation, magnetic separation, Froth floatation & leaching)

iii) Oxidation (Calcinations, Roasting)

iv) Reduction (Smelting, Definition & examples of flux, slag)

v) Refining of the metal (Electro refining, & Distillation only)

Sl No.	Week No.	Lecture No.	Topic to be Covered	Article No.	Date of Completion	Signature
1	9	41	• Existence of metals as	7.1		

			native, mineral, ores, • Definition of mineral , ore and gangue with examples. • Distinction between Ores And Minerals with examples.			
2		42	• Definition of Metallurgy. Various processes like ore dressing , crushing , grinding of the ore. • Concentration of the ores (gravity separation, magnetic separation with example). • Concentration of the ores (froth floatation process & leaching with example).	7.2		
3		43	• Metal Extraction processes • Oxidation--- Calcinations , Roasting (definition with examples) • Reduction –Smelting: definition with example. • Definition , types and uses of flux(with example). • Definition of Slag and its uses.	7.2		
4		44	• Method of refining of crude metals : Distillation (Definition with an example) • Electrolytic refining (Definition and process,) • Refining of impure Copper	7.2, 1007		

Review

Detailed Topic Plan:

Chapter No: 08 **Chapter Name: Alloys:** Definition of alloy. Types of alloys (Ferro, Non-Ferro & Amalgam) with example. Composition and uses of Brass, Bronze, Alnico, Duralumin

Sl No.	Week No.	Lecture No.	Topic to be Covered	Article No.	Date of Completion	Signature
1	9	45	• Alloys – Definition of Alloys. Purpose of making alloys. Types of alloys (Ferrous & non ferrous) with example. Composition & uses of Brass, Bronze, Steel ,	8.1,1008		

			Alnico, , Duralumin **Teachers Exam./ Doubt Clear/Revision : for the chapters 7 & 8**			

Review

Detailed Topic Plan:

Chapter No: 10 **Chapter Name: Water Treatment:**

Sources of water, Soft water, Hard water, hardness, types of Hardness (temporary or carbonate and permanent or non-carbonate), Removal of hardness by lime soda method (hot lime & cold lime—Principle, process & advantages), Advantages of Hot lime over cold lime process. Organic Ion exchange method (principle, process, and regeneration of exhausted resins)

Sl No.	Week No.	Lecture No.	Topic to be Covered	Article No.	Date of Completion	Signature
1	10	46	• Need for water treatment. • Different sources of water. Definition of soft water and hard water, • definition of hardness, units of hardness, • Types of hardness. • Difference between temporary and permanent hardness	10.1		
2		47	• . Removal of temporary hardness. • Methods of removal of permanent hardness: **Lime-soda process**, its principle and types. Process, advantages and disadvantages of cold lime-soda process.	10.2		
3		48	• Principle, process, advantages and disadvantages of hot lime-soda process. • Difference between cold lime & hot lime soda process. • Advantages of Hot lime over cold lime process.	10.2		
4		49	• Principle, processes of Ion-exchange method. • Regeneration, advantages and disadvantages of Ion-exchange process.	10.3		
5		50	• **Teachers Exam./ Doubt Clear/Revision: for ch 10**	1010		

Review

10) **Examination Schedule:**

Sl No.	Particulars of Test	Schedule	Type
1	Weekly Test (2nd Week onwards)	Wednesday (4th Sem.) & Thursday (6th sem.)	10 Short Questions (02 Marks):
2	Internal Exam.-1	4th Week	30 Marks (Long Questions)
3	Internal Exam.-2	8th Week	30 Marks (Long Questions)

11) **Assignment Collection/ Evaluation:**

Sl No.	Assignment No.	Content	Schedule
1	Assignment-1	Long Questions 7 Nos.(10 Marks) Short Questions 6 Nos. (5 Marks)	3rd Week
2	Assignment-2	Long Questions 8 Nos.(10 Marks) Short Questions 6 Nos. (5 Marks)	6th Week
3	Assignment-3	Long Questions 11 Nos.(10 Marks) Short Questions 8 Nos. (5 Marks)	9th Week
4	Assignment-4	VST 100 Marks	10th/11th Week

Signature of Faculty 24/3/22

Signature of HOD

Principal 08/4/2022

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ଭୁବନେଶ୍ୱର

TEACHING-CUM-LESSON PLAN

1) **Subject Code:** TH-2(A)
2) **Subject Title:** Engg Physics
3) **Semester:** 2nd
4) **Branch:** Elect.,Civil,Comp. ScEngg
5) **No. of Classes / Week:** 05
6) **Pre Requisite for the Subject: NIL / YES, If YES, give details:** Nil
7) **Text Book to be referred by students:**

Sl No.	Book	Author	Publication	Year (Edition)	Whether available in Library
i	Text Book of Physics	Barik,Das and Sharma	Kalyani Publishers	2021	Yes
ii	SCTE&VT learning material for Engg Physics	SCTE &VT, Odisha	SCTE &VT, Odisha	2021	Yes

8) **Course Coverage Schedule:**

Sl No.	Week No.	Ch. No	No. of classes planed	Name of the Chapter	Article		Expected Date of Completion	Remark
					From	To		
i	1	1	3	UNITS AND DIMENSIONS	1.1	1.5	29.03.22	
ii	2	2	3	SCALARS AND VECTORS	2.1	2.4	06.04.22	
	3	3	4	KINEMATICS	3.1	3.7	13.04.22	
iii		4	4	WORK & FRICTION	4.1	4.6		
iv	4	5	4	GRAVITATION	5.1	5.7	22.04.22	
		6	6	OSCILLATIONS & WAVES	6.1	6.7		
v	5	7	5	HEAT & THERMODYNAMICS	7.1	7.11	29.04.22	
vi	6	8	4	OPTICS	8.1	8.6	06.05.22	
vii	7	9	5	ELECTROSTATICS & MAGNETOSTATICS	9.1	9.12	13.05.22	
viii	8	10	4	CURRENT ELECTRICITY	10.1	10.5	20.05.22	
ix	9	11	5	ELECTROMAGNETISM ELECTROMAGNETIC INDUCTION	11.1	11.6	27.05.22	
x	10	12	3	MODERN PHYSICS	12.1	12.4	03.06.22	
Total:			50					

9) **Detail Class wise Plan:**

Detailed Topic Plan:

Chapter No: 01 Chapter Name: UNITS AND DIMENSIONS

Physical quantities - (Definition).

Definition of fundamental and derived units, systems of units (FPS, CGS, MKS and SI units).

Definition of dimension and Dimensional formulae of physicalquantities.

Dimensional equations and Principle ofhomogeneity.

Checking the dimensional correctness of Physicalrelations.

