



Sir M. Visvesvaraya Institute of Technology

Bengaluru - 562157

Approved by AICTE | Affiliated to VTU Belagavi | Accredited by NAAC

Department of Chemistry

Course File

Academic Year: 2023-24
Semester: I

me of the faculty member: Ms. Kavya.D.

le of the course with code: Applied Chemistry
for EEE stream / BCHEE102.

S. No.	Contents	Page Number
1.	Department Vision, Mission, PEOs, PSOs, POs	1
2.	Subject allotment order	2
3.	Course information sheet	3
4.	Calendar of events	4
5.	Class time table and Faculty member's individual time table	5
6.	Student list	6
7.	Syllabus copy for the course	7
8.	Gaps in the curriculum as identified during the introduction of new scheme	8
9.	Topics beyond syllabus to bridge the gaps in the curriculum - actions/events planned	8
10.	Lesson plan	9
11.	Evaluation pattern for the course	10
12.	CO-PO-PSOs mapping with justification	10
13.	CO-PO Attainment sheet of the previous year for the same course Actions taken to improve the attainment and report MoM from DAAC/PAC (Department Academic Advisory Committee/Program Advisory Committee)	11
14.	IPCC course lab related documents • Lab course plan with CO/PO/PSO mapping (For IPCC lab) with justification • CO-PO attainment for lab component • CO-PO attainment sheet of the previous year for the same lab course Continuous Improvement Evaluation (CIE) sheet of experiments	12

15.	Internal assessment question papers indicating the CO – PO mapping and Bloom's taxonomy levels with scheme of evaluation	13
16.	Internal assessment scores with B-forms	14
17.	List of slow learners and actions taken to support/improve performance (attendance sheet of the remedial classes/special assignments with impact analysis)	15
18.	List of fast learners and support extended to excel	16
19.	Tutorial sheets (If applicable)	-
20.	Course material (notes/e-contents/ power point presentations)	17
21.	Pedagogical/Innovative teaching methods	-
22.	Events/activities done for topics beyond syllabus to bridge the gaps in the curriculum <ul style="list-style-type: none"> Event details – Poster, attendance list, report, impact analysis with along with PO attainment 	18
23.	Course end survey by the students	19
24.	Students feedback	20
25.	Result analysis	21
26.	CO-PO Attainment sheet	-
27.	Course completion report by the course coordinator	22
28.	Any other course related documents	23

Kanya D
Signature of the faculty member

Prashanth K
Signature of HoD

Head
Department of Chemistry
Sir. MVIT, Bengaluru-562157

Sri Krishnadevaraya Educational Trust

Sir M. Visvesvaraya Institute of Technology, Bengaluru-562 157

INSTITUTE VISION

- To be a centre of excellence in technical and management education concurrently focusing on disciplined and integrated development of personality through quality education, sports, cultural and co-curricular activities.
- To promote transformation of students into better human beings, responsible citizens and competent professionals to serve as a valuable resource for industry, work environment and society.

INSTITUTE MISSION

- To impart quality technical education, provide state-of-art facilities, achieve high quality in teaching-learning & research and encourage extra & co-curricular activities.
- To stimulate in students a spirit of inquiring and desire to gain knowledge and skills to meet the changing needs that can enrich their lives.
- To provide opportunity and resources for developing skills for employability and entrepreneurship, nurturing leadership qualities, imbibing professional ethics and societal commitment.
- To create an ambience and nurture conducive environment for dedicated and quality staff to up-grade their knowledge and skills and disseminate the same to students on a sustainable long-term basis.
- To facilitate effective interaction with the industries, alumni and research institutions.



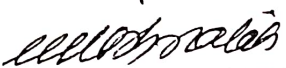
Sri Krishnadevaraya Educational Trust
Sir M. Visvesvaraya Institute of Technology, Bengaluru-562 157
Department of Chemistry

VISION

- To impart quality education to students with basic knowledge of fundamentals and strong foundation in science to mould them into competent professionals.

MISSION

- To provide information to students that builds within them, a strong foundation in the basic principles of science for technologies to develop problem solving abilities and analytical skills.
- To impart quality education to the students to meet the needs of society with ethics. The Department is well equipped for teaching and offers good practical training in Engineering Chemistry to meet the academic requirements of VTU.


Dr. G. M. KRISHNAIAH Ph.D
Professor & HOD of Chemistry
Sir M. Visvesvaraya Institute of
Technology, Bengaluru-562 157



Sri Krishnadevaraya Educational Trust
Sir M. Visvesvaraya Institute of Technology, Bengaluru-562 157
Department of Chemistry

PROGRAM OUTCOMES (POs)

P01: ENGINEERING KNOWLEDGE: Apply the knowledge of mathematics, science, Engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.

P02: PROBLEM ANALYSIS: Identify, formulate, review research literature and analyze complex engineering problems reaching substantiated conclusion using first principles of mathematics, natural sciences, and engineering sciences.

P03: DESIGN/DEVELOPMENT OF SOLUTIONS: Design solution for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, culture, societal and environmental consideration.

P04: CONDUCT INVESTIGATION 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 conclusion.

P05: MODERN TOOL USAGE: Create, select & apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitation.

P06: THE ENGINEER AND SOCIETY: Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal & cultural issues & the consequent responsibilities relevant to professional engineering practice.

P07: ENVIRONMENT & SUSTAINABILITY: Understanding impact of the professional engineering solution in societal & environmental context, and demonstrates the knowledge of, and need for sustainable development.

P08: ETHICS: Apply ethical principles and commit to professional ethics and responsibilities and norm of engineering practice.

P09: INDIVIDUAL AND TEAM WORK: Function effectively as an individual, and as a member or leader in diverse teams, and in multi disciplinary settings.

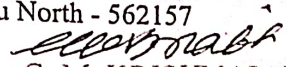
P010: COMMUNICATION: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective report and design documentation, make effective presentation and give and receive clear instruction.

P011: PROJECT MANAGEMENT FINANCE: Demonstrate knowledge and understanding of the engineering and management principles and these to own work, as a member and leader in a team, to manage projects and in multi disciplinary environment.

P012: 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.



Off International Airport Road, Hunasamaranahalli, Bengaluru North - 562157


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Technology, Bengaluru-562157

Sri Krishnadevaraya Educational Trust

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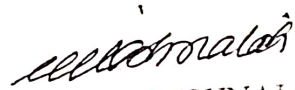
DEPARTMENT OF CHEMISTRY

Program Educational Objectives (PEO's)

PEO1: Students pursue profession in chemical sciences.

PEO2: Students will work in diversified areas.

PEO3: Students pursue education and focus on research activities.


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Professor & HOD of Chemistry
Sir M. Visvesvaraya Institute of
Technology, Bengaluru-562 157



SIR M. VISVESVARAYA INSTITUTE OF TECHNOLOGY

Department of Chemistry

Course outcome (Course Skill Set) At the end of the course the student will be able to :

CO1.	Identify the terms processes involved in scientific and engineering and applications
CO2.	Explain the phenomenon of Chemistry to describe the method of engineering processes
CO3.	Solve for the problems in Chemistry that are pertinent in engineering applications
CO4.	Apply the basic concepts of chemistry to explain the chemical properties and processes
CO5.	Analyze processes associated with chemical substances in properties and multi-disciplinary situations

2

Sir M. VISVESVARAYA INSTITUTE OF TECHNOLOGY
BENGALURU-562157
DEPARTMENT OF CHEMISTRY

DATE: 22-09-2023

ODD SEMESTER SUBJECT/S ALLOTMENT
[Applied Chemistry for CSE/CV/EC/ME Theory and Lab
(Integrated Course: BCHEX102, X=S/C/E/M)]

To,
Ms. Kavya D
Assistant Professor of Chemistry.

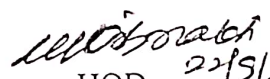
Sir,
The following subject/periods are allotted to the odd semester with effect from 22-09-2023 for the academic year 2023-24. So, I request you to accept.

