



Sri Indu College of Engineering & Technology :: Sheriguda (V), R.R.Dist

Department of Electronics & Communication engineering

Course/Subject Name : ENGINEERING CHEMISTRY
Prepared by : A.SHIVA KUMAR
Dept : H&S
Academic Year : 2022-2023
Class : ECE
Semester : II SEM

S.NO	NAME OF FILE	(Y/N)
1	Institute V/M	Y
2	Department V / M /PEO	Y
3	POs /PSOs	Y
4	Course Syllabus with Structure	Y
5	Course Outcomes (CO)	Y
6	Mapping CO with PO/PSO; Course with PO/PSO with Justification	Y
7	Academic Calendar	Y
8	Time table - highlighting your course periods including tutorial	Y
9	Lesson plan with number of hours/periods, TA/TM, Text/Reference book	Y
10	Gap within the syllabus - mapping to CO, PO/PSO	
11	Gaps beyond the syllabus - Mapping to PO/PSO	
12	Gaps addressed by a resource person - document	
13	Gaps addressed by any other teaching aid/methodology	
14	Web references	Y
15	Lecture notes	Y
16	List of Power point presentations / Videos	Y
17	CD with PPT/Videos	Y
18	University Question papers	Y
19	Internal Question papers, Key with CO and BT	Y
20	Assignment Question papers mapped with CO and BT	Y
21	Scheme of evaluation with CO and BT mapping	Y
22	Tutorial topics with evidence	Y
23	Result Analysis to identify weak and advanced learners - 3 times in a semester	Y
24	Result Analysis at the end of the course	Y
25	Remedial class for weak students - schedule and evidences	Y

26	Advance Learners- Engagement documentation	Y
27	Course Assessment (Plan & Execution)	Y
28	CO, PO/PSO attainment sheets	Y
29	Observation for not attaining CO or for improvement	Y
30	Plan of action to improve CO attainment next time	Y
31	Attendance register (Theory/Tutorial/Remedial) - Teacher/Course delivery record; Continuous evaluation	Y
32	Course file (Digital form)	Y

HOD



Sri Indu College of Engineering & Technology

Sheriguda (V), R.R.Dist

INSTITUTION VISION

To be a premier Institution in Engineering & Technology and Management with competency, values and social consciousness.

INSTITUTION MISSION

- IM₁** Provide high quality academic programs, training activities and research facilities.
- IM₂** Promote continuous Industry-Institute interaction for employability, Entrepreneurship, leadership and research aptitude among stakeholders.
- IM₃** Contribute to the economical and technological development of the region, state and nation.

PRINCIPAL



Sri Indu College of Engineering & Technology :: Sheriguda (V), R.R.Dist

Department of Electronics and Communication Engineering

DEPARTMENT VISION

To be a centre of excellence in Electronics and Communication Engineering Education to produce professionals for ever-growing needs of society.

DEPARTMENT MISSION

The Department has following Missions:

DM1 : To promote and facilitate student- centric learning.

DM2 : To involve in activities that enable overall development of stakeholders

DM3 : To provide holistic environment with state-of-art facilities for students to develop solutions for various social needs.

DM4 : Organize trainings in embedded systems with Industry interaction.

Head of the Department



Sri Indu College of Engineering & Technology :: Sheriguda (V), R.R.Dist

Department of Electronics and Communication Engineering

Program Educational Objectives (PEOs)

PEO1	Accomplish technical proficiency for the efficacious ECE Professional.
PEO2	Pursue higher studies with emphasizing design, test and development of the systems to meet the industry and societal needs
PEO3	Become entrepreneur by practicing ethics, professional integrity and leadership qualities.

Head of the Department



PROGRAM OUTCOMES (POs) & PROGRAM SPECIFIC OUTCOMES (PSOs)

Program Outcomes	
PO1	Engineering Knowledge: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.
PO2	Problem Analysis: Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
PO3	Design / Development of Solutions: Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.
PO4	Conduct investigations of complex problems: Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.
PO5	Modern tool usage: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.
PO6	The engineer and society: Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.
PO7	Environment and sustainability: Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.
PO8	Ethics: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
PO9	Individual and team work: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
PO10	Communication: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.
PO11	Project management and finance: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.
PO12	Life-long learning: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

Program Specific Outcomes	
PSO 1	To manure and empower the SICET-ECE students strong in practical, technical and research domains in the areas of Signal/ Image processing. VLSI and wireless Communication.
PSO 2	To design and develop a prototype system that will incorporate user requirements using modern devices and emerging technology for industry automations.
PSO 3	To make the SICET-ECE students as successful industry ready engineers by imparting essential interpersonal skills and wide spread exposure on multi-disciplinary technologies.

Head of the Department



Course Syllabus with Structure

BR22 – B.Tech. - Electronics & Communication Engineering

SRI INDU COLLEGE OF ENGINEERING & TECHNOLOGY

(An Autonomous Institution under UGC, New Delhi)

B.Tech. - I Year – II Semester

L T P C
3 1 0 4

(R22CHE1112) ENGINEERING CHEMISTRY

Course Objectives:

1. To bring adaptability to new developments in Engineering Chemistry and to acquire the skills required to become a perfect engineer.
2. To include the importance of water in industrial usage, fundamental aspects of battery chemistry, significance of corrosion its control to protect the structures.
3. To imbibe the basic concepts of petroleum and its products.
4. To acquire required knowledge about engineering materials like cement, smart materials and Lubricants.

Course Outcomes: After learning the contents of this paper the student must be able to

1. Acquire the basic knowledge of electrochemical procedures related to corrosion and its control.
2. Understand the basic properties of water and its usage in domestic and industrial purposes.
3. Learn the fundamentals and general properties of polymers and other engineering materials.
4. Predict potential applications of chemistry and practical utility in order to become good engineers and entrepreneurs.
5. Understand the synthesis of Synthetic petrol.

UNIT - I: Water and its treatment:

Introduction to hardness of water – Estimation of hardness of water by complexometric method and related numerical problems. Potable water and its specifications - Steps involved in the treatment of potable water - Disinfection of potable water by chlorination and break - point chlorination. Defluoridation- Determination of F⁻ ion by ion- selective electrode method. Boiler troubles: Sludges, Scales and Caustic embrittlement. Internal treatment of Boiler feed water - Calgon conditioning - Phosphate conditioning - Colloidal conditioning, External treatment methods - Softening of water by ion- exchange processes. Desalination of water – Reverse osmosis.

UNIT – II Battery Chemistry & Corrosion

Introduction - Classification of batteries- primary, secondary and reserve batteries with examples. Basic requirements for commercial batteries. Construction, working and applications of: Zn-air and Lithium ion battery, Applications of Li-ion battery to electrical vehicles. Fuel Cells- Differences between battery and a fuel cell, Construction and applications of Methanol Oxygen fuel cell and Solid oxide fuel cell. Solar cells - Introduction and applications of Solar cells.

Corrosion: Causes and effects of corrosion – theories of chemical and electrochemical corrosion – mechanism of electrochemical corrosion, Types of corrosion: Galvanic, water-line and pitting corrosion. Factors affecting rate of corrosion, Corrosion control methods- Cathodic protection – Sacrificial anode and impressed current methods.

UNIT - III: Polymeric materials:

Definition – Classification of polymers with examples – Types of polymerization – addition (free radical addition) and condensation polymerization with examples – Nylon 6:6, Terylene

Plastics: Definition and characteristics- thermoplastic and thermosetting plastics, Preparation, Properties and engineering applications of PVC and Bakelite, Teflon, Fiber reinforced plastics (FRP). Rubbers: Natural rubber and its vulcanization.

Elastomers: Characteristics –preparation – properties and applications of Buna-S, Butyl and Thiokol rubber.

Conducting polymers: Characteristics and Classification with examples-mechanism of conduction in trans-polyacetylene and applications of conducting polymers.

Biodegradable polymers: Concept and advantages - Polylactic acid and poly vinyl alcohol and their applications.

UNIT - IV: Energy Sources:

Introduction, Calorific value of fuel – HCV, LCV- Dulong's formula. Classification- solid fuels: coal – analysis of coal – proximate and ultimate analysis and their significance. Liquid fuels – petroleum and its refining, cracking types – moving bed catalytic cracking. Knocking – octane and cetane rating, synthetic petrol - Fischer-Tropsch's process; Gaseous fuels – composition and uses of natural gas, LPG and CNG, Biodiesel – Transesterification, advantages.

UNIT - V: Engineering Materials:

Cement: Portland cement, its composition, setting and hardening.

Smart materials and their engineering applications

Shape memory materials- Poly L- Lactic acid. Thermoresponse materials- Polyacryl amides, Poly vinyl amides

Lubricants: Classification of lubricants with examples-characteristics of a good lubricants - mechanism of lubrication (thick film, thin film and extreme pressure)- properties of lubricants: viscosity, cloud point, pour point, flash point and fire point.

TEXT BOOKS:

1. Engineering Chemistry by P.C. Jain and M. Jain, Dhanpatrai Publishing Company, 2010
2. Engineering Chemistry by Rama Devi, Venkata Ramana Reddy and Rath, Cengage learning, 2016
3. A text book of Engineering Chemistry by M. Thirumala Chary, E. Laxminarayana and K. Shashikala, Pearson Publications, 2021.
4. Textbook of Engineering Chemistry by Jaya Shree Anireddy, Wiley Publications.

REFERENCE BOOKS:

1. Engineering Chemistry by Shikha Agarwal, Cambridge University Press, Delhi (2015)
2. Engineering Chemistry by Shashi Chawla, Dhanpatrai and Company (P) Ltd. Delhi (2011)



Sri Indu College of Engineering & Technology :: Sheriguda (V), R.R.Dist

Department of Electronic and Communication Engineering

COs Mapping with POs & PSOs

Academic Year: 2022-23

Class: I YEAR-II SEM.

Course Name: ENGINEERING CHEMISTRY (R22CHE1112)

At the end of the course, the student will be able to

Course Outcomes (COs)	
C122.1	Acquire the basic knowledge of electrochemical procedures related to corrosion and its control.
C122.2	Understand the basic properties of water and its usage in domestic and industrial purposes
C122.3	Learn the fundamentals and general properties of polymers and other engineering materials.
C122.4	Predict potential applications of chemistry and practical utility in order to become good engineers and entrepreneurs.
C122.5	Understand the synthesis of Synthetic petrol.