Sl No.	Week No.	Lecture No.	Topic to be Covered	Article No.	Date of Completion	Signature
1	1	1	Physical quantities - (Definition). Definition of fundamental and derived units, systems of units (FPS, CGS, MKS and SI units).	1.1 1.2		
2		2	Definition of dimension and Dimensional formulae of physical quantities. Dimensional equations and Principle of homogeneity. Gr. B (Q.1-5)	1.3 1.4		
3		3	Checking the dimensional correctness of Physical relations. Gr. C (Q.1), Gr. A (Q.All) • **Teachers Exam./ Doubt Clear/Revision for chapters 1**	1.5,1001		

Review

Detailed Topic Plan:

Chapter No: 02 Chapter Name: SCALARS AND VECTORS

Scalar and Vector quantities (definition and concept), Representation of a Vector – examples, types ofvectors.

Triangle and Parallelogram law of vector Addition (Statement only).

Simple Numerical.

Resolution of Vectors - Simple Numericals on Horizontal and Vertical components.

Vector multiplication (scalar product and vector product ofvectors).

Sl No.	Week No.	Lecture No.	Topic to be Covered	Article No.	Date of Completion	Signature
1	2	4	Scalar and Vector quantities (definition and concept), Representation of a Vector – examples, types of vectors. Triangle and Parallelogram law of vector Addition (Statement only). Simple Numerical. Gr. B (Q.6)	2.1 2.2		

2		5	Resolution of Vectors – Simple Numericals on Horizontal and Vertical components.	2.3		
3		6	Vector multiplication (scalar product and vector product of vectors). Gr. A (Q.All) **Teachers Exam./ Doubt Clear/Revision for ch 2**	2.4		

Review

Detailed Topic Plan:

Chapter No: 03 Chapter Name: KINEMATICS

Concept of Rest and Motion.

Displacement, Speed, Velocity, Acceleration & FORCE (Definition, formula, dimension & SI units).

Equations of Motion under Gravity (upward and downward motion) - no derivation.

Circular motion: Angular displacement, Angular velocity and Angular acce

Relation between –(i) Linear & Angular velocity, (ii) Linear & Angular acceleration).

Define Projectile, Examples of Projectile.

Expression for Equation of Trajectory, Time of Flight, Maximum Height and Horizontal

Range for a projectile fired at an angle, Condition for maximum Horizontal Range.

Sl No.	Week No.	Lecture No.	Topic to be Covered	Article No.	Date of Completion	Signature
1	3	7	Concept of Rest and Motion. Displacement, Speed, Velocity, Acceleration & FORCE (Definition, formula, dimension & SI units).	3.1 3.2		
2		8	Equations of Motion under Gravity (upward and downward motion) - no derivation. Gr. B (Q.7-9) Circular motion: Angular displacement, Angular velocity and Angular acceleration (definition, formula & SI units). Gr. B (Q.10-12)	3.3 3.4		
3		9	Relation between –(i) Linear & Angular velocity, (ii) Linear & Angular acceleration). Gr. B (Q.11) Define Projectile, Examples of Projectile. Gr. C (Q.2, 6)	3.5 3.6		
4		10	Expression for Equation of Trajectory, Time of Flight, Maximum Height and Horizontal Range for a projectile fired at an angle, Condition for maximum Horizontal Range. Gr. A (Q.All)	3.7		

5		11	Concept of Rest and Motion. Displacement, Speed, Velocity, Acceleration & FORCE (Definition, formula, dimension & SI units). **Teachers Exam./ Doubt Clear/Revision for ch 3**	3.1 3.2		

Review

Detailed Topic Plan:
Chapter No: 4 Work – Definition, Formula & SI units.
Friction – Definition & Concept.
Types of friction (static, dynamic), Limiting Friction (Definition with Concept).
Laws of Limiting Friction (Only statement, No Experimental Verification).
Coefficient of Friction – Definition & Formula, Simple Numericals.
Methods to reduce friction.

Sl No.	Week No.	Lecture No.	Topic to be Covered	Article No.	Date of Completion	Signature
1	3	12	Work – Definition, Formula & SI units.	4.1		
2		13	Friction – Definition & Concept.	4.2		
3		14	Types of friction (static, dynamic), Limiting Friction (Definition with Concept). Gr. B (Q. 13)	4.3		
4		15	Laws of Limiting Friction (Only statement, No Experimental Verification). Gr. C (Q. 3-5) Coefficient of Friction – Definition & Formula, Simple Numericals. Methods to reduce friction. Gr. A (Q. All) **Teachers Exam./ Doubt Clear/Revision for ch 4**	4.4 4.5 4.6		

Review

Detailed Topic Plan:
Chapter No: 5 Newton's Laws of Gravitation – Statement and Explanation.
Universal Gravitational Constant (G)- Definition, Unit and Dimension.
Acceleration due to gravity (g)- Definition and Concept.
Definition of mass and weight.
Relation between g and G.
Variation of g with altitude and depth (No derivation – Only Explanation).
Kepler's Laws of Planetary Motion (Statement only).

Sl No.	Week No.	Lecture No.	Topic to be Covered	Article No.	Date of Completion	Signature
1	4	16	Newton's Laws of Gravitation –	5.1		

			Statement and Explanation. Universal Gravitational Constant (G)- Definition, Unit and Dimension. Acceleration due to gravity (g)- Definition and Concept. Gr. B (Q. 1-3)	5.2 5.3		
2		17	Definition of mass and weight. Relation between g and G. Gr. B (Q. 4), Gr. C (Q. 1-2)	5.4 5.5		
		18	Variation of g with altitude and depth (No derivation – Only Explanation).	5.6		
		19	Kepler's Laws of Planetary Motion (Statement only). Gr. C (Q. 3), Gr. A (Q. All) **Teachers Exam./ Doubt Clear/Revision for ch 5**	5.7		

Review

Detailed Topic Plan:

Chapter No: 6 Simple Harmonic Motion (SHM) - Definition & Examples.
6Expression (Formula/Equation) for displacement, velocity, acceleration of a body/ particle in SHM.
Wave motion – Definition & Concept.
Transverse and Longitudinal wave motion – Definition, Examples & Comparison.
Definition of different wave parameters (Amplitude, Wavelength, Frequency, Time Period.
Derivation of Relation between Velocity, Frequency and Wavelength of a wave
Ultrasonics – Definition, Properties & Applications.

Sl No.	Week No.	Lecture No.	Topic to be Covered	Article No.	Date of Completion	Signature
1	4	20	Simple Harmonic Motion (SHM) - Definition & Examples.	6.1		
2		21	Expression (Formula/Equation) for displacement, velocity, acceleration of a body/ particle in SHM. Gr. B (Q. 5)	6.2		
		22	Wave motion – Definition & Concept. Transverse and Longitudinal wave motion – Definition, Examples & Comparison. Gr. B (Q. 6-7)	6.3 6.4		
		23	Definition of different wave parameters (Amplitude, Wavelength, Frequency, Time Period. Gr. C (Q. 4-5)	6.5		

		24	Derivation of Relation between Velocity, Frequency and Wavelength of a wave	6.6		
		25	Ultrasonics – Definition, Properties & Applications. Gr. A (Q. All), Gr. B (Q. 8) & Gr. C (Q. 6) **Teachers Exam./ Doubt Clear/Revision for ch 6**	6.7		

Review

Detailed Topic Plan:

Chapter No: 7 Heat and Temperature – Definition & Difference

Units of Heat (FPS, CGS, MKS & SI).