The particulars of the allotment are as follows:

1. 1st Semester B.E., B- section theory (4 hours/ week): Total 4 hours /week (8 units)
2. 1st Semester B.E., Batches: H-1, A-2, G-1, B-1, E-2 & F-1 (2 hours/Batch/week): Total 12 hours /week (12 units)

Total = 20 Units

Thanking you,


HOD 22/9/23
Prof. & Head
Dept. of Chemistry
Sir M. Visvesvaraya Institute of Technology
Bengaluru-562 157

- Encl: (i) Personal time table
(ii) Class time table
(iii) Students class list
(iv) Attendance registers Theory /Lab
(v) Calendar of Events

COURSE INFORMATION SHEET

Course Name / Code	Applied Chemistry for CSE STREAM / BCHEE 102		
Degree / Branch	B.E / Electronics & Communication Engg		
Course Credit	4		
Course Category			
Course Teacher Contact Details	Course Teacher Name	Contact Details	
		Mobile	E-mail
	Ms.Kavya D	7624890579	kavya_che@ssssirmvit.edu
Head of the Department	Dr.Prashanth G.K		



SIR M VISVESVARAYA INSTITUTE OF TECHNOLOGY
ACADEMIC CALENDAR (TENTATIVE) FOR ODD SEMESTER 2023-24 FOR UG/PG

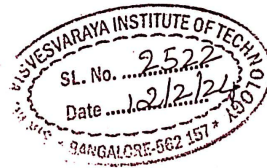
Particulars	7th Sem BE 2018 Scheme	5th Sem BE 2021 Scheme	3rd Sem BE 2022 Scheme	1st Sem BE 2022 Scheme	3rd Sem MBA 2022 Scheme	3rd Sem MCA 2022 Scheme	3rd Sem MTech	1st Sem MBA	1st Sem MCA	1st Sem MTech
Commencement of Odd Semester	14/08/2023	25/10/2023	15/11/2023	09-04-2023	01-12-2023	12-11-2023	12-11-2023	02-12-2024	02-12-2024	02-12-2024
Students Induction Programme/Internship	14/08/23 to 09/09/2023	25/10/23 to 23/11/23	NA	04/09/23 to 14/09/23	18/04/24 to 01/06/24	NA	NA	NA	NA	NA
Commencement of Classes	09-11-2023	25/11/2023	15/11/2023	15/09/2023	01-12-2023	12-11-2023	12-11-2023	02-12-2024	02-12-2024	02-12-2024
Last Working Day	17/01/2024	16/03/2024	03-09-2024	27/01/2024	13-03-2023	23/03/2024	23/03/2024	25/05/2024	25/05/2024	25/05/2024
Practical/Viva Examination	18/01/24 to 27/01/24	20/03/24 to 30/03/24	30/03/24 to 12/04/24	23/02/24 to 05/03/24	NA	25/3/24 to 30/3/24	25/03/24 to 30/03/24	27/05/24 to 31/05/24	27/05/24 to 31/05/24	27/05/24 to 31/05/24
Theory Examination	29/01/24 to 08/02/2024	01/04/24 to 25/04/24	13/03/23 to 27/03/24	29/01/24 to 21/02/24	18/03/24 to 17/04/24	01/04/24 to 18/04/24	01/04/24 to 18/04/24	03/06/24 to 20/06/24	03/06/24 to 20/06/24	03/06/24 to 20/06/24
First Test Dates	Oct 25-27, 2023	Jan 08-11, 2024	Jan 08-11, 2024	Nov 27-29 & Dec 01, 2023	Jan 22-27, 2024	Jan 22-24, 2024	Jan 22-24, 2024	01/04/24 to 04/04/24	26/03/24 to 28/03/24	26/03/24 to 28/03/24
Second Test Dates	Nov 27-29, 2023	Feb 08-10, 2024	Feb 26-28, 2024	Dec 26-29, 2023	March 04-09, 2024	Feb 26-29, 2024	Feb 26-29, 2024	13/05/24 to 17/05/24	25/04/24 to 27/04/24	25/04/24 to 27/04/24
Third Test Dates	Dec 26-28, 2023	March 04-07, 2024	NA	NA	NA	March 18-21, 2024	March 18-21, 2024	NA	13/05/24 to 15/05/24	13/05/24 to 15/05/24
Commencement of EVEN Semester	02-12-2024	29/04/2024	15/04/2024	05-06-2024	06-03-2024	22/04/2024	22/04/2024	25/06/2024	25/06/2024	25/06/2024

LIST OF HOLIDAYS (upto June, 2024)	
Ganesha Chaturthi	18/09/2023
Id Meelad	28/09/2023
Gandhi Jayanthi	10-02-2023
Mahalaya Amavasai	14/10/2023
Ayudha Puja	23/10/2023
Vijayadashmi	24/10/2023
Valmiki Jayanthi	28/10/2023
Rajyotsava Day	11-01-2023
Balipadyami	14/11/2023
Kanakadasa Jayanthi	30/11/2023
Christmas day	25/12/2023
Makara Sankranti	15/01/2024
Republic day	26/01/2024
Mahashivarathri	03-08-2024
Good Friday	29/03/2024
Ugadi	04-09-2024
Ramzan	04-11-2024
May Day	05-01-2024
Basava Jayanthi	05-10-2024
Bakrid	18/06/2024

NOTE:

TAL - To be Announced Later
NA - Not Applicable

IMPORTANT DATES (Tentative)	
Aarambha 2023	22/09/2023
Verve 2023	11-04-2023
Kalanjali	Dec 15 & 16, 2023

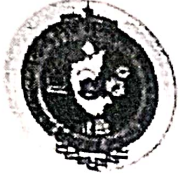


[Signature]

PRINCIPAL

PRINCIPAL

SIR M. VISVESVARAYA INSTITUTE OF TECHNOLOGY
Krishnadevarayanagar, Hunasamaranahalli,
International Airport Road, BANGALORE-562 157



ವಿಶ್ವೇಶ್ವರಯ್ಯ ತಾಂತ್ರಿಕ ವಿಶ್ವವಿದ್ಯಾಲಯ

("ವಿ ಟಿ ಯು ಅಧಿನಿಯಮ ೧೯೯೪" ರ ಅಡಿಯಲ್ಲಿ ಕರ್ನಾಟಕ ಸರ್ಕಾರದಿಂದ ಸ್ಥಾಪಿತವಾದ ರಾಜ್ಯ ವಿಶ್ವವಿದ್ಯಾಲಯ)

VISVESVARAYA TECHNOLOGICAL UNIVERSITY

(State University of Government of Karnataka Established as per the VTU Act, 1994)

"JnanaSangama" Belagavi-590018, Karnataka, India

Prof. Dr. B. E. Rangaswamy, Ph.D.
REGISTRAR

Phone: (0831) 2498100
Fax : (0831) 2405467

REF: VTU/BGM/ACA/2023-24/ 2668

DATE: 25 AUG 2023

NOTIFICATION

- Subject:** Tentative Academic Calendar of 1st semesters of B.E./B.Tech./B.Arch./B.Plan., and VII semester of B.E./B.Tech., programs of University regarding...
- Reference:** Dean faculty of Engineering, VTU Belagavi approval dated 24.08.2023
Hon'ble Vice-Chancellor's approval dated: 24.08.2023


The tentative academic calendar concerned to 1st semesters of B.E./B.Tech./B.Arch./B.Plan., and VII semester of B.E./B.Tech., programs of University for academic year 2023-24 are hereby notified as mentioned below;

	I semester B.E./B.Tech (2022 scheme)	I semester B.Plan/B.Arch (2022 scheme)	VII semester B.E./B.Tech (2018 scheme)
Commencement of the Semester	04.09.2023	04.09.2023	14.08.2023
# Internship/Students Induction Program	04.09.2023 To 14.09.2023	04.09.2023 To 14.09.2023	14.08.2023 To 09.09.2023
Commencement of Classes	15.09.2023	15.09.2023	11.09.2023
Last Working day of the Semester	06.01.2024	06.01.2024	06.01.2024
Practical Examination	08.01.2024 To 19.01.2024	08.01.2024 To 19.01.2024	08.01.2024 To 19.01.2024
Theory Examinations	22.01.2024 To 17.02.2024	22.01.2024 To 17.02.2024	22.01.2024 To 09.02.2024
Commencement of NEXT Semester	19.02.2024	19.02.2024	13.02.2024

Internship for VI semester completed students and Students Induction Program for 1st semester Students

Please Note:

- The academic sessions for ODD semesters should commence on the date mentioned above.