Mapping of Course Outcomes(CO's) with PO's AND PSO's

CO	PO'S												PSO'S		
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
C122.1	3	3	2	-	-	-	2	-	-	-	-	2	1	1	-
C122.2	3	3	3	-	-	-	3	-	-	-	-	2	1	2	-
C122.3	3	2	2	-	-	-	3	-	-	-	-	2	2	-	-
C122.4	3	3	2	-	-	-	2	-	-	-	-	2	1	1	-
C122.5	3	2	2	-	-	-	1	-	-	-	-	1	1	1	-
C122	3	2.6	2.2	-	-	-	2.2	-	-	-	-	1.8	1.2	1	-

3-High

2-Medium

1-Low

Faculty Incharge



Sri Indu College of Engineering & Technology :: Sheriguda (V), R.R.Dist

Department of Electronics and Communication Engineering



SRI INDU COLLEGE OF ENGINEERING & TECHNOLOGY
(An Autonomous Institution under UGC, New Delhi)
Recognized under 2(f) and 12(B) of UGC Act 1956
NBA Accredited, Approved by AICTE and Permanently affiliated to JNTUH
Sheriguda (V), Ibrahimpatnam, R.R.Dist, Hyderabad - 501 510

D4

BR-22

Lr.No.SICET/AUTO/DAE/BR-22/Academic Cal./655/2022

Date: 27.10.2022

I B.TECH. ACADEMIC CALENDAR
ACADEMIC YEAR : 2022-2023

Dr.G. SURESH,
Principal,

To,
All the HODs
Sir,

Sub: SICET (Autonomous) - Academic & Evaluation - Academic Calendar for **I B.Tech - I & II Semester**
for the academic year **2022-23** – Reg.

The approved Academic Calendar for **I B.Tech – I & II Semester** for the academic year **2022-23** is given below:

I SEMESTER

S.NO.	EVENT	PERIOD	DURATION
1.	Induction & Orientation Programme	03.11.2022	
2.	1 st Spell of Instructions for covering First Two and a half Units	03.11.2022 – 28.12.2022	8 Weeks
3.	I Mid Examinations	29.12.2022 – 04.01.2023	1 Week
4.	Submission of I Mid Term Examination Marks to the Autonomous Section on or before	10.01.2023	
5.	2 nd Spell of Instructions for covering Remaining Two and a half Units	05.01.2023 – 02.03.2023	8 Weeks
6.	II Mid Examinations	03.03.2023 – 09.03.2023	1 Week
7.	Preparation & Practical Examinations and Remedial Mid Test (RMT)	10.03.2023 – 16.03.2023	1 Week
8.	Submission of II Mid Term Examination Marks to the Autonomous Section on or before	16.03.2023	
9.	I Semester End Examinations	17.03.2023 – 01.04.2023	2 Weeks

Commencement of Class-Work for I B.Tech - II Semester 03.04.2023

II SEMESTER

S.NO.	EVENT	PERIOD	DURATION
1.	Commencement of II Sem Class Work	03.04.2023	
2.	1 st Spell of Instructions for covering First Two and a half Units (Including Summer Vacation)	03.04.2023 – 10.06.2023	10 Weeks
	Summer Vacation	15.05.2023 – 27.05.2023	2 Weeks
3.	I Mid Examinations	12.06.2023 – 17.06.2023	1 Week
4.	Submission of I Mid Term Examination Marks to the Autonomous Section on or before	23.06.2023	
5.	2 nd Spell of Instructions for covering Remaining Two and a half Units	19.06.2023 – 12.08.2023	8 Weeks
6.	II Mid Examinations	14.08.2023 – 19.08.2023	1 Week
7.	Preparation & Practical Examinations and Remedial Mid Test (RMT)	21.08.2023 – 26.08.2023	1 Week
8.	Submission of II Mid Term Examination Marks to the Autonomous Section on or before	26.08.2023	
9.	II Semester End Examinations	28.08.2023 – 09.09.2023	2 Weeks

Commencement of Class Work for II B.Tech – I Semester - 11.09.2023

ACE
CE
DEAN
PRINCIPAL

Copy to all the Heads of the Depts. and AO.

CONTROLLER OF EXAMINATIONS
Sri Indu College of Engineering & Technology
(An Autonomous Institution under JNTUH)
Sheriguda (V), Ibrahimpatnam, R.R. Dist-501510.

DIRECTOR
(Academic Audit)
Sri Indu College of Engineering & Technology
(An Autonomous Institution Under JNTUH)
Sheriguda, IBP, R.R. Dist-501510.

PRINCIPAL
Sri Indu College of Engineering & Technology
(An Autonomous Institution Under JNTUH)
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Department of Electronics and Communication Engineering

I.B.Tech II Semester ECE-A – TIME TABLE 2022-23

ROOM NO: F-101

w.e.f: 03-04-2023

Time/Day	9:40am-10:30am I	10:30-11:20am II	11:20-12:10pm III	L U N C H	12:40-01:45pm IV	1:45-2:50pm V	2:50-4:00pm VI
MON	EC	APPL	BEE		← EC LAB →		
TUE	EC	BEE	ODE&VC		← BEE LAB →		
WED	EC	EDC	ODE&VC		← EDC LAB →		
THU	←	CAEG	→		EDC	ODE&VC	EC
FRI	BEE	EDC	ODE&VC		← CAEG →		
SAT	ODE&VC	EC	EDC		← APP LAB →		

COURSE CODE	COURSE NAME	FACULTY NAME
R22MTH1211	Ordinary Differential Equations and Vector Calculus (ODE&VC)	M Leela
R22CHE1112	Engineering Chemistry (EC)	Dr S Ramu
R22MED1125	Computer Aided Engineering Graphics (CAEG)	B Santosh Kumar / L Ravi
R22EEE1114	Basic Electrical Engineering (BEE)	N Ashlesha
R22ECE1215	Electronic Devices and Circuits (EDC)	G Anitha
R22CSE1224	Applied Python Programming Laboratory (APP LAB)	D Mounika
R22CHE1127	Engineering Chemistry Laboratory (EC LAB)	Dr S Ramu
R22EEE1227	Basic Electrical Engineering Laboratory (BEE LAB)	N Ashlesha
R22ECE1229	Electronic Devices and Circuits Laboratory (EDC LAB)	G Anitha/P Manasa/N Prathibha
CLASS COORDINATOR: Ch Ashok Kumar		TIME TABLE INCHARGE: M Leela


Head of the Department


Principal

I.B.Tech II Semester ECE-B - TIME TABLE 2022-23

ROOM NO: F-102

w.e.f: 03-04-2023

Time Day	9:40am-10:30am I	10:30-11:20am II	11:20-12:10pm III	L U N C H	12:40-01:45pm IV	1:45-2:50pm V	2:50-4:00pm VI
MON	←	EDC LAB	→		EC	APPL	ODE&VC
TUE	ODE&VC	EDC	EC		← CAEG →		
WED	←	CAEG	→		ODE&VC	BEE	BEE
THU	←	BEE LAB	→		ODE&VC	EDC	EC
FRI	←	EC LAB	→		ODE&VC	EC	EDC
SAT	EDC	EC	BEE		← APP LAB →		

COURSE CODE	COURSE NAME	FACULTY NAME
R22MTH1211	Ordinary Differential Equations and Vector Calculus (ODE&VC)	M Leela
R22CHE1112	Engineering Chemistry (EC)	A Shiva Kumar
R22MED1125	Computer Aided Engineering Graphics (CAEG)	L Ravi / B Santhosh Kumar
R22EEE1114	Basic Electrical Engineering (BEE)	N Ashlesha
R22ECE1215	Electronic Devices and Circuits (EDC)	G Anitha
R22CSE1224	Applied Python Programming Laboratory (APP LAB)	G Lavanya
R22CHE1127	Engineering Chemistry Laboratory (EC LAB)	A Shiva Kumar
R22EEE1227	Basic Electrical Engineering Laboratory (BEE LAB)	N Ashlesha
R22ECE1229	Electronic Devices and Circuits Laboratory (EDC LAB)	G Anitha/P Manasa/N Prathibha
CLASS COORDINATOR: Ch Ashok Kumar		TIME TABLE INCHARGE: M Leela


Head of the Department


Principal



Sri Indu College of Engineering & Technology :: Sheriguda (V), R.R.Dist

Department of Electronics and Communication Engineering

INDIVIDUAL TIME TABLE

Time/D ay	9:40am- 10:30am I	10:30- 11:20am II	11:20- 12:10pm III	L U N C H	12:40- 01:45pm IV	1:45- 2:50pm V	2:50-4:00pm VI	
MON	ECE A					ECE A (LAB)		
TUE	ECE A		ECE B					
WED	ECE A							
THURS								ECE A
FRI	ECE B (LAB)						ECE B	
SAT		ECE A						
Faculty Name			A Shiva Kumar					

Faculty Signature

ECE –A		
SL No.	Hall Ticket No	Student Name
1	22D41A0401	A LIKHITHA
2	22D41A0402	ABBANAGONI TRISHA
3	22D41A0403	ACIREDDY SNEHALATHA
4	22D41A0404	AEMME SURYA PRAKASH
5	22D41A0405	AKA SANVITHA
6	22D41A0406	ALUGUBELLI SRAVAN KUMAR REDDY
7	22D41A0407	AMARAGONDA VIJAY
8	22D41A0408	AMBADI SHIVAMANI
9	22D41A0409	AMME RAJESH
10	22D41A0410	ANANYA BALLALA
11	22D41A0411	ARKA SUNNY BHARGAV
12	22D41A0412	BANOTH GOPICHAND NAYAK
13	22D41A0413	BANOTH THARUN KUMAR
14	22D41A0414	BINGI SRUTHI
15	22D41A0415	BODA HARIKA
16	22D41A0416	BODDU BHAVITHA
17	22D41A0417	BODDUPALLY SPOORTHI
18	22D41A0418	BODOLLA SANDEEP
19	22D41A0419	BOMMA PRANAVI
20	22D41A0420	BOPPA SHARVAN
21	22D41A0421	BOTTE ANIL
22	22D41A0422	CHAKALI VAMSHI
23	22D41A0423	CHANDANAPU CHANDRA VIKAS
24	22D41A0424	CHELIMANDLA ARAVIND KUMAR
25	22D41A0425	DAMMOJU HARSHITHA
26	22D41A0426	DEVIREDDY HARATHI
27	22D41A0427	DHANAVATH MANJULA
28	22D41A0428	DUMPETA VENKATESH
29	22D41A0429	ERAMALLA VIKRANTH GOUD
30	22D41A0430	G ANJALI
31	22D41A0431	G B SHIVA SAI KRISHNA
32	22D41A0432	GADDAM SRIRAM
33	22D41A0433	GANJI MANOJ KUMAR
34	22D41A0434	GANJI SAI TEJA
35	22D41A0435	GANNEBOINA AADITYA