Specific Heat (concept, definition, unit, dimension and simple numerical)

Change of state (concept), Latent Heat (concept, definition, unit, dimension and simple numerical)

Thermal Expansion – Definition & Concept

Expansion of Solids (Concept)

Coefficient of linear, superficial and cubical expansions of Solids – Definition & Units.

Relation between α, β & Y

Work and Heat - Concept & Relation.

Joule's Mechanical Equivalent of Heat (Definition, Unit)

First Law of Thermodynamics (Statement and concept only)

Sl No.	Week No.	Lecture No.	Topic to be Covered	Article No.	Date of Completion	Signature
1	5	26	Heat and Temperature – Definition & Difference Units of Heat (FPS, CGS, MKS & SI).	7.1 7.2		
2		27	Specific Heat (concept, definition, unit, dimension and simple numerical) Change of state (concept), Latent Heat (concept, definition, unit, dimension and simple numerical) Gr. B (Q. 1-4)	7.3 7.4		
3		28	Thermal Expansion – Definition & Concept Expansion of Solids (Concept) Coefficient of linear, superficial and cubical expansions of Solids – Definition & Units. Gr. B (Q. 8-11)	7.5 7.6 7.7		
		29	Relation between **α, β & Y** Gr. C (Q. 3) Work and Heat - Concept & Relation	7.8 7.9		
		30	Joule's Mechanical Equivalent of Heat (Definition, Unit)	7.10 7.11		

			First Law of Thermodynamics (Statement and concept only) Gr. A (Q. All) **Teachers Exam./ Doubt Clear/Revision for ch 7**			

Review

Detailed Topic Plan:

Chapter No: 8 Reflection & Refraction – Definition.

Laws of reflection and refraction (Statement only)

Refractive index – Definition, Formula &Simple numerical. Critical Angle and Total internal reflection – Concept, Definition & Explanation Refraction through Prism (Ray Diagram & Formula only – NO derivation)..

Fiber Optics – Definition, Properties & Applications.

Sl No.	Week No.	Lecture No.	Topic to be Covered	Article No.	Date of Completion	Signature
1	6	31	Reflection & Refraction – Definition. Laws of reflection and refraction (Statement only) ns.	8.1 8.2		
2		32	Refractive index – Definition, Formula &Simple numerical. Gr. B (Q. 1-6)	8.3		
3		33	Critical Angle and Total internal reflection – Concept, Definition & Explanation Gr. C (Q. 1)	8.4		
4		34	Refraction through Prism (Ray Diagram & Formula only – NO derivation).. Fiber Optics – Definition, Properties & Application Gr. A (Q. All) **Teachers Exam./ Doubt Clear/Revision for ch 8**	8.5 8.6		

Review

Detailed Topic Plan:

Chapter No: 9 Electrostatics – Definition & Concept.

Statement & Explanation of Coulombs laws, Definition of Unit charge.

Absolute & Relative Permittivity (ε) – Definition, Relation & Unit.

Electric potential and Electric Potential difference (Definition, Formula & SI Units).

Electric field, Electric field intensity (E) – Definition, Formula & Unit.

Capacitance - Definition, Formula & Unit.

Series and Parallel combination of Capacitors (No derivation, Formula for effective/Combined/total capacitance & Simple numericals).

Magnet, Properties of a magnet.

Coulomb's Laws in Magnetism – Statement & Explanation, Unit Pole (Definition).

Magnetic field, Magnetic Field intensity (H) - (Definition, Formula & SI Unit).

Magnetic lines of force (Definition and Properties)
Magnetic Flux (Φ) & Magnetic Flux Density (B) – Definition, Formula & Unit.

Sl No.	Week No.	Lecture No.	Topic to be Covered	Article No.	Date of Completion	Signature
1	7	35	Electrostatics – Definition & Concept. Statement & Explanation of Coulombs laws, Definition of Unit charge.	9.1 9.2		
2		36	Absolute & Relative Permittivity (ε) – Definition, Relation & Unit. Electric potential and Electric Potential difference (Definition, Formula & SI Units). Gr. B (Q. 1-4) Electric field, Electric field intensity (E) – Definition, Formula & Unit. Gr. C (Q. 1)	9.3 9.4 9.5		
3		37	Capacitance - Definition, Formula & Unit. Series and Parallel combination of Capacitors (No derivation, Formula for effective/Combined/total capacitance & Simple numericals).	9.6 9.7		
4		38	Magnet, Properties of a magnet. Coulomb's Laws in Magnetism – Statement & Explanation, Unit Pole (Definition).	9.8 9.9		
5		39	Magnetic field, Magnetic Field intensity (H) - (Definition, Formula & SI Unit). Magnetic lines of force (Definition and Properties) Magnetic Flux (Φ) & Magnetic Flux Density (B) – Definition, Formula & Unit. Gr. A (Q. All) **Teachers Exam./ Doubt Clear/Revision for ch 9**	9.10 9.11 9.12		

Review

Detailed Topic Plan:
Chapter No: 10 Electric Current – Definition, Formula & SI Units.
Ohm's law and its applications.
Series and Parallel combination of resistors (No derivation, Formula for effective/ Combined/ total resistance & Simple numericals).
Kirchhoff's laws (Statement & Explanation with diagram).
Application of Kirchhoff's laws to Wheatstone bridge - Balanced condition of Wheatstone's Bridge – Condition of Balance (Equation).

Sl No.	Week No.	Lecture No.	Topic to be Covered	Article No.	Date of Completion	Signature
1	8	40	Electric Current – Definition, Formula & SI Units.	10.1 10.2		

			Ohm's law and its applications			
2		41	Series and Parallel combination of resistors (No derivation, Formula for effective/ Combined/ total resistance & Simple numericals).	10.3		
3		42	Kirchhoff's laws (Statement & Explanation with diagram). Gr. B (Q. 1-3) Application of Kirchhoff's laws to Wheatstone bridge - Balanced condition of Wheatstone's Bridge – Condition of Balance (Equation). Gr. C (Q. 1-2)	10.4 10.5		
		43	Application of Kirchhoff's laws to Wheatstone bridge - Balanced condition of Wheatstone's Bridge – Condition of Balance (Equation). Gr. A (Q. All) **Teachers Exam./ Doubt Clear/Revision for ch 10**	10.5		

Review

Detailed Topic Plan:

Chapter No: 11 Electromagnetism – Definition & Concept.
Force acting on a current carrying conductor placed in a uniform magnetic field, Fleming's Left Hand Rule
Faraday's Laws of Electromagnetic Induction (Statement only)
Lenz's Law (Statement)
Fleming's Right Hand Rule
Comparison between Fleming's Right Hand Rule and Fleming's, Left Hand Rule.