	SIR M. VISVESVARAYA INSTITUTE OF TECHNOLOGY BENGALURU		RECORD FORMATS (ISO 9001:2008)
	R/PP/04/02: Rev. 02	1 st SEMESTER TIME TABLE - WITH EFFECT FROM: 16.10.2023	

Ms.DK	Sections: B		ROOM NO : B 207				Branch: EC		
DAY	9.00 A.M. TO 9.55 A.M.	9.55 A.M. TO 10.50 A.M.	10.50 A.M. TO 11.00 A.M.	11.00 A.M. TO 11.55 A.M.	11.55 A.M. TO 12.40 P.M.	12.40 P.M. TO 1.35 P.M.	1.35 P.M. TO 2.30 P.M.	2.30 P.M. TO 3.25 P.M.	3.25 P.M. TO 4.20 P.M.
MONDAY			TEA BREAK		LUNCH BREAK	B-DK	←	H-1 DK+KMS	→
TUESDAY	←	A-2 DK+KMS							
WEDNESDAY		B-DK					FORUM / CLUB ACTIVITIES		
THURSDAY	←	G-1 GKP + DK					←	B-1 DK+PS	→
FRIDAY	←	E ₂ — B-DK (KD+KMS)					←	F-1 GMK+DK	→

Prepared by: Sathyananda H.M Designation: Assistant Professor Signature: <i>m sathyananda</i>	Verified by: Dr. G.M. Krishnaiah Designation: Professor & HOD Signature: <i>G.M. Krishnaiah</i> 16.10.23	Name : Prof. Rakesh S.G Designation: Principal Signature:
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Dr. G. M. KRISHNAIAH Ph.D
 Professor & HOD of Chemistry
 Sir M. Visvesvaraya Institute of
 Technology, Bengaluru-562 157



Sir M. Visvesvaraya Institute of Technology, Bengaluru-562 157
Academic Year: 2023-24 Time Table- First Semester With Effect From 16/10/2023

Sem / Sec : I / B		BRANCH: ECE		ROOM NO: B207			Block Name: Basic Science			
TIME → DAY ↓	09.00 AM to 09.55 AM	09.55 AM to 10.50 AM	10.50 AM to 11.00 AM	11.00 AM to 11.55 AM	11.55 AM to 12.40 PM	12.40 PM to 01.35 PM	01.35 PM to 02.30 PM	02.30 PM to 03.25 PM	03.25 PM to 04.20 PM	
Monday	PLCI LAB		Tea break	ESCI	LUNCH BREAK	BCHEE102	BCEDK103			
Tuesday	BCEDK103					PLCI	BMATE101	MATH LAB - B1 & B2 (M 204/M210)		
Wednesday	BENGK106	BCHEE102	TEA BREAK	BMATE101		ESCI	FORUM / CLUB ACTIVITIES			
Thursday	BSFHK158	BCHEE102		BMATE101		PLCI	CHEM LAB B1&B2		LIB	
Friday	BICOK107	BMATE101		ESCI		BCHEE102	LG	LG	LIB	

Sl. No.	Course	Course code	Course Title	Faculty Names	Department
1.	ASC(IC)	BMATE101	Mathematics for EEE Stream -I	Mrs. S. Uma	Mathematics
2.	ASC(IC)	BCHEE102	Applied Chemistry for EEE Stream	Mr. Kavya D	Chemistry
3.	ESC	BCEDK103	Computer Aided Engineering Drawing	Mr. Ramesh CG & Mrs. Veena BG	ME
4.	ESCI	ESCK104X	Engineering Science course- I	Refer to the attached table for details of faculty names and room numbers	
5.	PLCI	BPLCK105X	Programming Language Course -I		
6.	AEC	BENGK106	Communicative English	Ms. Sai Shreeya Anwesha	Humanities
7.	HSMS	BICOK107	Indian Constitution	Mr. Prashantha BB	Humanities
8.	AEC/SDC	BSFHK158	Scientific Foundations of Health	Dr. Halima R	BT

Class Advisors: Mrs. Malashri S & Mrs. Shwetha L

Time Table officer - TTO		Chief Time Table Officer - CTO		Principal	
Name	Dr. G.K. Prashanth	Prof. S.B. Halesh		Prof. S.G. Rakesh	
Signature	<i>Prashanth GK</i>	<i>Prof. S.B. Halesh</i>		<i>Prof. S.G. Rakesh</i>	

Sir M. Visvesvaraya Institute of Technology
Bengaluru-562157

Department of Chemistry

Course: B.E. Semester: 1 Branch: ECE Section: B AY: 2023-24

S.No	Roll No.	Student Name	Remarks
1	B1	M.U. ROHITH	
2	B2	TEJAS D NAGARAJ	
3	B3	DHRUVAN A	
4	B4	RUJWATH MANJUNATH	
5	B5	YATHISH V	
6	B6	RAJATH R	
7	B7	ANISH V PRASAD	
8	B8	PRIYANKA K	
9	B9	CHANDRASHEKHAR GANJI	
10	B10	H. SATHWIK HANDE	
11	B11	SHILPA V S.	
12	B12	SHRIDHAR S KURIHULI	
13	B13	SABGANESG S NUGGANATTI	
14	B14	VIKAS	
15	B15	SHASHANK S BEDRE	
16	B16	DHARMARAJ SURESH WALI	
17	B17	THEERTHANA P REDDY	
18	B18	T S SAI LIKHITH	
19	B19	AISHWARYA S NAYKODI	
20	B20	MANJUNATH BHIMAPPA MURAMAN	
21	B21	AMBIKA S	
22	B22	RAHUL KUMAR	
23	B23	S. V. VIKAS	
24	B24	K. TEJASVI	
25	B25	LAKSHITH K. L.	
26	B26	KEERTHANA N	
27	B27	BHAGYASHREE B PATIL	
28	B28	KAVANA L	
29	B29	H. M. PREMA	
30	B30	SUDHANSHU KUMAR LAL	
31	B31	KUSHAL S. A.	
32	B32	MANDAN GOWDA J	
33	B33	HARSHA R	
34	B34	K. SAI GOKUL	
35	B35	ABHAY B SHARMA	
36	B36	KESHAV ANAND	
37	B37	ABHINAV NAMAN	

38	B38	SUHAS G	
39	B39	SUHAS D	
40	B40	PRITHVIK N	
41	B41	G. LINGARAJ	
42	B42	VOGIRALA ADARSH	
43	B43	AFNAN JHADWALE	
44	B44	ARSHAD RAZA	
45	B45	CHITRANSHU RAJ	
46	B46	PYUSH SHRIVASTAWA	
47	B47	ROUNAK KUMAR	
48	B48	VAIBHAV S TURAMARI	
49	B49	SUJAN ARYA G	
50	B50	SWETANGI RAY	
51	B51	HONEY KRISHNA	
52	B52	KUSHAL HARISH	
53	B53	ADITYA KUMAR	
54	B54	ABHAY CHOUDHURY	
55	B55	AYUSH	
56	B56	KUNAL BHARDWAJ	
57	B57	PREETISH BIJLA	
58	B58	RAGHAV M	
59	B59	AMRIT RAJ	
60	B60	RISHAV RAJ	
61	B61	AYUSH BHUSHAN	
62	B62	AYUSH RAJ	
63	B63	AYUSH SHIKHAR	
64	B64	AMAN KUMAR TRIPATHI	

Prabhanth

Head

Department of Chemistry
Sir. MVIT, Bengaluru-562157

Electrical & Electronics Engineering and Allied branches(Chemistry group)

CourseTitle:	Chemistry for Electrical and Electronics Engineering stream		
CourseCode:	BCHEE202/202	CIEMarks	50
Course Type(Theory/Practical/Integrated)	Integrated	SEEMarks	50
		Total Marks	100
TeachingHours/Week(L:T:P:S) ¹	2:2:2:0	Exam Hours	03
TotalHoursofPedagogy	40hoursTheory+10to 12Lab slots	Credits	04

Courseobjectives

- Toenablestudentstoacquireknowledgeonprinciplesofchemistryforengineeringapplicat ions.
- Todevelopanintuitiveunderstandingofchemistrybyemphasizingtherelatedbranchesofe ngineering.
- Toprovidestudentswithasolidfoundationinanalyticalreasoningrequiredtosolvesocietal problems.