36	22D41A0436	GOTTIPATI VENKATESWARLU
37	22D41A0437	GUJJETI GANESH KARTHIKEYA
38	22D41A0438	JATAVATH MUNI
39	22D41A0439	JURRU SURESH
40	22D41A0440	K SATHISH KUMAR
41	22D41A0441	KADEM MAITHILI
42	22D41A0442	KAMBALAPALLY MANIKANTA REDDY
43	22D41A0443	KAMSANI NISHITHA
44	22D41A0444	KANCHARLA NANDITHA
45	22D41A0445	KANDURI AKSHAYA REDDY
46	22D41A0446	KANUKULA VAMSHI
47	22D41A0447	KANUKULA VARDHAN
48	22D41A0448	KARANGULA ROSHINI
49	22D41A0449	KARNATI TEJASWINI
50	22D41A0450	KATAM RAKESH
51	22D41A0451	KATHERAPAKA SNEHA
52	22D41A0452	KETHAVATH MOUNIKA
53	22D41A0453	KOMMU SHIVANI
54	22D41A0454	KONGARA RITHIKA
55	22D41A0455	KOPPU RAMYASRI
56	22D41A0456	KOPPULA SHIVA KUMAR
57	22D41A0457	KORRA PAVAN KUMAR
58	22D41A0458	KOTAPATI SRINIVASULU
59	22D41A0459	KOTHAGOLLA MANASA
60	22D41A0460	KOTHAKAPU JAI ADITYA REDDY
61	22D41A0461	KUNDARAPU BHANU PRASANNA
62	22D41A0462	LADE SOWJANYA
63	22D41A0463	LAXMI NAARASIMHA
64	22D41A0464	MADDI MANISHA

ECE - B SECTION

SL No.	Hall Ticket No	
65	22D41A0465	MADHAGONI RUTHIKA GOUD
66	22D41A0466	MADHAGOUNI DIVYA
67	22D41A0467	MALLREDDY ANANYA
68	22D41A0468	MANCHIRYALA MANASWINI
69	22D41A0469	MAREDDY NAVEEN REDDY
70	22D41A0470	MAROJU PRAVALIKA
71	22D41A0471	MOHAMMED MATEEN
72	22D41A0472	MOHD ABDUL RIYAN
73	22D41A0473	MUDDAM SAI KOUSHIK
74	22D41A0474	MUNUGAPATI SRILAKSHMI

75	22D41A0475	NAGILLA SRAVANI
76	22D41A0476	NAGULA KEERTHI
77	22D41A0477	NALLA RANJITH REDDY
78	22D41A0478	NALLA SIDDARDHA REDDY
79	22D41A0479	NALLA USHASRI
80	22D41A0480	NALLAVELLI KALYAN BABU
81	22D41A0481	NARLAGIRI JAGADEESHWAR
82	22D41A0482	NENAVATH PRIYANKA
83	22D41A0483	OGGU AYODHYA
84	22D41A0484	PAJJURI HARSHITHA
85	22D41A0485	PALLEPATI SAI SHIVA DIKSHITH
86	22D41A0486	PANDI HARSHITHA
87	22D41A0487	PANUGANTI BHARATH
88	22D41A0488	PASUPULA SINDHUJA
89	22D41A0489	PATHULOTHU KRISHNA
90	22D41A0490	PEDDAVENA ANVESH
91	22D41A0491	PEDDI ANJALI
92	22D41A0492	PITTALA NANDINI
93	22D41A0493	POVAKU SHIVANI
94	22D41A0494	PURUSHOTHAM SATHWIK
95	22D41A0495	PUTCHAKAYALA MALLIKARJUNA RAO
96	22D41A0496	PUTTA KAVERI
97	22D41A0497	RAGANAMONI SHIVA SHANKER
98	22D41A0498	RAMADAS HARSHMITHA
99	22D41A0499	RAMAVATH NAVEENA
100	22D41A04A0	RAMAVATH RAGHAVENDRA
101	22D41A04A1	RAYAPU SUDHEER REDDY
102	22D41A04A2	SAIPREETAM VINNAKOTA
103	22D41A04A3	SANDHYA JUPALLY
104	22D41A04A4	SANUVALA KARTHIK
105	22D41A04A5	SAYNI NITHIN KUMAR
106	22D41A04A6	SEELAM SIVA NAGA LAKSHMI
107	22D41A04A7	SHAIK ABID
108	22D41A04A8	SURAM SRIJA
109	22D41A04A9	SURAPALLY NANDINI
110	22D41A04B0	TANGALAPALLY NARSAIAH
111	22D41A04B1	TENAGA SAI HANSIKA
112	22D41A04B2	THAMMISHETTY SHREEJA
113	22D41A04B3	THANGALLAPALLY AKHILA
114	22D41A04B4	THOKALA SAI CHANDANA
115	22D41A04B5	THOTAPALLI SAI SUBRAMANYAM
116	22D41A04B6	TIRUGAMALLA MUKESH KUMAR
117	22D41A04B7	TOTAPALLI SUSHMA
118	22D41A04B8	TURPU SREEJA

119	22D41A04B9	UDUTHALA RAVI GOUD
120	22D41A04C0	VADDEGONI NAGARAJU
121	22D41A04C1	VADLAMUDI VIJAY KUMAR
122	22D41A04C2	VADLAMUDI YASWANTH
123	22D41A04C3	VALIJALA MAHENDER
124	22D41A04C4	VANAPOSA KRANTHI KUMAR
125	22D41A04C5	VEGINATI RAVI KUMAR
126	22D41A04C6	VEMIREDDY VENKATA SAHITHI
127	22D41A04C7	YADALA SAI
128	22D41A04C8	YERRABOIENA VASANTH KUMAR
129	22D41A04C9	PATI SHIVA KUMAR REDDY



SRI INDU COLLEGE OF ENGG & TECH

LESSON PLAN

(Regulation :R22)

Department of Humanities and Sciences

Prepared on

24/11/2022

Rev1:

Page: 18 of 69

Sub. Code & Title (R22CHE1112) ENGINEERING CHEMISTRY

Academic Year: 2022-23

Year/Sem./Section

I / II /ECE A & B

Faculty Name & Designation

A.SHIVA KUMAR ASSISTANT PROFESSOR.

Unit/ Item No.	Topic (s)	Book Reference	Page (s)		Teaching Methodology	Proposed No. of Periods	Actual Date of Handled	CO//RB T
			From	To				
UNIT – I								
I	WATER AND IT'S TREATMENT					11		
1.1	Introduction – hardness of water	T2	45	47	Black board	1		CO2/I
1.2	Causes of hardness - types of hardness temporary and permanent hardness	T2	52	53	PPT	1		CO2/ II
1.3	Expression and units of hardness, Numerical problems	T2	55	56	Black board	1		CO2/II
1.4	Estimation of hardness of water by complexometric method	T2	57	58	Black board	1		CO2/IV
1.5	Potable water and its specifications and Steps involved in treatment of water	T2	74	77	Black board	1		CO2/II

1.6	Disinfection of water by chlorination and break point chlorination	T2	78	79	PPT	1		CO2/II	
1.7	Defluoridation – Determination of Fluoride ion by ion selective electrode method.	T2	82	84	PPT	1		CO2/II	
1.8	Boiler troubles-scales & sludge's , caustic embrittlement	T2	59	61	Black board	1		CO2/II	
1.9	boiler feed water-internal treatment – (Calgon conditioning, Phosphate conditioning and Colloidal conditioning).	T2	65	65	Black board	1		CO2/III	
1.10	External treatment of water – ion exchange process.	T2	66	73	Black board	1		CO2/II	
1.11	Desalination of water – Reverse osmosis.	T2	79	80	Black board	1		CO2/II	
	Revision				MCQ's				
	Total Periods					11			
	Review	Signature of the HOD/Coordinator							
Unit/ Item No.	Topic (s)	Book Reference	Page (s)	Teaching Methodology	Proposed No. of Periods	Actual Date of Handled	CO/RBT		
UNIT –II									
II	BATTERY CHEMISTRY AND CORROSION					12			
2.1	Introduction to Electro chemistry	T2	105	107	Black board	1		CO 1,4 /I	

2.2	Introduction to Batteries Classification of Batteries	T1	138	138	Black board	1		CO 1,4/I
2.3	Primary Batteries - Examples	T1	138	139	Black board	1		CO 1,4/II
2.4	Secondary Batteries – Construction & working of Li ion battery and its applications for Electrical vehicles.	T1	140	141	PPT	1		CO 1,4/II
2.5	Reserve Batteries –Examples Construction & applications of Zn-air battery.	T1	141	142	PPT	1		CO 1,4/III
2.6	Fuel Cells – Construction and working of Methanol Oxygen Fuel cells.	T1	142	145	Black board	1		CO 1,4/II
2.7	Construction and working of Solid oxide fuel cell, Solar cells and its applications.	T1	139	141	Black board	1		CO 1,4/II
2.8	Corrosion: Causes and effects of corrosion – Mechanism of chemical corrosion.	T2	159	161	Black board	1		CO 1,4 /II
2.9	Electrochemical corrosion – mechanism of electrochemical corrosion.	T2	163	165	Black board	1		CO 1,4/II
2.10	types of wet corrosion: Galvanic, water-line and pitting corrosion	T2	166	167	Black board	1		CO 1,4/I
2.11	Factors affecting rate of corrosion.	T2	169	171	Black board	1		CO 1,4/I
2.12	Corrosion control methods- Cathodic protection - Sacrificial anode and impressed current cathodic methods	T2	172	173	PPT	1		CO 1,4/II
	Revision				Quiz			

	Total Periods					12			
	Review	Signature of the HOD/Coordinator							
UNIT- III									
III	POLYMERIC MATERIALS					10			
3.1	Definitions, Classification of polymers with examples.	T2	201	202	Black board	1		CO3/II	
3.2	Types of polymerization – addition (free radical addition) and condensation polymerization – Nylon 6,6 & Terylene	T2	210	216	Demonstration	1		CO3/II	
3.3	Plastics : Thermo plastic and Thermosetting plastics and their differences.	T2	227	230	Demonstration	1		CO3/I	
3.4	Preparation, properties, engineering applications of: PVC, Teflon & Bakelite.	T2	225	227	Black board	1		CO3/II	
3.5	Fiber reinforced plastics (FRP)	T2	232	239	Black board	1		CO3/I	
3.6	Rubbers: Natural rubber and its vulcanization.	T2	235	236	Black board	1		CO3/III	
3.7	Elastomers : Characteristics – preparation –properties of Buna –S ,Butyl & Thiokol rubber.	T2	236	239	Demonstration	1		CO3/II	
3.8	Conducting polymers: Characteristics and Classification.	T2	240	242	Demonstration	1		CO3/II	
3.9	Mechanism of conduction in trans-poly acetylene and applications of conducting polymers.	T2	243	246	Black board	1		CO3/III	
3.10	Biodegradable polymers: Concept and advantages. Poly lactic acid and	T2	248	249	Black board	1		CO3/III	

	poly vinyl alcohol and their applications.								
	Revision								
	Total Periods					10			
	Review	Signature of the HOD/Coordinator							
UNIT-IV									
IV	ENERGY SOURCES					8			
4.1	Introduction, Calorific value of fuel – HCV, LCV- Dulong's formula.	T2	473	476	PPT	1		CO5/I	
4.2	Classification-solid fuels: coal – analysis of coal–proximate analysis ultimate analysis and their significance.	T2	490	496	Black board	1		CO5/II	
4.3	Liquid fuels – petroleum and its refining,	T2	497	500		1		CO5/II	
4.4	Cracking types – moving bed catalytic cracking.	T2	501	505	Black board	1		CO5/III	
4.5	Knocking – octane and cetane rating,	T2	505	508	PPT	1		CO5/III	
4.6	synthetic petrol - Fischer-Tropsch's process	T2	508	509	Black board	1		CO5/II	
4.7	Gaseous fuels – composition and uses of natural gas, LPG and CNG,	T2	509	510	Black board	1		CO5/II	
4.8	Biodiesel-Trans esterification, advantages.	T2	4.34	4.35	Black board	1		CO5/III	
	Revision				Seminars				
	Total Periods					8			
	Review	Signature of the HOD/Coordinator							