Sl No.	Week No.	Lecture No.	Topic to be Covered	Article No.	Date of Completion	Signature
1	9	44	Electromagnetism – Definition & Concept.	11.1		
2		45	Force acting on a current carrying conductor placed in a uniform magnetic field, Fleming's Left Hand Rule Gr. B (Q. 1-2)	11.2		
		46	Faraday's Laws of Electromagnetic Induction (Statement only) Gr. C (Q. 2)	11.3		
		47	Lenz's Law (Statement) Fleming's Right Hand Rule	11.4 11.5		
		48	Comparison between Fleming's Right Hand Rule and Fleming's Left Hand Rule Gr. A (Q. All) **Teachers Exam./ Doubt Clear/Revision for ch 11**	11.6		

Review

Detailed Topic Plan:

Chapter No: 12 LASER & laser beam (Concept and Definition)
Principle of LASER (Population Inversion & Optical Pumping)
Properties & Applications of LASER
Wireless Transmission – Ground Waves, Sky Waves, Space Waves
(Concept & Definition)

Sl No.	Week No.	Lecture No.	Topic to be Covered	Article No.	Date of Completion	Signature
1	10	49	LASER & laser beam (Concept and Definition) Principle of LASER (Population Inversion & Optical Pumping) Gr. B (Q. 1-3)	12.1 12.2		
2		50	Properties & Applications of LASER Wireless Transmission – Ground Waves, Sky Waves, Space Waves (Concept & Definition) Gr. A (Q. All) **Teachers Exam./ Doubt Clear/Revision for ch 12**	12.3, 12.4		

10) Examination Schedule:

Sl No.	Particulars of Test	Schedule	Type
1	Weekly Test (2^{nd} Week onwards)	Wednesday (4^{th} Sem.) & Thursday (6^{th} sem.)	10 Short Questions (02 Marks):
2	Internal Exam.-1	4^{th} Week	30 Marks (Long Questions)
3	Internal Exam.-2	8^{th} Week	30 Marks (Long Questions)

11) Assignment Collection / Evaluation:

Sl No.	Assignment No.	Content	Schedule
1	Assignment-1	Long Questions 7 Nos.(10 Marks) Short Questions 6 Nos. (5 Marks)	3^{rd} Week
2	Assignment-2	Long Questions 8 Nos.(10 Marks) Short Questions 6 Nos. (5 Marks)	6^{th} Week
3	Assignment-3	Long Questions 11 Nos.(10 Marks) Short Questions 8 Nos. (5 Marks)	9^{th} Week
4	Assignment-4	VST 100 Marks	$10^{th}/11^{th}$ Week

Signature of Faculty **Signature of Asst. HOD** **Signature of HOD**

Principal 08/04/2022

Nilachal Polytechnic

Estd. - 1997

Bhubaneswar

LESSON PLAN

1) **Semester:- 1st sem**
2) **Branch:- All**
3) **Subject:- Engg. Mathematics-I**
4) **Name of Faculty:- P.Behera & S.Rout**
5) **Text Book to be followed by Student/Faculty:-**

Book-1:- Sctevt Course Material Engg. Math-I

Book-2:- Elements of mathematics-Vol. 1 & 2

(Odisha state bureau of text book)

Book-3:- Text book of Engineering Mathematics-I(Part-I)

THEORY

		PLAN			PROGRESS	
Week No.	**Lecture No.**	**Chapter No. & Name**	**Article No.**	**Topic(As per Syllabus)**	**Article Actually Covered**	**Sign. Of Faculty with Date**
1	1	Chapter -1 (Matrices & Determinants)	1(a)	Definition of Matrices, types of Matrices		
	2		1(b)	Algebra of Matrices (Q.1 -9)		
	3					
	4		1(c)	Determinant(S. Q.1 -10)		
	5					
	6		1(e)	Inverse of a matrix (2nd and 3rd order)(Q.11 -14) (S. Q.11 -13)		
2	7	Chapter -1 (Matrices & Determinants)	1(g)	Solution of equations by matrix inverse method (2nd and 3rd) (Q.1 -14)		
	8					
	9					
	10		1(d)	Properties of determinant & problems(Q.1 -9, 15)		
	11					
	12					
3	13	Chapter -1 (Matrices & Determinants)	1(f),	Cramer's Rule(Q.17 -20)		
	14		1(f),1001	Cramer's Rule (Problems) (Q.21 -28)		
	15					
	16	Chapter -2 (Trigonometry)	2(a)	Trigonometrical ratios (S. Q.1 -6)		
	17					
	18		2(b)	Compound angles(only formulae) (Q.1 -8)		
	19	Chapter -2 (Trigonometry)	2(b)	Multiple and submultiples angles (only formulae) (S Q.9 -18)		
	20		2(b)	Multiple and		

4	21			submultiples angles (only formulae) (LQ.- 1, 2, 3, 5, 9, 10, 15, 22, 24 - 36) Inverse circular functions and its properties (No derivation)		
	22					
	23					
	24					
5	25	Chapter -2 (Trigonometry)				
	26		2(c)	Inverse circular function(problems(S.Q.-1-11),(L Q.- 1-10)		
	27					
	28					
	29		2(c) , 1002	Inverse circular function(problems L Q.-11-22)		
	30					
6	31	Chapter -3 (Co-Ordinate Geometry in two dimensions)	3(a), 3(b)	Introduction of Geometry in 2 dimension , Distance formulae, Division formulae, area of a triangle (only formulae, no derivation) (SQ.1 -9)		
	32		3(a), 3(b)	Introduction of Geometry in 2D , Distance formulae, Division formulae, area of triangle (only formulae, no derivation) (LQ.1 -3)		
	33		3(c)	Slope of a line angle between two lines Condition of perpendicularity and parallelism(SQ.10 -17), (LQ.4 -9)		
	34					
	35		3(d), 3(e)	Different forms of Straight lines (only formulae) (i) One point form (ii) two point form (iii) Slope form, (iv) Intercept form, (v) Perpendicular form. Equation of a line passing through a point and (i) parallel to a line (LQ.1 -4)		
	36					
7	37	Chapter -3 (Co-Ordinate Geometry in two dimensions)				
	38		3(e)	Equation of a line passing through a point (ii) Perpendicular to a line. (LQ.5-9)		
	39		3(f), 3(g)	Equation of a line passing through the intersection to two lines,Distance of a point from a line (LQ.10 -15)		
	40		3(g),1003	Distance of a point from a line (LQ.15 -21)		
	41		4(a)-i	Equation of circle, Centre radius form, (SQ.1 -5, 9-20)		