Teaching-LearningProcess

Thesearesamplestrategies,whichteachercanusetoacceleratetheattainmentofthevariouscours eoutcomesandmakeTeaching-Learningmoreeffective

- Tutorial&remedialclassesforneedystudents(notregularT/R)
- ConductingMakeupclasses/Bridgecoursesforneedystudents
- Demonstrationofconceptseitherbybuildingmodelsorbyindustryvisit
- Experimentsinlaboratoriesshallbeexecutedinblendedmode(conventionalornon- conventionalmethods)
- UseofICT-Onlinevideos,onlinecourses
- Useofonlineplatformsforassignments/Notes/Quizzes(Ex.Googleclassroom)

MODULE1:ChemistryofElectronicMaterials(8hr)

ConductorsandInsulators:Introduction,principlewithexamples.

Semiconductors: Introduction, production of electronic grade silicon-Czochralski process(CZ) andFloatZone(FZ)methods.

Polymers:Introduction,Molecularweight-

Numberaverage,Weightaverageandnumericalproblems.Conductingpolymers- synthesisandconductingmechanismofpolyacetylene.Preparation, propertiesandcommercialapplicationsofgrapheneoxide.

PCB: Electroless plating – Introduction, Electroless plating of copper in the manufacture ofdouble-sidedPCB.

Self-learning:Technologicalimportanceofmetalfinishinganddistinctionbetween electroplatingandelectrolessplating.

MODULE2:EnergyConversionandStorage(8hr)

Batteries: Introduction, classification of batteries. Components, construction, working andapplications of modern batteries; Na-ion battery, solid state battery (Li-polymer battery)andflowbattery(Vanadiumredoxflowbattery).

FuelCells:Introduction,construction,workingandapplicationsofmethanol-oxygenand

polymerelectrolytemembrane(PEM)fuelcell.

SolarEnergy: Introduction, importance of solar PV cell, construction and working of solar PV cell, advantages and disadvantages.

Self-learning: Electrodes for electrostatic double layer capacitors, pseudocapacitors, and hybrid capacitor.

MODULE 3: Corrosion Science and E-waste Management (8hr)

Corrosion Chemistry: Introduction, electrochemical theory of corrosion, types of corrosion - differential metal and differential aeration. Corrosion control - galvanization, anodization and sacrificial anode method. Corrosion Penetration Rate (CPR) - Introduction and numerical problem.

E-waste Management: Introduction, sources, types, effects of e-waste on environment and human health, methods of disposal, advantages of recycling. Extraction of copper and gold from e-waste.

Self-learning: Recycling of PCB and battery components

MODULE 4: Nanomaterials and Display Systems (8hr)

Nanomaterials: Introduction, size dependent properties of nanomaterials (Surface area, Catalytic, Conducting), preparation of nanomaterials by sol-gel and co-precipitation method with example. Introduction, properties and applications - Nanofibers, Nanophotonics, Nanosensors.

Display Systems: Liquid crystals (LC's) - Introduction, classification, properties and application in Liquid Crystal Displays (LCD's). Properties and application of Organic Light Emitting Diodes (OLED's) and Quantum Light emitting diodes (QLED's).

Perovskite Materials: Introduction, properties and applications in optoelectronic devices.

Self-learning: Properties & electrochemical applications of carbon nanotubes and graphene.

MODULE 5: Sensors in Analytical Techniques (8hr)

Electrode System: Introduction, types of electrodes. Ion selective electrode - definition, construction, working and applications of glass electrode. Determination of pH using glass electrode. Reference electrode - Introduction, calomel electrode - construction, working and applications of calomel electrode. Concentration cell - Definition, construction and Numerical problems.

Sensors: Introduction, working principle and applications of Conductometric sensors, Electrochemical sensors, Thermometric sensors, and Optical sensors.

Analytical Techniques: Introduction, principle and instrumentation of Colorimetric sensors; its application in the estimation of copper, principle and instrumentation of Potentiometric sensors; principle and instrumentation of its application in the estimation of iron, Conductometric sensors; its application in the estimation of weak acid.

Self-learning: IR and UV-Visible spectroscopy.

PRACTICAL MODULE

A - Demonstration (any two) offline/virtual:

A1. Synthesis of polyurethane

A2. Determination of strength of an acid in Pb-acid battery

A3. Synthesis of iron oxide nanoparticles

A4. Electroplating of copper on metallic objects

B-Exercise (compulsorily any 4 to be conducted):

- B1. Conductometric estimation of acid mixture
 B2. Potentiometric estimation of FA using $K_2Cr_2O_7$
 B3. Determination of pKa of vinegar using pH sensor (Glass electrode)
 B4. Determination of rate of corrosion of mild steel by weight loss method
 B5. Estimation of total hardness of water by EDTA method

C-Structured Enquiry (compulsorily any 4 to be conducted):

- C1. Estimation of Copper present in electroplating effluent by optical sensor (colorimetry)
 C2. Determination of Viscosity coefficient of lubricant (Ostwald's viscometer)
 C3. Estimation of iron in TMT bar by diphenyl amine/external indicator method
 C4. Estimation of Sodium present in soil/effluent sample using flame photometry
 C5. Determination of Chemical Oxygen Demand (COD) of industrial wastewater sample

D-Open Ended Experiments (any two):

- D1. Estimation of metal in e-waste by optical sensors
 D2. Electroless plating of Nickel on Copper
 D3. Determination of glucose by electrochemical sensors
 D4. Synthesis of polyaniline and its conductivity measurement

Course outcome (Course Skill Set)

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

C01.	Identify the terms and processes involved in scientific and engineering applications
C02.	Explain the phenomena of chemistry to describe the methods of engineering processes
C03.	Solve the problems in chemistry that are pertinent in engineering applications
C04.	Apply the basic concepts of chemistry to explain the chemical properties and processes
C05.	Analyze properties and multi processes associated with chemical substances in disciplinary situations

Assessment Details (both CIE and SEE)

The weightage of Continuous Internal Evaluation (CIE) is 50% and for Semester End Exam (SEE) is 50%. The minimum passing mark for the CIE is 40% of the maximum marks (20 marks out of 50). The minimum passing mark for the SEE is 35% of the maximum marks (18 marks out of 50). A student shall be deemed to have satisfied the academic requirements and earned the credits allotted to each subject/ course if the student secures not less than 35% (18 Marks out of 50) in the semester-end examination (SEE), and a minimum of 40% (40 marks out of 100) in the sum total of the CIE (Continuous Internal Evaluation) and SEE (Semester End Examination) taken together.

Continuous Internal Evaluation (CIE):

The CIE marks for the theory component of the IC shall be **30 marks** and for the laboratory component **20 Marks**.

CIE for the theory component of the IC

- Three Tests each of 20 Marks; after the completion of the syllabus of 35-40%, 65-70%, and 90-100% respectively.
- Two Assignments/two quizzes/ seminars/one field survey and report presentation/one-course project totalling 20 marks.