UNIT-V									
V	ENGINEERING MATERAILS					8			
5.1	Cement: Portland cement, its composition, setting and hardening.	T2	409	416	Demonstration	1		CO3/II	
5.2	Smart materials and their engineering applications	T2	434	435	Black board	1		CO3/III	
5.3	Shape memory materials- Poly L- Lactic acid.	T2	436	438	Black board	1		CO3/III	
5.4	Thermo response materials- Polyacryl amides, Poly vinylamides	T2	438	439	Black board	1		CO3/III	
5.5	Lubricants: Classification of lubricants with examples.	T2	419	420	PPT	1		CO3/II	
5.6	Characteristics of a good lubricants	T2	420	421	Black board	1		CO3/I	
5.7	Mechanism of lubrication (thick film, thin film and extreme pressure)	T2	419	422	Black board	1		CO3/III	
5.8	Properties of lubricants: viscosity, cloud point,	T2	421	422	Demonstration	1		CO3/II	
	Revision				MCQ's				
	Total Periods					8			
	Review	Signature of the HOD/Coordinator							

LIST OF TEXT BOOKS AND REFERENCES

TEXT BOOKS:

1. Engineering Chemistry by P.C.Jain & M.Jain; Dhanpat Rai Publishing Company (P) Ltd., NewDelhi, 2018.
2. Engineering Chemistry, by Prasanta Rath, B. Rama Devi, Ch. Venkata Ramana Reddy,Subhendu Chakroborty, Cengage Learning India Pvt. Ltd., 2018
3. Organic Chemistry: Structure and Function by K.P.C. Volhardt and N.E.Schore, 5th Edition.
4. University Chemistry, by B.M. Mahan, Pearson IV Edition
5. University Chemistry, by B.M. Mahan, Pearson IV Edition
6. Text Book of Stereo Chemistry by Kalsi.

WEB REFERENCES FOR CHEMISTRY

- W1. https://www.ch.ic.ac.uk/vchemlib/course/mo_theory/main.html
- W2. <https://chemed.chem.purdue.edu/genchem/topicreview/bp/ch12/crystal.php>
- W3. <https://puretecwater.com/downloads/basics-of-reverse-osmosis.pdf>
- W4. http://staffnew.uny.ac.id/upload/132206549/pendidikan/04a_HARD+WATER.pdf
- W5. http://www.demiwater.nl/files/AWT_Tf-024.pdf
- W6. <https://searchmobilecomputing.techtarget.com/definition/battery>
- W7. https://profiles.uonbi.ac.ke/sdereese/files/h-sch_102_types_of_organic_reactions_and_mechanisms.pdf
- W8. <http://www.chymist.com/aspirin.pdf>
- W9. <https://byjus.com/jee/polymers>
- W10. <http://www.behranoil.com/upload/upload/1471064098.pdf>

Faculty Signature



Sri Indu College of Engineering & Technology :: Sheriguda (V), R.R.Dist

Department of Electronics and Communication Engineering

TUTORIAL LESSON PLAN

S.No	TOPIC TO BE COVERED	TEACHING AIDS	BOOKS	Proposed No. of Periods
1	Estimation of hardness of water by complexometric method.	Black Board	T – 2	1
2	Treatment of water – ion exchange process, calgon conditionig	Black Board	T – 2	1
3	Hardness of water and its types	Black Board	T – 2	1
4	Lead acid Battery	Black Board	T – 2	1
5	Lithium ion Battery – Construction, working and its Applications	PPT	T – 2	1
6	Hydrogen Oxygen fuel cell	Black Board	T – 2	1
7	Factors affecting rate of corrosion depends upon nature of metal & nature of environment	Black Board	T – 2	1
8	Cathodic protection	Black Board	T – 2	1
9	Prepartion, properties and applications of PVC, Teflon and Bakelite	Black Board	T – 2	1
10	mechanical stability of lubricants.	Black Board	T – 2	1
11	Preparation of synthetic petrol	Black Board	T – 2	1
TOTAL				11

Faculty Signature



Sri Indu College of Engineering & Technology :: Sheriguda (V), R.R.Dist

Department of Electronics and Communication Engineering

WEB REFERENCES FOR CHEMISTRY

- W1. https://www.ch.ic.ac.uk/vchemlib/course/mo_theory/main.html
- W2. <https://chemed.chem.purdue.edu/genchem/topicreview/bp/ch12/crystal.php>
- W3. <https://puretecwater.com/downloads/basics-of-reverse-osmosis.pdf>
- W4. http://staffnew.uny.ac.id/upload/132206549/pendidikan/04a_HARD+WATER.pdf
- W5. http://www.demiwater.nl/files/AWT_Tf-024.pdf
- W6. [https://chem.libretexts.org/Bookshelves/Analytical_Chemistry/Supplemental_Modules_\(Analytical_Chemistry\)/Electrochemistry/Basics_of_Electrochemistry](https://chem.libretexts.org/Bookshelves/Analytical_Chemistry/Supplemental_Modules_(Analytical_Chemistry)/Electrochemistry/Basics_of_Electrochemistry)
- W7. <https://searchmobilecomputing.techtarget.com/definition/battery>
- W8. https://profiles.uonbi.ac.ke/sderese/files/h-sch_102_types_of_organic_reactions_and_mechanisms.pdf
- W9. <http://www.chymist.com/aspirin.pdf>
- W10. <https://byjus.com/jee/polymers>
- W11. <http://www.behranoil.com/upload/upload/1471064098.pdf>

Faculty Signature

CHEMISTRY
LECTURE
NOTES



Sri Indu College of Engineering & Technology :: Sheriguda (V), R.R.Dist

Department of Electronics and Communication Engineering

CHEMISTRY (C122)

List of power point presentations / videos:

S.No	Topic name	No. Of Slides/Duration
1	Water and its treatment	39
2	Battery chemistry	33
3	Solar cells	34
4	Corrosion	54
5	Polymers	43
6	Bio degradable polymers	46
7	Energy sources	15
8	Cement & preparation	35
9	Lubricants	28

Faculty Signature

BR-20

Write Your Ht.No.



SRI INDU COLLEGE OF ENGINEERING & TECHNOLOGY

(An Autonomous Institution under UGC, New Delhi) - Recognized under 2(f) and 12(B) of UGC Act 1956

I B.Tech. I Semester (Regular & Suppl.) End Examinations, April – 2022.

(R20ECH1101) CHEMISTRY

13/04/2022 (For EEE, CSE, CS, AI&ML, AI&DS, DS, IoT, CSIT and IT) Day- 2 (FN)

Duration: 3 Hrs

Maximum Marks: 70M

Blooms Taxonomy : (L1-Remembering, L2-Understanding, L3-Appling, L4-Analyzing, L5-Evaluating and L6-Creating).

Course Outcomes : CO.

Section – A

Answer All the following questions.

(5Qx4M =20M)

- | | |
|--|--------|
| 1. List out the Limitations of valence bond theory. | L1 CO1 |
| 2. Methods used for internal softening of boiler feed water. | L2 CO2 |
| 3. The reduction potential of the saturated calomel electrode, SCE, is 0.24V Vs SHE at 25 ⁰ C. The cell, SCE [Fe(CN) ₆] ³⁻ (0.25M), [Fe(CN) ₆] ⁴⁻ (0.55M) Pt, has measured a potential of 0.12V at 25 ⁰ C. What is the standard potential of Pt [Fe(CN) ₆] ³⁻ , [Fe(CN) ₆] ⁴⁻ ? | L5 CO2 |
| 4. Define E1 and E2 reactions with examples. | L1 CO4 |

5. Discuss the influence of crystallinity on polymer property. L3 CO3

Section – B

Answer any FIVE questions choosing one from each unit. (5Qx10M =50M)

UNIT - I

6. Explain the salient features of crystal field theory and show diagrammatically the splitting of 'd' orbitals in octahedral field. L2 CO1

OR

7. With the help of MO energy level diagram of N₂, explain the following: L3 CO1
- a) Bond order of N₂.
- b) Magnetic property.

UNIT - II

8. a) Explain the reasons for the following boiler troubles with chemical equations L2 CO2
- i) Formation of Scales.
- ii) Caustic embrittlement.
- b) 100 mL of a water sample required 20 mL of 0.01M EDTA for the titration with L5 CO2
- Eriochrome Black-T indicator. 100 mL of the same sample after boiling and filtering required 5mL of 0.01M EDTA solution. Calculate the temporary and permanent hardness of the sample

OR

9. Define demineralization. Describe method of softening of water by using ion exchange process. L2 CO2

P.T.O.

UNIT - III

10. Write notes on lead acid battery with respect to construction and cell reactions during discharging and recharging. L4 CO2

OR

11. a) Discuss any five factors affecting corrosion. L2 CO2
b) Explain chemical corrosion with suitable examples. L2 CO2

UNIT - IV

12. Explain in detail synthesis, mechanism and applications of Aspirin. L2 CO4

OR

13. a) Conformational analysis of n-butane. L2 CO4
b) Explain how KMnO_4 is useful for oxidation of alcohol with suitable examples. L3 CO4