	42		4(a)-ii	General Equation of a circle, (LQ.7-14)		
8	**43**	Chapter -4 (Circle)				
	44		4(a)-iii	End points of diameter form (LQ.1 -6)		
	45		1004	Problems (LQ.15-21)		
	46	Chapter -5 (Co-ordinate Geometry in three dimensions)	5(a)	Distance formulae, section formulae, direction ratio, direction cosine, angle between two lines(SQ.1 -11) , (LQ.-3-5)		
	47					
	48					
9	**49**	Chapter -5 (Co-ordinate Geometry in three dimensions)	5(a)	Condition of parallelism and perpendicularity		
	50		5(b)-i	Equation of a plane(i) General form, (LQ.1 -5)		
	51		5(b)-ii	Angle between two planes, perpendicular distance of a point from a plane, (LQ.1 0-15)		
	52		5(b)-i	equation of a plane passing through a point and (i) parallel to a plane, (ii) perpendicular to a plane (LQ.8, 17, 18)		
	53					
	54		5(b) –ii) ,1005	equation of a plane passing through a point and (i) parallel to a plane, (ii) perpendicular to a plane(LQ.6,7, 9, 16)		
10	**55**	Chapter -5 (Co-ordinate Geometry in three dimensions)				
	56	Chapter -6 (Sphere)	6(a)-i	Equation of a Sphere-Center radius form (SQ.1 -5)		
	57		6(a)-ii	Equation of a Sphere-General form (LQ.1 -4)		
	58					
	59		6(a)-iii	Equation of a Sphere, two end points of a diameter from (only formulae (LQ.5 -9)		
	60		1006	Problems (LQ.1 0-11)		

Faculty **HOD** **Principal**

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ଭୁବନେଶ୍ୱର

TEACHING-CUM-LESSON PLAN

1) **Subject Code:Th-3**
2) **Subject Title: Engg. Mathematics-II**
3) **Semester:2nd**
4) **Branch: All**
5) **No. of Classes / Week: 06**
6) **Pre Requisite for the Subject: NIL / YES, If YES, give details: Nil**
7) **Text Book to be referred by students:**

Sl No.	Book	Author	Publication	Year (Edition)	Whether available in Library
1	SCT& VT MATERIAL Engg. Math-II		SCT& VT ,Odisha	2020	
II	Elements of Mathematics Vol- I & II		Odisha State Bureau of Text book,Odisha	2018	
III	Mathematics Part-I & II – Textbook for class XII		NCERT Publication	2017	

8) **Course Coverage Schedule:**

Sl No.	Week No.	Ch. No	No. of classes planed	Topic to be covered	Article From	Article To	Expected Date of Completion	Remark
i	1	1	06	Vector Algebra	1(a)	1(i)		
ii	2	1	04	Vector Algebra	1(j)	1001	11-04-2022	
		2	02	Limits & Continuity	2(a)	2(b)		
iii	3	2	06	Limits & Continuity	2(c)	2(e)		
iv	4	2	04	Limits & Continuity	2(f)	1002	23-04-2022	
		3	02	Derivatives	3(a)	3(b)		
v	5	3	06	Derivatives	3(c)	3(e)iii		
vi	6	3	06	Derivatives	3(e)iv	3(g)		
vii	7	3	01	Derivatives	1003	1003	19-05-2022	
		4	05	Integration	4(a)	4(d)		
viii	8	4	06	Integration	4(d)	4(e)		

ix	9	4	04	Integration	4(f)i	1004	28-05-2022	
		5	02	Differential Equation	5(a)	5(b)i		
x	10	5	06	Differential Equation	5(b)ii	1005	03-06-2022	
Total:60								

9) Detail Class wise Plan:

Detailed Topic Plan:

Chapter No: 01 **Chapter Name: Vector Algebra**

a) Introduction

b) Types of vectors (null vector, parallel vector , collinear vectors) (in component form).

c) Representation of vector .

d) Magnitude and direction of vectors.

e) Addition and subtraction of vectors.

f) Position vector .

g) Scalar product of two vectors.

h) Geometrical meaning of dot product

i) Angle between two vectors.

j) Scalar and vector projection of two vectors.

k) Vector product and geometrical meaning (Area of triangle and parallelogram)

Sl No.	Week No.	Lecture No.	Topic to be Covered	Article No.	Date of Completion	Signature
	1	1	Introduction, Types of vector	1(a),1(b)		
		2	Representation of a vector, Magnitude and direction of a vector	1(c) ,1(d)		
		3	Addition & Substation of vectors	1(e)		
		4	Position Vector	1(f)		
		5	Scalar or Dot product of two vector	1(g)		
		6	Geometrical meaning of dot product & Angle between two vectors.	1(h),1(i)		
	2	7	Scalar and vector projection of two vectors	1(j)		
		8	Vector or cross product of two vectors, geometrical meaning of cross product.	1(k)		
		9	Area of triangle and parallelogram.	1(k)		
		10	Problem solve from exercise	1001		
		Last Class	**Teachers Exam./ Doubt Clear/Revision:**			

VIEW:

Detailed Topic Plan:

Chapter No: 02 **Chapter Name: Limits & Continuity**

a) Definition of function, based on set theory.

b) Types of functions:- i) Constant function ii) Identity function iii) Absolute value function iv)The Greatest integer function v) Trigonometric function vi) Exponential function vii) Logarithmic function.

c) Introduction of limit.

d) Existence of limit.

e) Methods of evaluation of limit:-i) $\lim_{x\to a}\frac{x^n-a^n}{x-a}=na^{n-1}$ ii) $\lim_{x\to 0}\frac{a^x-1}{x}=\log a$ iii) $\lim_{x\to 0}\frac{e^x-1}{x}=1$

iv) $\lim_{x\to 0}(1+x)^{\frac{1}{x}}=e$ v) $\lim_{x\to\infty}\left(1+\frac{1}{x}\right)^x=e$ vi) $\lim_{x\to 0}\frac{\ln(1+x)}{x}=1$ vii) $\lim_{x\to 0}\frac{\sin x}{x}=1$

viii) $\lim_{x\to 0}\frac{\tan x}{x}=1$.

f) Definition of continuity of a function at a point and problems based on it.

Sl No.	Week No.	Lecture No.	Topic to be Covered	Article No.	Date of Completion	Signature
1	2	11	Definition of function based on set theory	2(a)		
2		12	Types of functions	2(b)		
3	3	13	Introduction to limit, Existence of limit	2(c), 2(d)		
4		14	Method of evaluation of limit, standard formula of limit	2(e)		
5		15	Method of evaluation of limit, standard formula of limit	2(e)		
6		16	Method of evaluation of limit, standard formula of limit	2(e)		
7		17	Method of evaluation of limit, standard formula of limit	2(e)		
8		18	Method of evaluation of limit, standard formula of limit	2(e)		
9	4	19	Definition of Continuity of a function at a point.	2(f)		
10		20	Definition of Continuity of a function at a point.	2(f)		
11		21	Definition of Continuity of a function at a point.	2(f)		
12		22	Problem from Exercise	1002		
		Last Class	**Teachers Exam./ Doubt Clear/Revision:**			

REVIEW:

Detailed Topic Plan:

Chapter No: 03 **Chapter Name: Derivatives**

a) Derivative of a function at a point .

b) Algebra of derivative.

c) Derivative of standard functions :- x^n , a^x , e^x , lnx , sinx, cosx ,secx, tanx, cotx, cosecx, $\sin^{-1}x$, $\cos^{-1}x$, $\tan^{-1}x$, $\csc^{-1}x$, $\sec^{-1}x$, $\cot^{-1}x$.

d) Derivative of composite function (Chain Rule) .

e) Methods of differentiation :-

i) Parametric function

ii) Implicit function

iii) Logarithmic function

iv) a function with respect to another function .

f) Applications of Derivative:- i) Successive Differentiation (up to second order)

ii) Partial Differentiation (function of two variables up to second order)

g) Problems based on above.