Total Marks scored (test + assignments) out of 80 shall be scaled down to **30 marks**

CIE for the practical component of the IC

- On completion of every experiment/program in the laboratory, the students shall be

evaluated and marks shall be awarded on the same day. The **15 marks** are for conducting the experiment and preparation of the laboratory record, the other **05 marks** shall be for the test conducted at the end of the semester.

- The CIE marks awarded in the case of the Practical component shall be based on the continuous evaluation of the laboratory report. Each experiment report can be evaluated for 10 marks. Marks of all experiments' write-ups are added and scaled down to 15 marks.
- The laboratory test (**duration 03 hours**) at the end of the 15th week of the semester /after completion of all the experiments (whichever is early) shall be conducted for 50 marks and scaled down to **05 marks**.

Scaled-down marks of write-up evaluations and tests added will be CIE marks for the laboratory component of IC/IPCC for **20 marks**.

- The minimum marks to be secured in CIE to appear for SEE shall be 12 (40% of maximum marks) in the theory component and 08 (40% of maximum marks) in the practical component. The laboratory component of the IC/IPCC shall be for CIE only. However, in SEE, the questions from the laboratory component shall be included. The maximum of 05 questions is to be set from the practical component of IC/IPCC, the total marks of all questions should not be more than 25 marks.

The theory component of the IC shall be for both CIE and SEE.

Semester End Examination(SEE):

Theory SEE will be conducted by University as per the scheduled timetable, with common question papers for the subject (**duration 03 hours**)

- The question paper shall be set for 100 marks. The medium of the question paper shall be English/Kannada). The duration of SEE is 03 hours.
- The question paper will have 10 questions. Two questions per module. Each question is set for 20 marks. The students have to answer 5 full questions, selecting one full question from each module. The student has to answer for 100 marks and **marks scored out of 100 shall be proportionally reduced to 50 marks**.

There will be 2 questions from each module. Each of the two questions under a module (with a maximum of 3 sub-questions), **should have a mix of topics** under that module.

Suggested Learning Resources:

Books(TitleoftheBook/Nameoftheauthor/Nameofthepublisher/EditionandYear)

1. WileyEngineeringChemistry,WileyIndiaPvt.Ltd.NewDelhi,2013-2ndEdition.
2. EngineeringChemistry,Satyaprakash&ManishaAgrawal,KhannaBookPublishing,Delhi
3. ATextBookofEngg.Chemistry,ShashiChawla,DhanpatRai&Co.(P)Ltd.
4. EssentialsofPhysicalChemistry,Bahl & Tuli,S.ChandPublishing
5. AppliedChemistry,SunitaRattan,Kataria5.EngineeringChemistry,Baskar,Wiley
6. EngineeringChemistry-I,D.Groure Krishana,VikasPublishing
7. ATextbookofEngineeringChemistry,SSDara&Dr.SSUmare,SChand&CompanyLtd.,12thEdition,2011
8. ATextBookofEngineeringChemistry,R.V.GadagandNityanandaShetty,I.K.InternationalPublishinghouse. 2ndEdition,2016.
9. TextBookofPolymerScience,F.W.Billmeyer,JohnWiley&Sons,4thEdition,1999.
10. NanotechnologyAChemicalApproachtoNanomaterials,G.A.Ozin &A.C.Arsenault,RSCPublishing,2005.
11. CorrosionEngineering,M.G.Fontana,N.D.Greene,McGrawHillPublications,NewYork,3rdEdition,1996.
12. Linden'sHandbookofBatteries,KirbyW.Beard,FifthEdition,McGrawHill,2019.
13. OLEDDisplayFundamentalsandApplications,TakatoshiTsujiMura,Wiley-Blackwell,2012
14. Supercapacitors: Materials, Systems, and Applications, Max Lu, Francois Beguin,ElzbietaFrackowiak,Wiley-VCH;1st edition,2013.

15. "Handbook on Electroplating with Manufacture of Electrochemicals", ASIAPACIFIC BUSINESS PRESS Inc., 2017. Dr. H. Panda,
16. Expanding the Vision of Sensor Materials. National Research Council 1995, Washington, DC: The National Academies Press. doi:10.17226/4782.
17. Engineering Chemistry, Edited by Dr. Mahesh Band and Dr. Roopashree B, Sunstar Publisher, Bengaluru, ISBN 978-93-85155-70-3, 2022
18. High Performance Metallic Materials for Cost Sensitive Applications, F.H. Froes, et al, John Wiley & Sons, 2010
19. Instrumental Methods of Analysis, Dr. K. R. Mahadik and Dr. L. Sathiyarayanan, Nirali Prakashan, 2020
20. Principles of Instrumental Analysis, Douglas A. Skoog, F. James Holler, Stanley R. Crouch Seventh Edition, Cengage Learning, 2020
21. Polymer Science, VR Gowariker, NV Viswanathan, Jayadev, Sreedhar, New Age Int. Publishers, 4th Edition, 2021
22. Engineering Chemistry, PC Jain & Monica Jain, Dhanpat Rai Publication, 2015-16th Edition.
23. Nanostructured materials and nanotechnology, Hari Singh, Nalwa, academic press, 1st Edition, 2002.
24. Nanotechnology Principles and Practices, Sulabha Kulkarni, Capital Publishing Company, 3rd Edition 2014
25. Principles of nanotechnology, Phanikumar, Scitech publications, 2nd Edition, 2010.
26. Chemistry for Engineering Students, B.S. Jai Prakash, R. Venugopal, Sivakumaraiah & Pushpalyengar., Subash Publications, 5th Edition, 2014
27. "Engineering Chemistry", O.G. Palanna, Tata McGraw Hill Education Pvt. Ltd. New Delhi, Fourth Reprint, 2015.
28. Chemistry of Engineering materials, Malini S, K. S. Anantha Raju, CBS publishers Pvt Ltd.
29. Laboratory Manual Engg. Chemistry, Anupma Rajput, Dhanpat Rai & Co.

Web links and Video Lectures (e-Resources):

- <http://libgen.rs/>
- <https://nptel.ac.in/downloads/122101001/>
- <https://nptel.ac.in/courses/104/103/104103019/>
- <https://ndl.iitkgp.ac.in/>
- <https://www.youtube.com/watch?v=faESCxAWR9k>
- <https://www.youtube.com/watch?v=TBqXMWaxZYM&list=PLyhmwFtznRhuz8L1bb3X-9lbHrDMjHWWWh>
- <https://www.youtube.com/watch?v=j5Hml6KN4TI>
- <https://www.youtube.com/watch?v=X9GHBdyYcyo>
- <https://www.youtube.com/watch?v=1xWBPZnEjk8>
- <https://www.youtube.com/watch?v=wRAo-M8xBHM>

Activity Based Learning (Suggested Activities in Class) / Practical Based learning

- <https://www.vlab.co.in/broad-area-chemical-sciences>
- <https://demonstrations.wolfram.com/topics.php>
- <https://interestingengineering.com/science>

COs and POs Mapping (Individual teacher has to fill up)

PO												
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	1	1				1					
CO2	3	1	1				1					
CO3	3	1	1				1					
CO4	3	1	1				1					
CO5	3	1	1				1					



SIR M. VISVESVARAYA INSTITUTE OF TECHNOLOGY

Department of Chemistry

DEPARTEMENT ACADEMIC ADVISORY COMMITTEE

Department Academic Advisory Committee has been constituted with effect from 5th January 2024. All the members are requested to accept the assignment and extend their cooperation in the effective functioning of the committee.