UNIT - V

14. Write preparation, properties and applications of: L2 CO3
a) PVC.
b) Nylon.

OR

15. Discuss the mechanism of Lubrication. L4 CO3

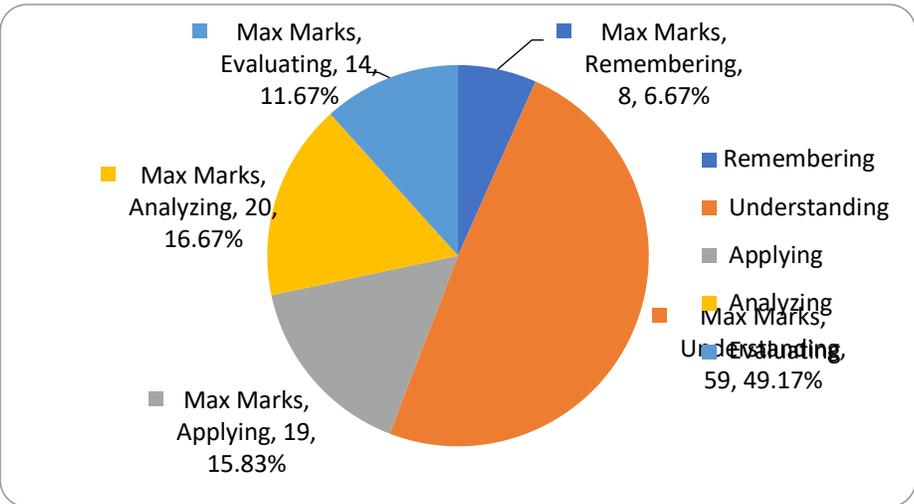


Department of Computer Science and Engineering

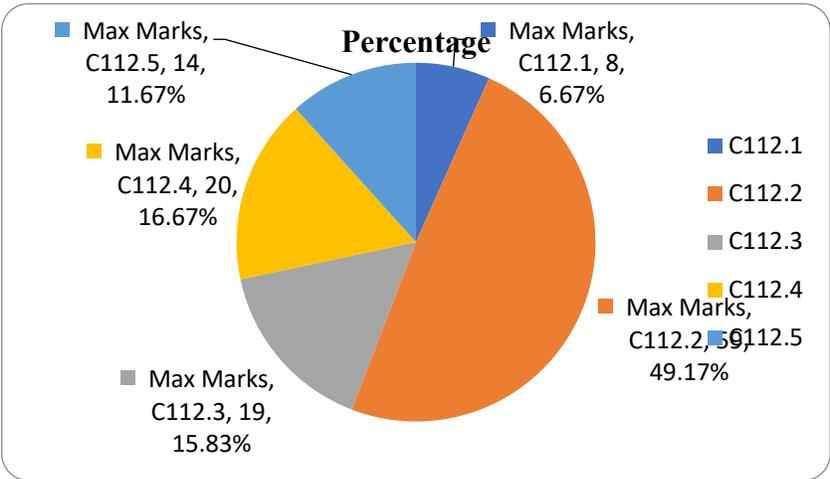
Scheme of evaluation with CO & BT mapping

Question no.	Course outcome mapping	Bloom's Taxonomy level mapping
1	C112.1	K1- Remembering
2	C112.2	K2- Understanding
3	C112.5	K5- Evaluating
4	C112.1	K1- Remembering
5	C112.3	K3- Applying
6	C112.2	K2- understanding
7	C112.3	K3- Applying
8	C112.2	K2- Understanding
9	C112.5	K5- Evaluating
10	C112.4	K4- Analyzing
11	C112.2	K2- Understanding
12	C112.2	K2- Understanding
13	C112.2 C112.3	K2- Understanding K3- Applying
14	C112.2	K2- Understanding
15	C112.4	K4- Analyzing

Remembering: 8M (6.67.0%); Understanding: 59M (49.16%); Applying: 19M (15.83%), Analyzing: 20M(16.66%); Evaluating: 14M(11.67%);



Course Outcome	Max Marks	Percentage
C112.1	8M	6.67
C112.2	59M	49.17
C112.3	19M	15.83
C112.4	20M	16.67
C112.5	14M	11.67



Faculty Signature

I B.Tech - I Semester - I Mid Term Examination, February – 2022**(R20ECH1101) CHEMISTRY**

(For EEE, CSE, CS, AI&ML, AI&DS, DS, IoT, CSIT and IT)

Duration: 90 Mins**Dt: 10-02-2022, Day-1 (AN)****Max Marks: 25M****Section – A**Answer All the questions

Marks: 5Qx1M = 5M

* (L1-Remembering, L2-Understanding, L3-Applying, L4-Analyzing, L5-Evaluating, L6-Creating.)

*BloomsCourse
OutcomesTaxonomy
Levels

- | | | |
|--|------|-----|
| 1. What are the limitations of Valence Bond Theory? | (L1) | CO1 |
| 2. Explain the term Bond Order and how it is calculated. | (L2) | CO1 |
| 3. What is Desalination? | (L1) | CO2 |
| 4. How is the hardness of water expressed? | (L1) | CO2 |
| 5. Write any two applications of Fuel cells. | (L1) | CO3 |

Section – BAnswer any FOUR questions

Marks: 4Qx5M = 20M

- | | | |
|---|------|-----|
| 6. Explain about VBT Theory with suitable examples. | (L2) | CO1 |
| 7. Construct the molecular orbital diagrams O ₂ and N ₂ molecule and predict the magnetic behavior of it. | (L3) | CO1 |
| 8. Explain the following: a) Phosphate Conditioning. b) Caustic embrittlement. | (L2) | CO2 |
| 9. Discuss the Ion Exchange method for softening of water. | (L5) | CO2 |
| 10. a) Define ion selective electrode. Explain the construction of glass electrode. | (L1) | CO3 |
| b) Write a detailed note on quin hydrone electrode. | (L1) | CO3 |
| 11. a) Write a short note on Lithium ion batteries. | (L2) | CO3 |
| b) Define fuel cell. Explain the construction and working principle of methanol -oxygen fuel cell. | (L2) | CO3 |
-

I B.Tech - I Semester - I Mid Term Examination, February – 2022**(R20ECH1101) CHEMISTRY**

(For EEE, CSE, CS, AI&ML, AI&DS, DS, IoT, CSIT and IT)

Duration: 90 Mins**Dt: 10-02-2022, Day-1 (AN)****Max Marks: 25M****Section – A****Answer All the questions****Marks: 5Qx1M = 5M***** (L1-Remembering, L2-Understanding, L3-Applying, L4-Analyzing, L5-Evaluating, L6-Creating.)*****Blooms****Course
Outcomes****Taxonomy
Levels**

- | | | |
|--|------|-----|
| 1. What are the limitations of Valence Bond Theory? | (L1) | CO1 |
| 2. Explain the term Bond Order and how it is calculated. | (L2) | CO1 |
| 3. What is Desalination? | (L1) | CO2 |
| 4. How is the hardness of water expressed? | (L1) | CO2 |
| 5. Write any two applications of Fuel cells. | (L1) | CO3 |

Section – B**Answer any FOUR questions****Marks: 4Qx5M = 20M**

- | | | |
|---|------|-----|
| 6. Explain about VBT Theory with suitable examples. | (L2) | CO1 |
| 7. Construct the molecular orbital diagrams O ₂ and N ₂ molecule and predict the magnetic behavior of it. | (L3) | CO1 |
| 8. Explain the following: a) Phosphate Conditioning. b) Caustic embrittlement. | (L2) | CO2 |
| 9. Discuss the Ion Exchange method for softening of water. | (L5) | CO2 |
| 10. a) Define ion selective electrode. Explain the construction of glass electrode. | (L1) | CO3 |
| b) Write a detailed note on quin hydrone electrode. | (L1) | CO3 |
| 11. a) Write a short note on Lithium ion batteries. | (L2) | CO3 |
| b) Define fuel cell. Explain the construction and working principle of methanol -oxygen fuel cell. | (L2) | CO3 |

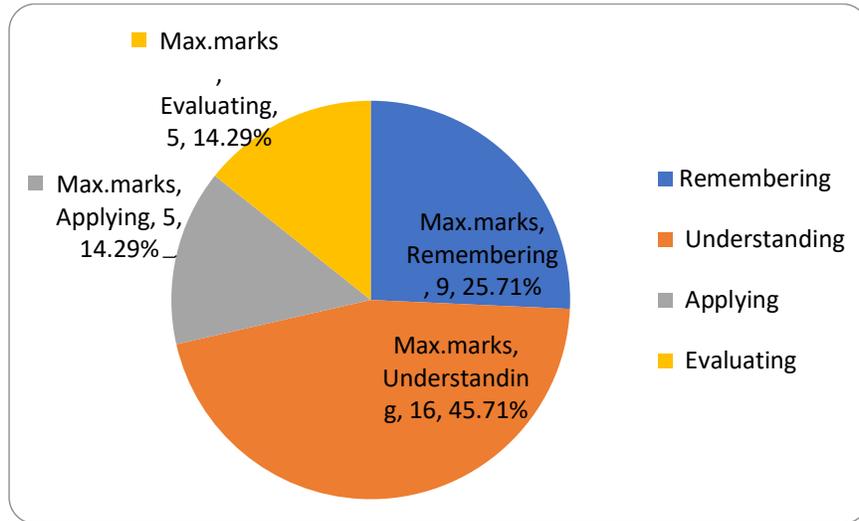


Department of Computer Science and Engineering

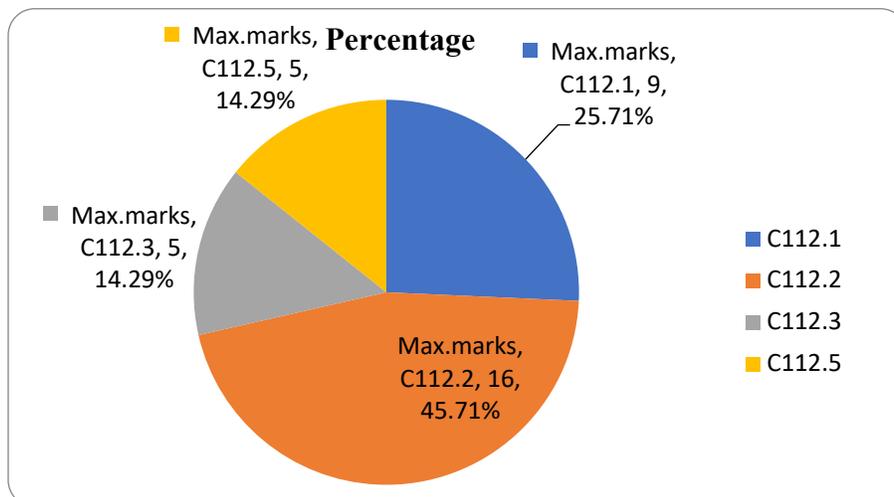
CO & BT for MID TEST – I

Question no.	Course outcome mapping	Bloom's Taxonomy level mapping
1	C112.1	K1- Remembering
2	C112.2	K2- Understanding
3	C112.1	K1- Remembering
4	C112.1	K1- Remembering
5	C112.2	K1- Remembering
6	C112.2	K2- Understanding
7	C112.3	K3- Applying
8	C112.2	K2- Understanding
9	C112.5	K5- Evaluating
10	C112.1	K1- Remembering
11	C112.2	K2- Understanding

**Remembering: 9M (25.71%); Understanding: 16M (45.71 %); Applying: 5M (14.29 %)
Evaluating: 5M (14.29 %**



Course outcomes	Max.marks	percentage
C112.1	9M	25.71%
C112.2	16M	45.71%
C112.3	5M	14.29%
C112.5	5M	14.29%



BR-20



SRI INDU COLLEGE OF ENGINEERING & TECHNOLOGY

D4

I B.Tech - I Semester - II Mid Term Examination, March – 2022

(R20ECH1101) CHEMISTRY

(For EEE, CSE, CS, AI&ML, AI&DS, DS, IoT, CSIT and IT)

Duration: 90 Mins

Dt: 30-03-2022, Day-1 (AN)

Max Marks: 25M

Section – A

Answer **All** the questions

Marks: 5Qx1M = 5M

* (L1-Remembering, L2-Understanding, L3-Appling, L4-Analyzing, L5-Evaluating, and L6-Creating.)