Sl No.	Week No.	Lecture No.	Topic to be Covered	Article No.	Date of Completion	Signature
1	4	23	Derivative of a function at a given point	3(a)		
2		24	Algebra of Derivative	3(b)		
3	5	25	Derivative of Standard Functions	3(c)		
4		26	Derivative of Standard Functions	3(c)		
5		27	Derivative of Composite function(Chain Rule)	3(d)		
6		28	Methods of differentiation of parametric function	3(e). i		
7		29	Methods of differentiation of Implicit function	3(e).ii		
8		30	Methods of differentiation of logarithmic function	(e).iii		
9	6	31	Methods of differentiation of a function w.r.t another function	3(e).iv		
10		32	Application of derivative: successive differentiation.	3(f).i		
11		33	Application of derivative: successive differentiation	3(f).i		
12		34	Partial differentiation(function of two variable up to second order)	3(f).ii		
13		35	Partial differentiation(function of two variable up to second order)	3(f).ii		
14		36	Problem based on above	3(g)		
15	7	37	Problem from Exercise	1003		
		Last Class	Teachers Exam./ Doubt Clear/Revision:			

REVIEW:

Detailed Topic Plan:

Chapter No: 04 **Chapter Name: Integration**

a) Definition of integration as inverse of differentiation

b) Integrals of standard functions.

c) Methods of integration:- i) Integration by substitution ii) Integration by parts.

d) Integration of the following forms:-$i)\int \frac{dx}{a^2+x^2}$ ii) $\int \frac{dx}{a^2-x^2}$ iii) $\int \frac{dx}{x^2-a^2}$ iv) $\int \frac{dx}{\sqrt{a^2+x^2}}$

v) $\int \frac{dx}{\sqrt{a^2-x^2}}$ vi) $\int \frac{dx}{\sqrt{x^2-a^2}}$ vii) $\int \sqrt{a^2+x^2}\,dx$ viii) $\int \sqrt{a^2-x^2}\,dx$ ix) $\int \sqrt{x^2-a^2}\,dx$

x) $\int \frac{dx}{x\sqrt{x^2-a^2}}$.

e) Definite integral, properties of definite integrals:-

i) $\int_0^a f(x)\,dx = \int_0^a f(a-x)\,dx$ ii) $\int_a^b f(x)dx = -\int_b^a f(x)dx$

iii) $\int_a^c f(x)dx = \int_a^b f(x)dx + \int_b^c f(x)dx \;, a < b < c$

iv) $\int_{-a}^{a} f(x)dx = \begin{cases} 0 & , f(x) = odd \\ 2\int_0^a f(x)dx & , f(x) = even \end{cases}$

f) Application of integration :-i) Area enclosed by a curve and X – axis

ii) Area of a circle with centre at origin.

Sl No.	Week No.	Lecture No.	Topic to be Covered	Article No.	Date of Completion	Signature
1	7	38	Definition of integration as inverse of differentiation. Integral of some standard function	4(a),4(b)		
2		39	Substation method of integration	4(c).i		
3		40	By parts methods of integration	4(c) .ii		
4		41	Integration of standard forms	4(d)		
5		42	Integration of standard forms	4(d)		
6	8	43	Integration of standard forms	4(d)		
7		44	Integration of standard forms	4(d)		
8		45	Properties of definite integration	4(e)		
9		46	Properties of definite integration	4(e)		
10		47	Properties of definite integration	4(e)		
11		48	Properties of definite integration	4(e)		
12	9	49	Application of integration Area	4(f).i		

			enclosed by a curve with x-axis			
13		50	Area of a circle with center at origin.	4(f).ii		
14		51	Area of a circle with center at origin.	4(f).ii		
15		52	Problem from Exercise	1004		
		Last Class	**Teachers Exam./ Doubt Clear/Revision:**			

REVIEW:

Detailed Topic Plan:

Chapter No: 05 **Chapter Name: Differential Equation**

a) Order and degree of a differential equation.

b) Solution of differential equation:-

i) 1st order and 1st degree equation by the method of separation of variables.

ii) Linear equation $\frac{dy}{dx} + Py = Q$, where P,Q are functions of x.

Sl No.	Week No.	Lecture No.	Topic to be Covered	Article No.	Date of Completion	Signature
1	9	53	Order and degree of D.E	5(a)		
2		54	Solution of 1st order and 1st degree D.E Variable separable method	5(b).i		
3	10	55	Solution of 1st order and 1st degree D.E Variable separable method	5(b).i		
4		56	Solution of Linear differential Equation	5(b).ii		
5		57	Solution of Linear differential Equation	5(b).ii		
6		58	Solution of Linear differential Equation	5(b).ii		
7		59	Solution of Linear differential Equation	5(b).ii		
8		60	Problem from Exercise	1005		
		Last Class	**Teachers Exam./ Doubt Clear/Revision:**			

10) Examination Schedule:

Sl No.	Particulars of Test	Schedule	Type
1	Weekly Test (2nd Week onwards)	Wednesday (4th Sem.) & Thursday (6th sem.)	10 Short Questions (02 Marks):
2	Internal Exam.-1	4th Week	30 Marks (Long Questions)
3	Internal Exam.-2	8th Week	30 Marks (Long Questions)

Assignment Collection / Evaluation:

No.	Assignment No.	Content	Schedule
1	Assignment-1	Long Questions 7 Nos.(10 Marks) Short Questions 6 Nos. (5 Marks)	3rd Week
2	Assignment-2	Long Questions 8 Nos.(10 Marks) Short Questions 6 Nos. (5 Marks)	6th Week
3	Assignment-3	Long Questions 11 Nos.(10 Marks) Short Questions 8 Nos. (5 Marks)	9th Week
4	Assignment-4	VST 100 Marks	10th/11th Week

25/03/22 25/03/22 25/03/22

Signature of Faculty **Signature of Asst. HOD** **Signature of HOD**

Principal

TEACHING-CUM-LESSON PLAN

1) **Subject Code: TH-4**

2) **Subject Title: Engg. Mechanics**

3) **Semester: 2nd**

4) **Branch: Mechanical Engg.**

5) **No. of Classes / Week: 6/week**

6) **Pre Requisite for the Subject: NIL / YES, If YES, give details: YES**

- Compute the force, moment & their application through solving of simple problems on coplanar forces.
- Understand the concept of equilibrium of rigid bodies.
- Know the existence of friction & its applications through solution of problems on above.
- Locate the C.G. & find M.I. of different geometrical figures.
- Know the application of simple lifting machines. 6. Understand the principles of dynamics.