Sl. No.	Name of the faculty	Designation	Role
1	Dr. G.K. Prashanth	Associate Professor & HoD	Chairman
2	Dr. G.M. Krishnaiah	Professor	Member
3	Mr. H.M. Sathyananda	Asst. Professor	Member

Prashanth AC

Signature of the HoD
Head

Department of Chemistry
Sir. MVIT, Bengaluru-562157



SIR M. VISVESVARAYA INSTITUTE OF TECHNOLOGY

Department of Chemistry

CURRICULUM GAP IDENTIFICATION AND ACTION

Course Name: Applied Chemistry

Course Code: BCHEE102

Semester: I

Scheme: 2022

Topics identified as potential gaps in the curriculum	Relevance/importance of these gaps	POs mapped	Actions planned to bridge the gaps
1. Energy storage system: Requirements of a commercial cell, Battery characteristics	<ul style="list-style-type: none">Understanding the requirements of a commercial cell is crucial for engineering students to grasp how energy storage systems are designed, manufactured, and utilized in real-world applications.It is essential for engineering students to comprehend the performance, efficiency, and suitability of different batteries for various applications in technology and industry.	1, 3	Expert lecture
2. Electrode system: Derivation of Nernst equation	<ul style="list-style-type: none">It is vital to comprehend how electrode potentials are influenced by ion concentrations, which is fundamental in electrochemical cell design and analysis.	1, 2, 3	
3. Analytical Techniques: Differences between instrumentation and volumetric techniques	<ul style="list-style-type: none">It is important to accurately select and apply the appropriate methods for precise and reliable chemical analysis in various engineering applications.	1, 3	
4. Polymers: Definitions, Types of polymerization	<ul style="list-style-type: none">It is essential for engineering students to grasp how polymers are synthesized and classified, which is fundamental in material selection and application in engineering projects.	1, 3	

Prabash KC

Signature of the HoD
Head

Department of Chemistry
Sir M. Visvesvaraya Institute of Technology
Bengaluru-562157

Off International Airport Road, Krishnadevarayanagara, Hunasamaranahalli, Bengaluru – 562 157



SIR M. VISVESVARAYA INSTITUTE OF TECHNOLOGY

Department of Chemistry

TOPICS TAUGHT BEYOND THE SYLLABUS TO BRIDGE THE GAPS IN THE CURRICULUM

Course Name: Applied Chemistry

Course Code: BCHEE102

Semester: I

Scheme: 2022


Topics identified as potential gaps in the curriculum	Relevance/importance of these gaps	POs mapped	Actions planned to bridge the gaps
1. Energy storage system: Requirements of a commercial cell, Battery characteristics	<ul style="list-style-type: none">Understanding the requirements of a commercial cell is crucial for engineering students to grasp how energy storage systems are designed, manufactured, and utilized in real-world applications.It is essential for engineering students to comprehend the performance, efficiency, and suitability of different batteries for various applications in technology and industry.	1, 3	Expert lecture
2. Electrode system: Derivation of Nernst equation	<ul style="list-style-type: none">It is vital to comprehend how electrode potentials are influenced by ion concentrations, which is fundamental in electrochemical cell design and analysis.	1, 2, 3	
3. Analytical Techniques: Differences between instrumentation and volumetric techniques	<ul style="list-style-type: none">It is important to accurately select and apply the appropriate methods for precise and reliable chemical analysis in various engineering applications.	1, 3	
4. Polymers: Definitions, Types of polymerization	<ul style="list-style-type: none">It is essential for engineering students to grasp how polymers are synthesized and classified, which is fundamental in material selection and application in engineering projects.	1, 3	

Prabanth H/C

Signature of the HoD
Head

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	SIR M. VISVESVARAYA INSTITUTE OF TECHNOLOGY BANGALORE	(ISO 9001 : 2008)
	Form No.: R/PP04/04	LESSON PLAN

Subject : Applied chemistry for EEE Engg. Stream (EEE, ECE, ETE)

Subject code : BCHEE102/202

Sem / Sec : 1 / A, B, C, D & E.

WEEK	DATE	TOPICS PLANNED
I	From 25.09.23 to 3.10.23	Module – 1 : Chemistry of Electronic Materials Conductors and Insulators: Definition of conductors, semiconductor and insulators based on band theory, principle with examples taking Cu, Si and Quartz or any suitable example Semiconductors: Introduction, production of electronic grade silicon from quartz i) Czochralski process (CZ) and ii) Float Zone (FZ) methods ii) Polymers: Importance and developments in the field of polymers (Definition of number and weight average molecular mass, Formulae their in)
II	From 4.10.23 to 11.10.23	iii) Numerical problems on Number average and weight average molecular mass PCB: Electroless plating – Introduction, Electroless plating of copper in the manufacture of double-sided PCB. Conducting polymers – synthesis of polyacetylene, Conducting mechanism of polyacetylene. Graphene Oxide: Preparation, properties and commercial applications.
III	From 12.10.23 to 18.10.23	Module-2: Energy; Source, Conversion and Storage Batteries: Introduction, classification of batteries as primary, secondary and reserve batteries. Components, construction, working and applications of modern batteries; i) Na-ion battery, ii) solid state battery (Li-polymer battery) and iii) flow battery (Vanadium redox flow battery)
IV	From 19.10.23 to 27.10.23	Fuel Cells: Introduction, construction, working and applications of methanol-oxygen fuel cell, polymer electrolyte membrane (PEM) fuel cell Solar Energy: Introduction, importance of solar PV cell, construction and working of solar PV cell, advantages and disadvantages.
V	From 30.10.23 to 06.11.23	Module-3: Corrosion Science and E-waste Management Corrosion Chemistry: Introduction (ill effects, global losses, technological importance), electrochemical theory of corrosion (principle, reactions under different conditions and diagram taking iron as an example), Types of corrosion-differential metal ((Definition, Principle, Process and application),)and differential aeration (principle, explanation with examples), Corrosion control – ((Definition, Principle, Process and application)galvanization, anodization and sacrificial anode method
VI	From 7.11.23 to 15.11.23	Corrosion Penetration Rate (CPR) - Introduction and numerical problem E-waste Management: Introduction (ill effects of e-waste management, global losses, environmental importance), sources, types, effects of e-waste on environment and human health Methods of disposal(Classification) , advantages of recycling.

Prepared by: Kavya.D
 Designation : Asst professor
 Signature : Kavya.D
 22/09/23

Approved by : Dr.G.M.Krishnaiah
 Designation : Professor & HOD
 Signature : Dr.G.M.Krishnaiah
 22/9/23
 Dept. of Chemistry

Sir M. Visvesvaraya Institute of Technology
 Bangalore 562 157



SIR M. VISVESVARAYA INSTITUTE
OF TECHNOLOGY
BANGALORE

(ISO 9001 : 2008)

Form No.: R/PP04/04

LESSON PLAN

Subject : Applied chemistry for EEE Engg. Stream (EEE, ECE, ETE)
Subject code : BCHEE102/202
Sem / Sec : 1 / A, B, C, D & E.

		Extraction of copper and gold from e-waste(Principle, process, taking PCB as an example)
VII	From 16.11.23 to 24.11.23	Module-4: Nanomaterials and Display Systems Nanomaterials: Introduction, size dependent properties of nanomaterials (Surface area, Catalytic, Conducting), preparation of nanomaterials by sol-gel and co-precipitation method with example. Introduction, properties and applications - Nanofibers, Nanophotonics, Nanosensors.
VIII	From 4.12.23 to 11.12.23	Display Systems: Liquid crystals (LC's) - Introduction, classification, properties and application in Liquid Crystal Displays (LCD's). Properties and application of Organic Light Emitting Diodes (OLED's) and Quantum Light emitting diodes (QLED's). Perovskite Materials: Introduction, properties and applications in optoelectronic devices.
IX	From 12.12.23 to 18.12.23	Module-5: Sensors in Analytical Techniques Electrode System: Introduction, types of electrodes Ion selective electrode – definition, construction, working and applications of glass electrode. Determination of pH using glass electrode Reference electrode - Introduction, calomel electrode – construction, working and applications of calomel-electrode Concentration cell – Definition, construction and Numerical problems
X	From 19.12.23 to 22.12.23	Sensors: Introduction, working principle and applications of Conductometric sensors Electrochemical sensors, Thermometric sensors, and Optical sensors Analytical Techniques: Introduction, principle and instrumentation of Colorimetric sensors; its application in the estimation of copper, Potentiometric sensors; its application in the estimation of iron, Conductometric sensors; its application in the estimation of weak acid
XI	From 11.12.23 to 18.12.23: Lab internals	
XII	From 01.01.24 to 06.01.24 : Revision Class	