*Blooms

Course
Outcomes

Taxonomy
Levels

- | | | |
|--|------|-----|
| 1. What is rusting? Give its chemical formula. | (L1) | CO4 |
| 2. State and explain Markonikov's rule with example. | (L5) | CO5 |
| 3. What are Grignard reagents? Give one example. | (L1) | CO5 |
| 4. Define Polymer and Polymerization. | (L1) | CO6 |
| 5. Define the term Lubrication. | (L2) | CO6 |

Section – B

Answer any **FOUR** questions

Marks: 4Qx5M = 20M

- | | | |
|---|------|-----|
| 6. a) What is cathodic protection? Explain Sacrificial anodic protection control of corrosion? | (L1) | CO4 |
| b) Write a detailed note on Galvanization. | (L1) | CO4 |
| 7. Explain the mechanism of Electrochemical Corrosion with an example? | (L5) | CO4 |
| 8. a) What is nucleophilic substitution? Explain the mechanism, factors affecting and rate of SN ¹ reaction? | (L1) | CO5 |
| b) Explain the synthesis, mechanism and applications of Aspirin. | (L1) | CO5 |
| 9. a) Explain the reduction reactions by using LiAlH ₄ . | (L5) | CO5 |
| b) Explain about Anti Markonikov's rule. | (L5) | CO5 |
| 10. Explain the preparation, properties and applications of the following: | (L2) | CO6 |

- a) TEFLON (PTFE) and b) PVC.
11. What is Glass Transition Temperature of Polymers? Explain its significance. (L1) CO6
-

BR-20  **SRI INDU COLLEGE OF ENGINEERING & TECHNOLOGY** **D4**

I B.Tech - I Semester - II Mid Term Examination, March – 2022

(R20ECH1101) CHEMISTRY

(For EEE, CSE, CS, AI&ML, AI&DS, DS, IoT, CSIT and IT)

Duration: 90 Mins

Dt: 30-03-2022, Day-1 (AN)

Max Marks: 25M

Section – A

Answer **All** the questions

Marks: 5Qx1M = 5M

* (L1-Remembering, L2-Understanding, L3-Appling, L4-Analyzing, L5-Evaluating, and L6-Creating.)

***Blooms** **Course**
Taxonomy **Outcomes**
Levels

- | | | |
|--|------|-----|
| 1. What is rusting? Give its chemical formula. | (L1) | CO4 |
| 2. State and explain Markonikov's rule with example. | (L5) | CO5 |
| 3. What are Grignard reagents? Give one example. | (L1) | CO5 |
| 4. Define Polymer and Polymerization. | (L1) | CO6 |
| 5. Define the term Lubrication. | (L2) | CO6 |

Section – B

Answer any **FOUR** questions

Marks: 4Qx5M = 20M

- | | | |
|---|------|-----|
| 6. a) What is cathodic protection? Explain Sacrificial anodic protection control of corrosion? | (L1) | CO4 |
| b) Write a detailed note on Galvanization. | (L1) | CO4 |
| 7. Explain the mechanism of Electrochemical Corrosion with an example? | (L5) | CO4 |
| 8. a) What is nucleophilic substitution? Explain the mechanism, factors affecting and rate of SN ¹ reaction? | (L1) | CO5 |
| b) Explain the synthesis, mechanism and applications of Aspirin. | (L1) | CO5 |
| 9. a) Explain the reduction reactions by using LiAlH ₄ . | (L5) | CO5 |
| b) Explain about Anti Markonikov's rule. | (L5) | CO5 |

10. Explain the preparation, properties and applications of the following: (L2) CO6
a) TEFLON (PTFE) and b) PVC.
11. What is Glass Transition Temperature of Polymers? Explain its significance. (L1) CO6
-



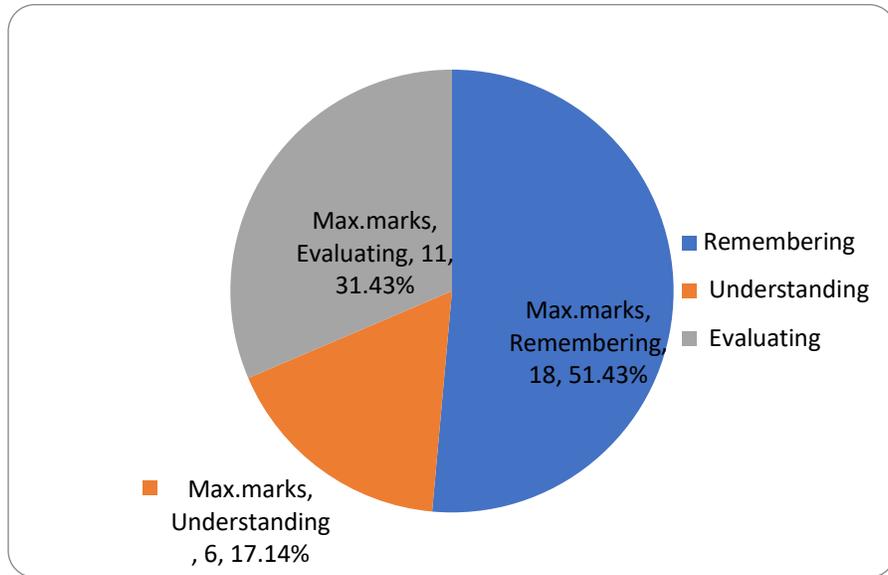
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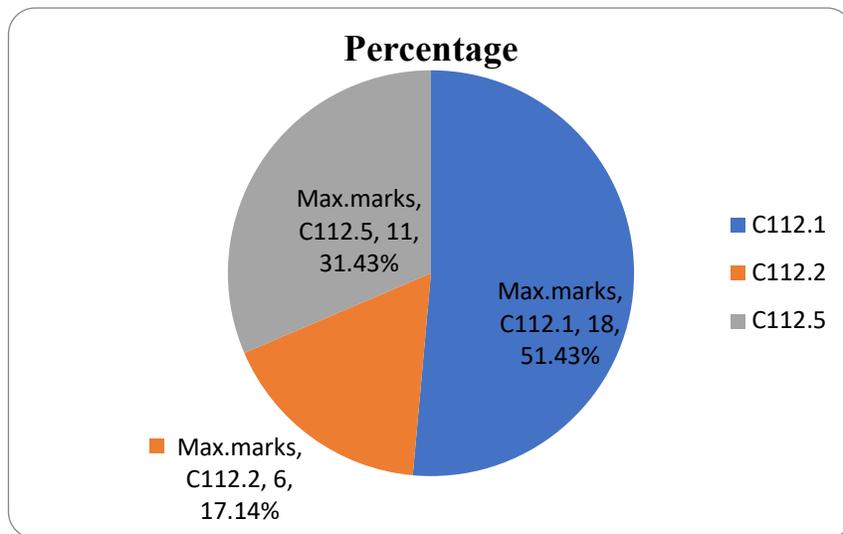
CO & BT for MID TEST – II

Question no.	Course outcome mapping	Bloom's Taxonomy level mapping
1	C112.1	K1- Remembering
2	C112.5	K5- Evaluating
3	C112.1	K1- Remembering
4	C112.1	K1- Remembering
5	C112.2	K2- Understanding
6	C112.1	K1- Remembering
7	C112.5	K5- Evaluating
8	C112.1	K1- Remembering
9	C112.5	K5- Evaluating
10	C112.2	K2- Understanding
11	C112.1	K1- Remembering

Remembering: 18M (51.43%); Understanding: 6M (17.14%); Evaluating: 11M(31.43 %);



Course outcomes	Max.marks	percentage
C112.1	18M	51.43%
C112.2	6M	17.14%
C112.5	11M	31.43 %



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Assignment Questions

Assignment — Mid – I

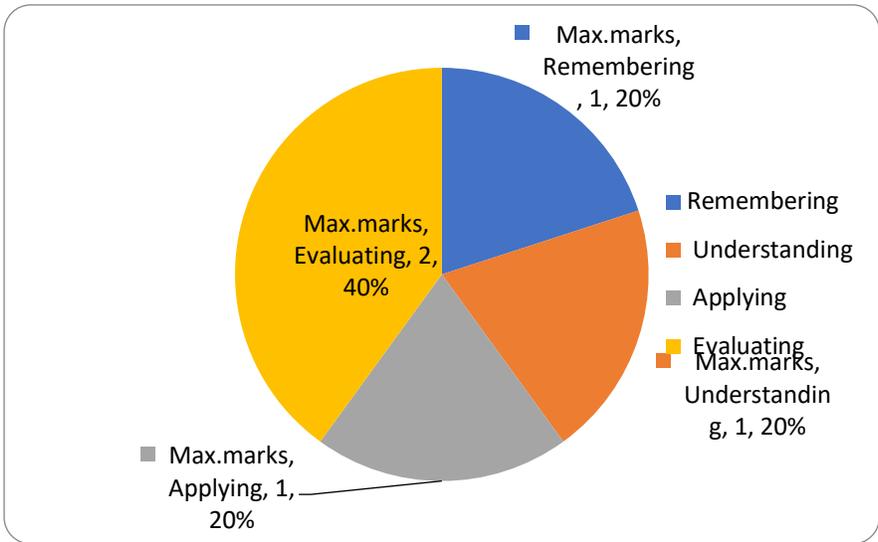
1. What are the salient features of crystal field theory? Give the reason for crystal field splitting of d' orbitals ?
2. Apply crystal field theory for splitting of d-orbital's in tetrahedral and square planar complexes
3. Discuss the ion exchange method for the treatment of water?
4. Estimate the Hardness of water by using EDTA method. Discuss the principle involved in it.
5. Explain about Galvanic Corrosion.