7) **Text Book to be referred by students:**

Sl No.	Book	Author	Publication	Year (Edition)	Whether available in Library
i	Engineering Mechanics	R.S. Khurmi	S.Chand		YES

8) **Course Coverage Schedule:**

Sl No.	Week No.	Ch. No	No. of classes planed	Topic to be covered	Article From	Article To	Expected Date of Completion	Remark
i	1	1	06	Fundamentals of engineering mechanics	1.1	1.4.2		
ii	2	1	03		1.4.3	1.5,1001	15.04.22	
		2	03	Equilibrium	2.1	2.2,1002	19.04.22	
iii	3	3	06	Friction	3.1	3.3,1003	26.04.22	
iv	4	4	06	Centroid and moment of inertia	4.1	4.1		
v	5	4	06		4.1	4.2		
vi	6	4	05		4.2	4.2,1004	14.05.22	
		5	01	Simple machines	5.1	6.1		
vii	7	5	06		5.2	5.2		
viii	8	5	03		5.2	5.3,1005	27.05.22	
		6	03	Dynamics	6.1	6.1		
ix	9	6	03		6.1	6.3		
x	10	6	03		6.3	6.3,1006	13.05.22	

9) **Detail Class wise Plan**

Detailed Topic Plan:

Chapter No: 01 Chapter Name: FUNDAMENTALS OF ENGINEERING MECHANICS

1.1 Engineering mechanics divisions of engineering mechanics, statics, dynamics, fundamental units, derived units, systems of units, fundamental SI units, some S.I derived units, mass and weight, difference between mass and weight, rigid body and elastic body, scalar and vector. 1.2 Force - force system, units of force, effect of force, characteristics of a force, principle of physical independence of forces, system of forces, coplanar forces, collinear forces, concurrent forces, collinear forces, concurrent forces, coplanar concurrent forces, coplanar non-concurrent forces, non-coplanar concurrent forces, non-coplanar non-concurrent forces, pull and push, action and reaction, free body diagram, external force and internal force, tension, representation of a force, denoting a force by bow"s notation, principle of transmissibility of forces, principle of superposition of forces. 1.3 Resolution of a force, resolution of a given force into two components in two assigned direction, determination of resolved parts of a force, significance of the resolved parts of a force 1.4 Resultant and component, equilibriant, equal forces, methods for finding the resultant force, 1.4.1Analytical method for resultant force, parallelogram law of forces, determination of the resultant of two concurrent forces with the help of law of parallelogram of forces, difference between components and resolved parts, analytical method of determining the resultant of any number of co-planar concurrent forces. 1.4.2 Graphical method - triangle law of forces, polygon law of forces, graphical conditions of equilibrium of a system of co-planar concurrent forces, space diagram, vector diagram and bow"s notation. Classification of parallel forces - like parallel forces, unlike parallel forces, 1.4.3 Analytical method of determination of the resultant of a system of like and unlike parallel forces , analytical method of determining the point of application of the resultant of a system of like and unlike non concurrent parallel forces, graphical method for the resultant of parallel forces. 1.5 Moment of a force - moment of a force about an axis types of moments - clockwise moment, anticlockwise moment , positive moment and negative moment, algebraic sum of the moments, geometrical representation of the moment of the force about a point, Varignon"s theorem, principle of moments. Couple - arm of a couple, moment of a couple. Classification of couples – clockwise couple, anticlockwise couple, units of couple, characteristics of a couple, exercises

Sl No.	Week No.	Lecture No.	Topic to be Covered	Article No.	Date of Completion	Signature
1	1	1	Fundamentals. Definitions of Mechanics, Statics, Dynamics, Rigid Bodies, Force Force System. Definition, Classification of force system according to plane & line of action. Characteristics of Force & effect of Force.	1.1 1.2		
2		2	Principles of Transmissibility & Principles of Superposition. Action & Reaction Forces & concept of Free Body Diagram.	1.2		
3		3	Resolution of a Force. Definition, Method of Resolution, Types of Component forces, Perpendicular components & non-perpendicular components.	1.3		
4		4	Composition of Forces. Definition, Resultant Force, Method of composition of forces	1.4		
5		5	Analytical Method such as Law of Parallelogram of forces & method of resolution.	1.4.1		
6		6	Graphical Method. Introduction, Space diagram, Vector diagram, Polygon law of forces.	1.4.2		

	2	7	Resultant of concurrent, non-concurrent & parallel force system by Analytical & Graphical Method.	1.4.3		
8		8	Moment of Force. Definition, Geometrical meaning of moment of a force, measurement of moment of a force & its S.I units. Classification of moments according to direction of rotation, sign convention, Law of moments	1.5		
9		9	Varignon's Theorem, Couple – Definition, S.I. units, measurement of couple, properties of couple. **Teachers Exam./ Doubt Clear/Revision:**	1.5 1001		

Review:

Detailed Topic Plan:

Chapter No: 02 Chapter Name: EQUILLIBRIUM

2.1 Definition, principles of equilibrium, analytical conditions of equilibrium of a co-planar system of concurrent forces, analytical conditions of equilibrium of a system of coplanar non-concurrent forces, types of equilibrium - stable equilibrium, unstable equilibrium, neutral equilibrium, free body diagram, method of equilibrium of coplanar forces - analytical method, graphical method,

2.2 Lami"s theorem, graphical method for the equilibrium of coplanar forces, converse of the law of triangle of forces, converse of the law of polygon of forces, exercises

Sl No.	Week No.	Lecture No.	Topic to be Covered	Article No.	Date of Completion	Signature
1	2	1	Definition, condition of equilibrium, Analytical conditions of equilibrium for concurrent, non-concurrent.	2.1		
2		2	Graphical conditions of Equilibrium for concurrent, non-concurrent & Free Body Diagram.	2.2		
3		3	Lamia's Theorem – Statement, Derivation **Teachers Exam./ Doubt Clear/Revision:**	2.2 1002		

Review:

Detailed Topic Plan:

Chapter No:03 Chapter Name: FRICTION

3.1 Frictional force, static, dynamic & limiting friction, normal reaction, angle of repose, coefficient of friction, laws of static friction, laws of kinetic or dynamic friction, advantages of friction , disadvantages of friction. 3.2 Equilibrium of bodies on level plane, equilibrium of a body on a rough horizontal plane, equilibrium of a body on a rough inclined plane - equilibrium of a body on a rough inclined plane subjected to a force acting along the inclined plane, equilibrium of a body on a rough inclined plane subjected to a force acting horizontally, equilibrium of a body on a rough inclined plane subjected to a

force acting at some angle with the inclined plane,
3.3 Applications of friction - ladder friction, wedge friction, graphical method, analytical method, exercises

Sl No.	Week No.	Lecture No.	Topic to be Covered	Article No.	Date of Completion	Signature
1	3	1	Definition of friction, Frictional forces, Limiting frictional force, Coefficient of Friction.	3.1		
2		2	Angle of Friction & Repose, Laws of Friction, Advantages & Disadvantages of Friction.	3.1		
3		3	Equilibrium of bodies on level plane – Force applied on horizontal	3.2		
4		4	Equilibrium of bodies on level plane – inclined plane (up &down).	3.2		
		5	Ladder Friction and solve numerical	3.3		
		6	Wedge Friction solve numerical. **Teachers Exam./ Doubt Clear/Revision:**	3.3 1003		