Prepared by: *Kavya*
Designation : *Asst. Professor*
Signature : *Kavya* 22/09/23

Approved by : Dr.G.M.Krishnaiah
Designation : Professor & HOD
Signature : *G.M. Krishnaiah* 22/9/23
Prof. & Head
Dept. of Chemistry

Sir M. Visvesvaraya Institute of Technology
Bangalore-562 157

Course Outcomes (COs) for BCHEE102/202: Applied Chemistry for Electrical & Allied Branches

1. CO1: Identify the terms and application processes involved in scientific and engineering contexts.
2. CO2: Explain the phenomena of chemistry to describe the methods of engineering processes.
3. CO3: Solve the problems in chemistry that are pertinent to engineering applications.
4. CO4: Apply the basic concepts of chemistry to explain chemical properties and processes.
5. CO5: Analyze properties and multidisciplinary situations.

Program Outcomes (POs) Mapping and Justification

1. PO1: Engineering knowledge:

- CO1: Identifying terms and application processes is foundational for engineering knowledge, providing the basic language and context needed for engineering tasks.
- CO2: Explaining chemical phenomena and methods used in engineering processes requires a solid understanding of engineering principles.
- CO3: Solving chemistry problems relevant to engineering applications directly uses engineering knowledge to address practical issues.
- CO4: Applying basic chemistry concepts to explain chemical properties and processes involves using foundational engineering knowledge.
- CO5: Analyzing properties and multidisciplinary situations requires broad engineering knowledge to integrate different aspects and disciplines.

2. PO2: Problem analysis:

- CO1: Weakly related as identifying terms and processes helps in understanding the problem but does not directly analyze it.
- CO2: Weakly related as explaining phenomena aids in understanding the problem's context.
- CO3: Weakly related as solving problems is a direct application of problem analysis skills.
- CO4: Weakly related as applying basic concepts helps in breaking down and understanding the problem.
- CO5: Weakly related as analyzing multidisciplinary situations helps in comprehending complex problems.

3. PO3: Design/development of solutions:

- CO1: Weakly related as identifying terms and processes is a preliminary step in the design process.
- CO2: Weakly related as explaining phenomena provides the necessary background for design.
- CO3: Weakly related as solving problems can contribute to developing solutions.
- CO4: Weakly related as applying basic concepts aids in the initial stages of design.
- CO5: Weakly related as analyzing properties and situations can inform the design process.

4. **PO7: Environment and sustainability:**
- CO1: Weakly related as identifying terms and processes can include understanding their environmental impact.
 - CO2: Weakly related as explaining phenomena includes understanding environmental and sustainability aspects of engineering processes.
 - CO3: Weakly related as solving problems can involve addressing environmental and sustainability concerns.
 - CO4: Weakly related as applying basic concepts helps in understanding the environmental impact of chemical processes.
 - CO5: Weakly related as analyzing properties and multidisciplinary situations often includes considering environmental and sustainability factors.

CO-PO Mapping Matrix

CO/PO	PO1	PO2	PO3	PO7
CO1	3	1	1	1
CO2	3	1	1	1
CO3	3	1	1	1
CO4	3	1	1	1
CO5	3	1	1	1

- 3: Strong contribution
- 2: Moderate contribution
- 1: Weak contribution

Justification

1. **PO1: Engineering knowledge:**
 - All COs strongly contribute to PO1 as they require a foundational understanding of engineering principles to identify, explain, solve, apply, and analyze chemical concepts and their applications in engineering.
2. **PO2: Problem analysis:**
 - CO3 strongly contributes to PO2 because solving chemistry problems is a direct application of problem analysis skills.
 - CO1, CO2, CO4, and CO5 weakly contribute to PO2 as they provide necessary background knowledge and context for problem analysis.
3. **PO3: Design/development of solutions:**
 - All COs weakly contribute to PO3 as they provide preliminary knowledge, context, and problem-solving skills that are essential in the design and development of engineering solutions.
4. **PO7: Environment and sustainability:**
 - All COs weakly contribute to PO7 as they provide an understanding of the environmental and sustainability aspects of chemical processes and their applications in engineering, which is crucial for developing environmentally friendly technologies in computing and allied branches.



SIR M. VISVESVARAYA INSTITUTE OF TECHNOLOGY

Department of Chemistry

DEPARTEMNT ACADEMIC ADVISORY COMMITTEE

Department Academic Advisory Committte has been constituted with effect from 5th January 2024. All the members are requested to accept the assignment and extend their cooperation in the effective functioning of the committee.

Sl. No.	Name of the faculty	Designation	Role
1	Dr. G.K. Prashanth	Associate Professor & HoD	Chairman
2	Dr. G.M. Krishnaiah	Professor	Member
3	Mr. H.M. Sathyananda	Asst. Professor	Member

Prashanth K

Signature of the HoD
Head

Department of Chemistry
Sir. MVIT, Bengaluru-562157

Course Outcomes (COs) for BCHEX102/202: Applied Chemistry Lab

1. CO1: Handling different types of instruments for analysis of materials using small quantities of materials involved for quick and accurate results.
2. CO2: Carrying out different types of titrations for estimation of concerned materials using comparatively more quantities of materials involved for good results.

Program Outcomes (POs) Mapping and Justification

1. **PO1: Engineering knowledge:**
 - CO1: Handling instruments for material analysis requires a solid foundation in engineering knowledge.
 - CO2: Performing titrations involves understanding chemical principles and applying this knowledge.
2. **PO2: Problem analysis:**
 - CO1: Weakly related, as using instruments for material analysis involves problem analysis.
 - CO2: Weakly related, as carrying out titrations requires analyzing the problem to select the correct method.
3. **PO3: Design/development of solutions:**
 - CO1: Weakly related, as handling instruments and analyzing materials provide data for design and development.
 - CO2: Weakly related, as titrations provide essential data for design and development.
4. **PO4: Conduct investigations of complex problems:**
 - CO1: Handling instruments often involves investigating complex material properties.
 - CO2: Titrations require careful investigation and analysis of chemical properties.
5. **PO5: Modern tool usage:**
 - CO1: Strongly related, as handling different types of instruments requires proficiency in modern tools.
 - CO2: Weakly related, as titrations, while traditional, may also involve modern analytical equipment.
6. **PO7: Environment and sustainability:**
 - CO1: Weakly related, as accurate analysis of materials can inform sustainable practices.
 - CO2: Weakly related, as titrations help in reducing excess reagent use and waste.
7. **PO9: Individual and teamwork:**
 - CO1: Handling instruments often requires individual precision and sometimes teamwork in a lab setting.
 - CO2: Titrations often involve collaborative work to ensure accurate results and validation.
8. **PO10: Communication:**
 - CO1: Handling instruments and reporting results require clear communication, especially in a lab report format.
 - CO2: Titrations require clear documentation and communication of methods and results.