CO & BT for Assignment- Mid- I

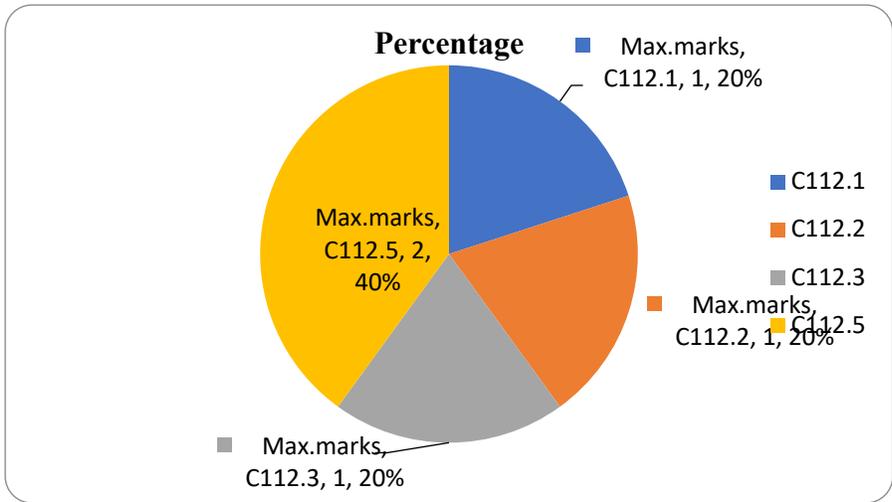
Question no.	Course outcome mapping	Bloom's Taxonomy level mapping
1	C112.2	K2- Understanding
2	C112.3	K3- Applying
3	C112.5	K5- Evaluating
4	C112.5	K5- Evaluating
5	C112.1	K1- Remembering

Remembering: 1M (20%); Understanding: 1M (20%); Applying: 1M (20%);

Evaluating: 2M (40%)



Course outcomes	Max.marks	percentage
C112.1	1M	20%
C112.2	1M	20%
C112.3	1M	20%
C112.5	2M	40%



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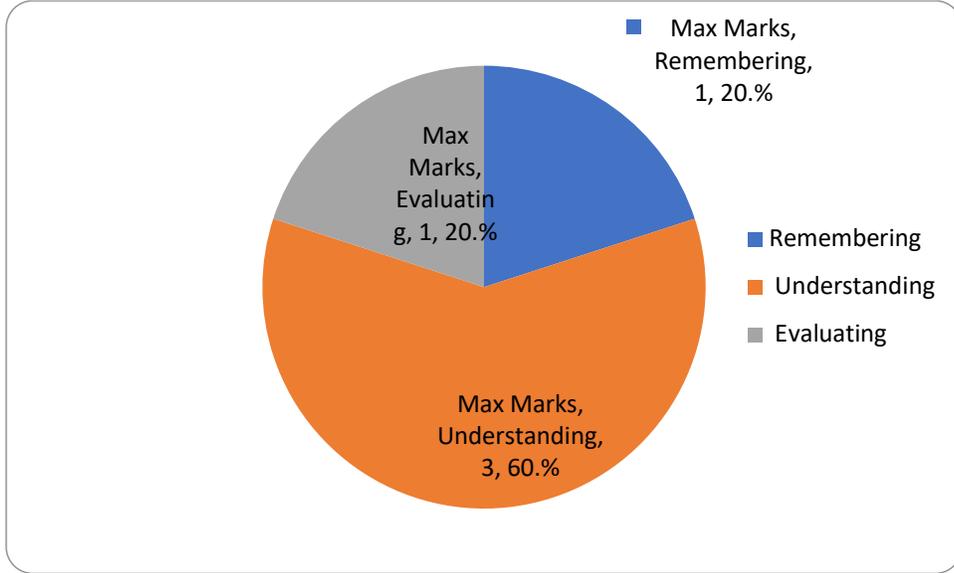
Assignment Questions - Mid – II

1. What are the factors affecting rate of corrosion?
2. Explain the following a) Saytzeff rule b) Oxidation by chromic acid
3. (a)What is optical isomerism? Explain the measurement of optical activity.
(b) Explain Grignard addition on carbonyl compounds.
4. Explain the mechanism of a) thin film lubrication b)extreme pressure lubrication
5. Explain how the following polymers are synthesized?
a)Nylon 6,6 b)Bakelite

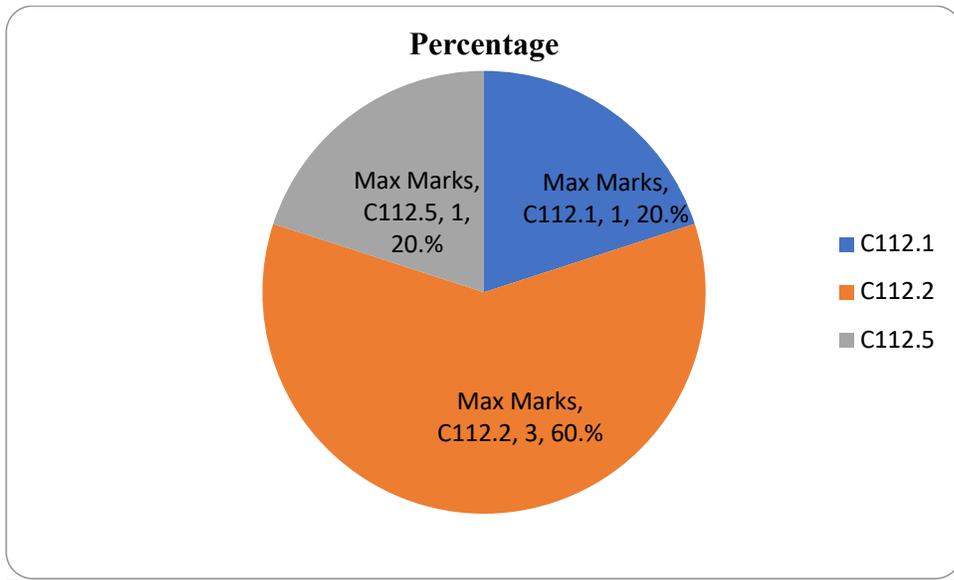
CO & BT for Assignment- Mid-II

Question no.	Course outcome mapping	Bloom's Taxonomy level mapping
1	C112.1	K1- Remembering
2	C112.2	K2- Understanding
3	C112.2	K2- Understanding
4	C112.5	K5- Evaluating
5	C112.2	K2- Understanding

Remembering: 1M (20%); Understanding: 3M (60%), Evaluating: 1M (20%);



Course outcomes	Max.marks	percentage
C112.1	1M	20%
C112.2	3M	60%
C112.5	1M	20%



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Unit- Test Questions

Unit – I **Write any TWO Questions.**

1. What are atomic and molecular orbitals? Give the differences between atomic and molecular orbitals.
2. What is the reason for crystal field splitting of d' orbitals.
3. Are the factors affecting the magnitude of crystal field splitting?
4. Construct the energy level diagrams of N₂ and O₂ molecules.

Unit – II **Write any TWO Questions.**

1. Explain the **Ion Exchange Method** for treatment of water.
2. Explain the process of **Complexometric Titrations** used for **Estimation of Hardness of water by EDTA.**
 1. What are the steps involved in the **treatment of potable water?**
 2. Explain the following a) **Colloidal Conditioning** b) **Chlorination.**

Unit – III **Write any TWO Questions.**

1. Define **Fuel cell**. Explain construction and working of **Hydrogen-Oxygen** fuel cell, give its applications.
2. Explain the construction, working and advantages of the following electrodes:
 - a) **Standard Calomel electrode** b) **Quinhydrone electrode.**
3. a) Explain the mechanism of **Electrochemical Corrosion w.r.t rusting of iron.**
b) Explain **Impressed Current protection method** to control corrosion?
4. Differentiate the following with Suitable examples
 - a) **Galvanizing & Tinning,** b) **Electroplating & Electro less Plating.**

Unit – IV **Write any TWO Questions.**

1. a) What are isomers? How are they classified? Give examples.
b) Explain the representation of 3-dimensional structures with examples

2. a) Explain SN² mechanism with suitable examples.
b) Write a brief account on addition reactions.
3. a) Explain the elimination reaction with suitable examples.
b) How are elimination reactions differ from addition reaction?
4. Explain the following.
a) Saytzeff rule b) Oxidation by chromic acid.

Unit – V Write any TWO Questions.

1. Explain the preparation, properties and applications of the following
a) **TEFLON (PTFE)** b) **PVC**
2. What is Glass Transition Temperature of Polymers? Explain the factors that affect Glass Transition Temperature
3. are Lubricants? How are they classified? Write the Characteristics of a good lubricant
4. Explain the following properties of Lubricants
a) **Flash and Fire point.** b) **Cloud and Pour point.** c) **Mechanical Stability**

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After 1st mid results the analysis made to identify the **weak and advanced learners** to assign different tasks.

The students who got < 60% of our mid or internal evaluation are identified as weak learners as given below, 28 students are identified, for them **Remedial classes** were conducted.

Weak Learners:

S.No.	Student roll number	S.No.	Student roll number
1	21D41A0502	18	21D41A05G9
2	21D41A0516	19	21D41A05H1
3	21D41A0521	20	21D41A05H4
4	21D41A0525	21	21D41A05J0
5	21D41A0532	22	21D41A05J2
6	21D41A0536	23	21D41A05J3
7	21D41A0543	24	21D41A05L6
8	21D41A0568	25	21D41A05M7
9	21D41A0570	26	21D41A05N2
10	21D41A0583	27	21D41A05P7
11	21D41A0593	28	21D41A05R1
12	21D41A05C0	29	21D41A05R2
13	21D41A05D4		
14	21D41A05D8		
15	21D41A05E2		
16	21D41A05E3		
17	21D41A05F0		

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Advance learners—seminar book:

Internal marks above 28, the students are identified as the advanced learners. For them seminars / ppts / small project works were assigned.

Date	S.No	Roll.No.	Name of the Student	Seminar/PPT/project Topic name	Signature of the student	Remarks	Sign
08/12/21	1	21D41A0509	AITY PRASANNA	Molecular orbital theory			
10/12/21	2	21D41A0519	ARSAPALLI SINDHU	Crystal Field theory			
13/12/21	3	21D41A0537	CHALLA DEEKSHITHA REDDY	VBT			
15/12/21	4	21D41A0559	EDLA DEEPAK REDDY	Splitting of d-orbitals			
17/12/21	5	21D41A0574	GIRI VARSHA	Ion exchange process			
20/12/21	6	21D41A0581	GOUNI ANUSHA	Boiler troubles			
22/12/21	7	21D41A05A1	KAIRAMKONDA USHA	Reverse Osmosis			

29/12/21	8	21D41A05B5	KATTA HANSHU	Reference electrodes			
31/01/22	9	21D41A05B6	KATTA SHANMUKHI	Batteries			
02/01/22	10	21D41A05E6	MARRU SAKETH PRUDHVI	Fuel cells			
04/01/22	11	21D41A05G3	MUNAGALA SRUJANA	Types of Corrosion			
07/01/22	12	21D41A05M 1	SAMINENI SAI DEEPTHI	Corrosion Controlling Mechanism			
09/01/22	13	21D41A05M 4	SAYYAD KHWAJA	Types of reactions			
11/01/22	14	21D41A05Q6	VALLAPUDAS U GANESH	Nucleophilic substitution reactions			
12/01/22	15	21D41A05Q7	VANKAYALA AASRITH VENKATA SAI KUMAR	Oxidation reactions			
21/01/22	16	21D41A05R3	VEERABOINA SIRICHANDAN A	Reduction reactions			
23/01/22	17	21D41A05R7	YARRAM NIKHITHA	Drug molecules and applications			