Review:

Detailed Topic Plan:

Chapter No: 04 Chapter Name: CENTROID AND MOMENT OF INERTIA
4.1 **Centroid** – Introduction, Centre of gravity (C.G), centroid definition, methods for centre of gravity, centre of gravity by moments, centre of gravity by moments, axis of reference, centre of gravity of plane figures, centroid of various cross sections, centroids of solid bodies, centre of gravity of symmetrical sections, centre of gravity of unsymmetrical sections 4.2 **Moment of inertia** - Introduction, calculation of moment of inertia by integration method, theorem of perpendicular axis, theorem of parallel axis, moment of inertia of a rectangular section, moment of inertia of a hollow rectangular section, moment of inertia of a circular section, moment of inertia of a hollow circular section, moment of inertia of a composite section, moment of inertia of a triangular section, moment of inertia of some geometric shapes, exercises

Sl No.	Week No.	Lecture No.	Topic to be Covered	Article No.	Date of Completion	Signature
1	4	1	Centroid – Definition, Moment of an area about an axis, centroid of geometrical figures such as squares, rectangles, triangles, circles, semicircles & quarter circles, centroid of composite figures.	4.1		
2		2	Numerical on CG	4.1		
3		3	Numerical on CG	4.1		
4		4	Numerical on CG	4.1		
		5	Numerical on CG	4.1		
		6	Numerical on CG	4.1		
	5	7	Numerical on CG	4.1		
		8	Moment of Inertia – Definition, Derivation	4.2		
5		9	Moment of Inertia – Parallel axis axis Theorems.	4.2		
6		10	Moment of Inertia - Perpendicular axis	4.2		

			Theorems. M.I. of plane lamina & different engineering sections.			
7		11	M.I. of plane lamina & different engineering sections.	4.2		
8		12	Numerical on MI	4.2		
9	6	13	Numerical on MI	4.2		
10		14	Numerical on MI	4.2		
11		15	Numerical on MI	4.2		
12		16	Numerical on MI	4.2		
13		17	Numerical on MI **Teachers Exam./ Doubt Clear/Revision:**	4.2 1004		

Review:

Detailed Topic Plan:

Chapter No: 05 SIMPLE MACHINES

5.1 Introduction simple machine, compound machine, simple gear drive, simple gear train, velocity ratio of a simple gear train, velocity ratio, compound gear train, terminology in simple lifting machine- (M.A, V.R. &Efficiency and relation between them), law of machine, maximum mechanical advantage (max. M.A.), maximum efficiency, reversible machine, condition for reversible machine, irreversible machine / non-reversible machine / self-locking machine, condition for irreversible machine, friction in machines in terms of effort and load, 5.2 Study of simple machines, simple wheel and axle, single purchase crab winch, double purchase crab winch, worm and worm wheel, screw jack, 5.3 Hoisting machine - pulley and sheave block, chain hoists, cranes, mobile crane, truck mounted crane, tower crane, overhead crane, derrick cranes, exercises

Sl No.	Week No.	Lecture No.	Topic to be Covered	Article No.	Date of Completion	Signature
1	6	1	Definition of simple machine, define M A, V.R. & Efficiency & State the relation between them	5.1		
2	7	2	Velocity ratio of simple and compound gear train, explain simple & compound lifting machine	5.1		
		3	Velocity ratio of simple and compound gear train, explain simple & compound lifting machine	5.1		
3		4	Velocity ratio of simple and compound gear train, explain simple & compound lifting machine	5.1		
4		5	State Law of Machine, Reversibility of Machine, Self Locking Machine.	5.1		
5		6	Discuss problems on Law of Machine	5.1		
6		7	Study of simple machines – simple axle & wheel, single purchase crab Winch	5.2		
7	8	8	Study of simple machines – Double purchase crab winch, Worm & Worm Wheel, Screw Jack.	5.2		
8		9	Discuss problems on Study of simple machines	5.2		
9		10	Types of hoisting machine like derricks etc, Their use and working principle.	5.3		

			(No problems). **Teachers Exam./ Doubt Clear/Revision:**	**1005**		

Review:

Detailed Topic Plan:

Chapter No: 06 Chapter Name: DYNAMICS

6.1 Kinematics and kinetics, principles of dynamics- Newton"s laws of motion (first law of motion, second law of motion, third law of motion). Motion of particle acted upon by a constant force, equations of motion, D" Alembert"s principle, recoil of gun, 6.2 Work, power, energy - potential energy, kinetic energy. 6.3 Momentum and Impulse, law of conservation of linear momentum, law of conservation of energy, collision of elastic bodies, Newton"s law of collision of elastic bodies and coefficient of restitution, direct collision of two bodies, direct impact of a body with a fixed plane, exercises

Sl No.	Week No.	Lecture No.	Topic to be Covered	Article No.	Date of Completion	Signature
1	8	1	Kinematics & Kinetics, Principles of Dynamics, Newton's Laws of Motion	6.1		
2		2	Motion of Particle acted upon by a constant force,	6.1		
3		3	Equations of motion, De-Alembert's Principle	6.1		
4	9	4	Discuss problems on De-Alembert's Principle	6.1		
5		5	Work, Power, Energy & its Engineering Applications	6.2		
6		6	Discuss problems on Work, Power, Energy	6.2		
7		7	Kinetic & Potential energy & its application.	6.2		
8		8	Discuss problems on Kinetic & Potential energy	6.2		
9		9	Momentum & impulse, conservation of energy	6.3		
10	10	10	conservation of linear momentum	6.3		
11		11	collision of elastic bodies	6.3		
12		12	Coefficient of Restitution	6.3		
13		13	Discuss problems on Momentum & impulse	6.3		
14		14	Discuss problems on Momentum & impulse	6.3		
15		15	Discuss problems on conservation of linear momentum **Teachers Exam./ Doubt Clear/Revision:**	6.3 **1006**		

eview:

10) Examination Schedule:

Sl No.	Particulars of Test	Schedule	Type
1	Weekly Test (2nd Week onwards)	Wednesday (4th Sem.) & Thursday (6th sem.)	10 Short Questions (02 Marks):
2	Internal Exam.-1	4th Week	30 Marks (Long Questions)
3	Internal Exam.-2	8th Week	30 Marks (Long Questions)

11) Assignment Collection/ Evaluation:

Sl No.	Assignment No.	Content	Schedule
1	Assignment-1	Long Questions 7 Nos.(10 Marks) Short Questions 6 Nos. (5 Marks)	3rd Week
2	Assignment-2	Long Questions 8 Nos.(10 Marks) Short Questions 6 Nos. (5 Marks)	6th Week
3	Assignment-3	Long Questions 11 Nos.(10 Marks) Short Questions 8 Nos. (5 Marks)	9th Week
4	Assignment-4	VST 100 Marks	10th/11th Week

Dalai S. Sarala
Signature of Faculty

Signature of Asst. HOD

Signature of HOD

Principal
08/04/2022

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