Faculty Signature



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Course Outcome Assessment

Course : CSE AY: 2021-22
CLASS: I B.Tech SEM: 1st Semester

S.No	Roll Number	1st Internal Exam	2nd Internal Exam	University Exam
	Max Marks	30	30	70
1	21D41A0501	27	25	
2	21D41A0502	12	22	
3	21D41A0503	28	28	
4	21D41A0504	15	15	
5	21D41A0505	15	15	
6	21D41A0506	24	30	
7	21D41A0507	24	25	
8	21D41A0508	20	24	
9	21D41A0509	30	26	
10	21D41A0510	22	22	
11	21D41A0511	26	25	
12	21D41A0512	28	29	
13	21D41A0513	29	30	
14	21D41A0514	15	23	
15	21D41A0515	25	25	

16	21D41A0516	9	11	
17	21D41A0517	16	18	
18	21D41A0518	25	29	
19	21D41A0519	30	30	
20	21D41A0520	29	30	
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22	21D41A0522	18	23	
23	21D41A0523	29	30	
24	21D41A0524	27	30	
25	21D41A0525	5		
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255	21D41A05R5	15	15	
256	21D41A05R6	19	24	
257	21D41A05R7	29	30	
258	21D41A05R8	18	28	
259	21D41A05R9	15	21	
Students scored more than 60%marks				
Total no. of students				
% of Marks				

Rubric for Attainment

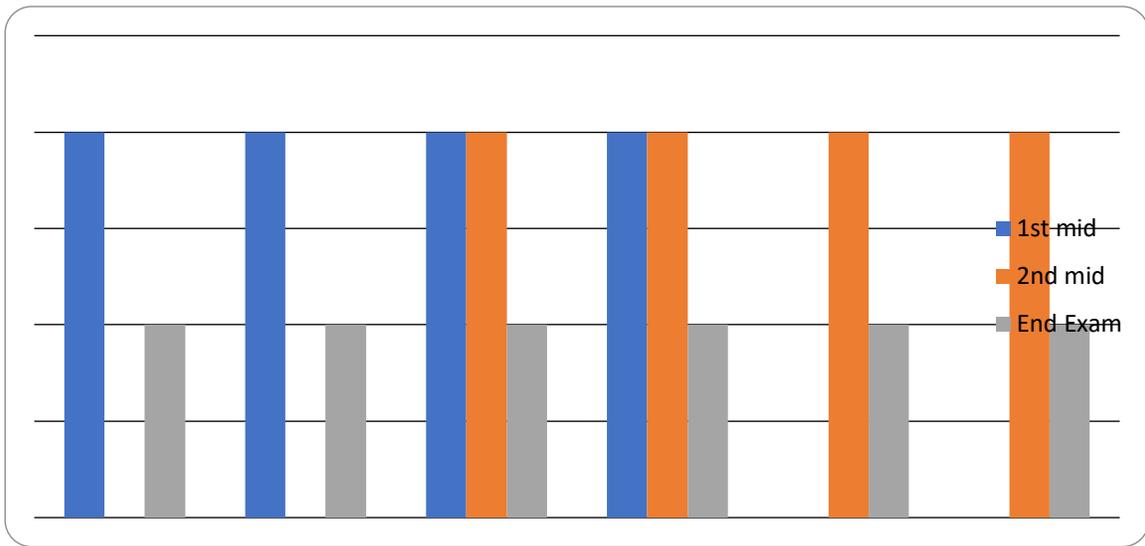
Level

	Level	Criterion
Low	1	<49% students
Moderate	2	50-69% students
High	3	>70% students

	1st mid	2nd mid	End Exam
Course Attainment Level	2	2	1
		OVERALL	set target level
			Attainment status
			status

CO1	2		1	1.50	2.60 NA	NA
CO2	2		1	1.50	2.50 NA	NA
CO3	2	2	1	1.67	2.83 NA	NA
CO4	2	2	1	1.67	2.66 NA	NA
CO5		2	1	1.50	2.83 NA	NA
CO6		2	1	1.50	3.00 NA	NA
				1.56		

Overall
Course
Attainment
Level 1.56



Course	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PS O1	PS O2	PS O3	
C112.1	3	2	2	-	-	-	-	-	-	-	-	-	3	3	-	2.60
C112.2	3	3	2	-	-	-	2	-	-	-	-	-	3	2	-	2.50
C112.3	3	3	3	-	-	-	2	-	-	-	-	-	3	3	-	2.83
C112.4	3	3	2	-	-	-	2	-	-	-	-	-	3	3	-	2.67
C112.5	3	3	3	-	-	-	2	-	-	-	-	-	3	3	-	2.83
C112.6	3	3	3	-	-	-	-	-	-	-	-	-	3	3	-	3.00
C216	3	2.8	2.5	-	-	-	2	-	-	-	-	-	3	2.8	-	

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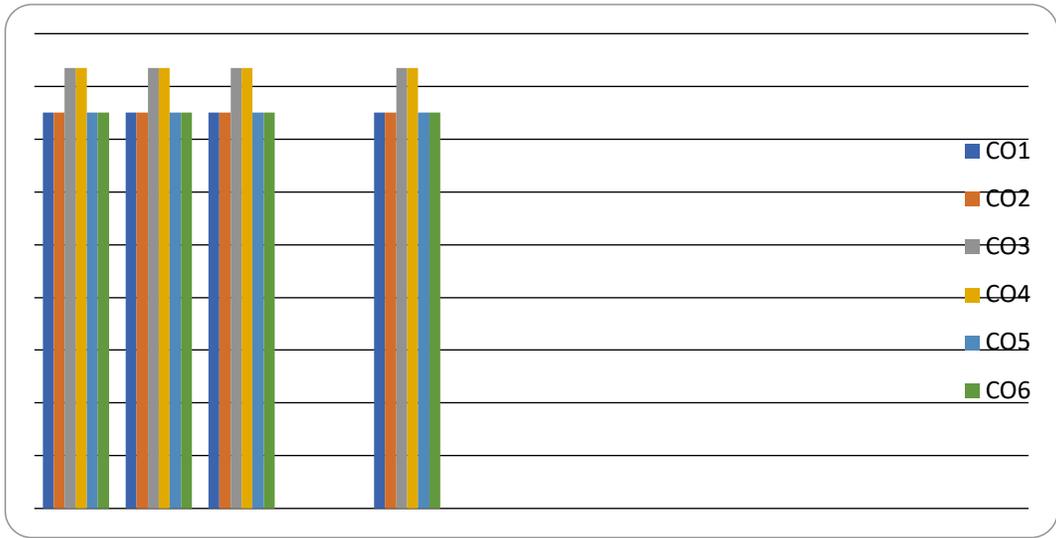
**Sri Indu College of Engineering & Technology :: Sheriguda (V),
R.R.Dist
Department of Computer Science and Engineering**

Programme Outcome Assessment

Course : EC
CLASS: I B.Tech

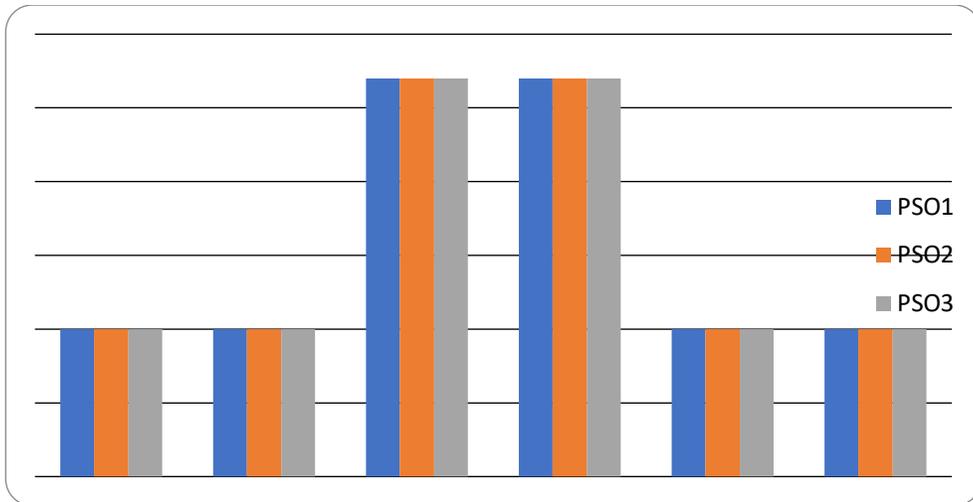
AY: 2018-19
SEM: 1st

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	1.5	1.5	1.5	-	1.5	-	-	-	-	-	-	-
CO2	1.5	1.5	1.5	-	1.5	-	-	-	-	-	-	-
CO3	1.67	1.67	1.67	-	1.67	-	-	-	-	-	-	-
CO4	1.67	1.67	1.67	-	1.67	-	-	-	-	-	-	-
CO5	1.5	1.5	1.5	-	1.5	-	-	-	-	-	-	-
CO6	1.5	1.5	1.5	-	1.5	-	-	-	-	-	-	-
OVER ALL	1.56	1.56	1.56	-	1.56	-	-	-	-	-	-	-
TARGET	3	3	2.7	-	3	-	-	-	-	-	-	-
STATUS	NA	NA	NA		NA							



Programme Specific Outcome Assessment

	CO1	CO2	CO3	CO4	CO5	CO6	OVER ALL		
PSO1	1.50	1.50	1.67	1.67	1.50	1.50	1.56	3.00	NA
PSO2	1.50	1.50	1.67	1.67	1.50	1.50	1.56	3.00	NA
PSO3	1.50	1.50	1.67	1.67	1.50	1.50	1.56	3.00	NA



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Course Improvements Based on Assessment

Course : EC AY: 2018-189
 CLASS: I B.Tech SEM: 1st semester

Course Attainment Level	1st mid	2nd mid	End Exam	OVERALL	set target level	attainment status
	2	3	1			
CO1	2		1	1.50	2.86	NA
CO2	2		1	1.50	3.00	NA
CO3	2	2	1	1.67	3.00	NA
CO4	2	2	1	1.67	2.86	NA
CO5		2	1	1.50	3.00	NA
CO6		2	1	1.50	3.00	NA
				1.56		

Overall Course Attainment Level 1.56

Best Performing Course Outcome CO3

Least Performing Course Outcome CO5

Observations/ Reasonsfor Low attainment :

1	Additional Content was not covered.
2	Some Tutorials were not implemented.

Corrective measures/Action items:

1	More basics for filters required.
2	Tutorial Plan Sheet should be improved.

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Sri Indu College of Engineering & Technology :: Sheriguda (V), R.R.Dist

Department of Computer Science and Engineering

I –B.TECH CSE I-SEMESTER RESULT ANALYSIS

A.Y	SUBJECT NAME	NO OF STUDENTS		QUESTION PAPER SETTING		PASS %
		APPEARED	PASSED	INTERNAL	EXTERNAL	
2018-19	CHEMISTRY	240	165	COURSE INSTRUCTOR	EXPERTS COMMITTEE	68.75 %



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