CO/PO	PO1	PO2	PO3	PO4	PO5	PO7	PO9	PO10
CO1	3	1	1	2	3	1	2	2
CO2	3	1	1	2	1	1	2	2

- 3: Strong contribution
- 2: Moderate contribution
- 1: Weak contribution

Justification

1. **PO1: Engineering knowledge:**
 - **CO1 and CO2:** Both outcomes strongly contribute to PO1 as they require a solid understanding of chemical principles and engineering knowledge.
2. **PO2: Problem analysis:**
 - **CO1 and CO2:** Weakly contribute as they involve analyzing problems to determine appropriate methods and interpret results.
3. **PO3: Design/development of solutions:**
 - **CO1 and CO2:** Weakly contribute as they provide essential data for the design and development of engineering solutions.
4. **PO4: Conduct investigations of complex problems:**
 - **CO1:** Moderately contributes as handling instruments often involves investigating complex material properties.
 - **CO2:** Moderately contributes as titrations require careful investigation and analysis of chemical properties.
5. **PO5: Modern tool usage:**
 - **CO1:** Strongly contributes as handling various instruments requires proficiency in modern tools.
 - **CO2:** Weakly contributes as titrations may also involve modern analytical equipment.
6. **PO7: Environment and sustainability:**
 - **CO1 and CO2:** Weakly contribute as accurate analysis and titration help minimize waste and optimize material use.
7. **PO9: Individual and teamwork:**
 - **CO1 and CO2:** Moderately contribute as both handling instruments and performing titrations often involve collaborative work.
8. **PO10: Communication:**
 - **CO1 and CO2:** Moderately contribute as both require clear documentation and communication of methods and results, especially in lab reports.

Sir M. Visvesvaraya Institute of Technology, Bengaluru

Department of Chemistry

Course Title: Applied Chemistry

Sub code: BCHEE102

ASSIGNMENT – 1 (for A, B, C, D, & E Sections)

Date of assignment given: 15.11.2023

Last date for submission: 30.11.2023

1. What is metallic corrosion? Explain the electrochemical theory of corrosion with iron as example.
2. Explain (i) Differential metal corrosion, & (ii) Differential aeration corrosion.
3. Explain galvanization. Mention its applications.
4. Discuss anodizing of aluminium. Mention its applications.
5. What is cathodic protection? Discuss sacrificial anodic method.
6. What is CPR? A sheet of carbon steel one meter wide by three meters long has lost 40 g to corrosion over the past six months. Convert that mass loss to a penetration rate of the steel in mm units and mpy units. What would be the corrosion rate? (Carbon steel density = 7.8 g/cm^3).
7. A thickness of brass sheet of area 400 inch^2 is exposed to air near the ocean. After two years period it was found to experience a weight loss of 375 g due to corrosion. If the density of Brass is 8.73 g/cm^3 . Calculate the CPR in mm/year and mpy.
8. What is e-waste? Given the sources of e-waste.
9. Briefly discuss the effect of e wastes on environment and human health.
10. Briefly discuss different methods of e-waste disposal. Mention the advantages of recycling.
11. Briefly discuss how gold and copper are recovered from e waste.
12. Explain the classification of materials as conductors, insulators, and semiconductors with the help of band theory.
13. Describe the production of monocrystalline silicon by Czochralski method.
14. Discuss the production of monocrystal silicon by flat zone method.
15. What is electroless plating? Discuss electroless plating of copper on PCB.
16. What are polymers? Give the synthesis of Kevlar. Mention its properties and applications.
17. Give the synthesis of polyacetylene. Mentions its applications.
18. Discuss the mechanism of conduction in polyacetylene.
19. A polymer has the following composition: 100 molecules of molecular mass 1000 g/mol, 200 molecules of molecular mass 2000 g/mol, and 600 molecules of molecular mass 6000 g/mol. Calculate the number average and weight average molecular weight. Also, calculate the PDI.
20. Give the synthesis of graphene oxide. Mention its properties and applications.

Prepared by: Dr. G.K. Prashanth

Approved by: Dr. G.M. Krishnaiah
Prof. & Head
Dept. of Chemistry
Sir M. Visvesvaraya Institute of Technology
Bengaluru-562 157

Sir M. Visvesvaraya Institute of Technology, Bengaluru
Department of Chemistry

Course title: Applied Chemistry


Course code: BCHEE102

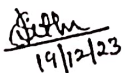
ASSIGNMENT – 2 (for A,B,C,D & E Sections)

Date of assignment given: 19.12.2023

Last date for submission: 30.12.2023

1. What are batteries? Explain the classification of batteries with suitable examples.
2. What are photovoltaic cells? Describe the construction and working of a photovoltaic cell. Mention its advantages and disadvantages.
3. Explain the construction and working of Sodium-ion battery. Mention its applications.
4. Explain the construction and working of Lithium-polymer battery. Mention its applications.
5. What are fuel cells? Explain the construction and working of methanol- oxygen fuel cell.
6. What are flow batteries? Explain the construction and working of Vanadium redox flow battery. Mention its applications.
7. Discuss the construction and working of polymer electrolyte fuel cell. Mention its applications.
8. What are ion selective electrodes? Explain the construction and working principle of glass electrode. Mention the advantages and disadvantages of glass electrode.
9. What are reference electrodes? Explain the construction and working principle of calomel electrode. Mention the advantages of calomel electrode.
10. Explain how pH of the solution is determined using glass electrode
11. What are concentration cells? Represent a cell formed by immersing two silver electrodes in silver nitrate solutions of concentration 0.01 and 0.1 M. Write the reactions and find the emf of the cell.
12. Calculate the valency of Zn from the following cell at 298K, if the emf of the cell is 0.02571V.
13. Explain the working principle and applications of electrochemical sensor.
14. What is instrumental method of analysis? Mention its advantages and limitations.
15. Describe the conductometric estimation of a weak acid against a strong base and a weak base.
16. What are potentiometric sensors? Explain the principle, instrumentation and the application of potentiometric sensor in the estimation of iron.
17. Briefly discuss the working principle and applications of colorimetric sensors.

Prepared by: Ms. Kavya D  19/12/23

Mrs. Punitha S  19/12/23


Approved by: Dr. G.M. Krishnaiah
Prof. & Head

Dept. of Chemistry
Sir M. Visvesvaraya Institute of Technology
Bengaluru-562 157

USN

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M

V

Sir M. Visvesvaraya Institute of Technology
Bengaluru 562 157
INTERNAL TEST PAPER

TEST NO : 1 SEM : I COURSE / BRANCH / SECS : BE /ECE, ETE, & EEE/ A, B, C, D, & E MAX. MARKS : 25 DURATION : 60 Mins
COURSE TITLE : Applied Chemistry for EEE & Allied branches Faculty Names : Dr. G.K. Prashanth, Mr. H.M. Sathyananda, Ms. Kavya D, & Mrs. Punitha S

Instructions: Answer any one Question from each PART

BL – Bloom's Taxonomy Levels (1- Remembering, 2- Understanding, 3 – Applying, 4 – Analyzing, 5 – Evaluating, 6 - Creating)
CO – Course Outcomes PO – Program Outcomes; PI – Performance Indicator

Q. No	Question	Marks	CO	BL	PO	PI
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PART A

1	a) What is metallic corrosion? Explain the electrochemical theory of corrosion with iron as example.	8	CO3	L2	1	1.5.1
	b) Discuss sources, types, and effects of e-waste on environment and human health.	7	CO3	L2	1	1.5.1

OR

2	a) What is CPR? Calculate the CPR in both mpy and mmpy for a thick steel sheet of area 100 inch ² experiences a weight loss of 500 g after one year (Density of steel=7.9 g/cm ³)	8	CO3	L2	2	1.5.1
	b) Describe the extraction of copper from e-waste. Mention any two advantages of recycling.	7	CO3	L2	1	1.5.1

PART B

3	a) Discuss the mechanism of conduction in polyacetylene	5	CO1	L2	1	1.5.1
	b) A polydisperse sample of polystyrene is prepared by mixing three monodisperse samples in the following proportions. 1 g of 10,000 molecular weight, 2 g of 50,000 molecular weight and 2 g of 1,00,000 molecular weight. Determine number average and weight average molecular weight. Also find the polydispersity index.	5	CO1	L2	2	1.5.1

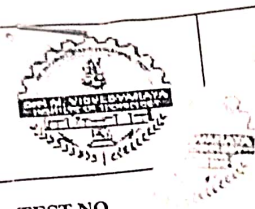
OR

4	a) Explain the production of electronic grade silicon by Czochralski process	5	CO1	L2	1	1.5.1
	b) What is electrolessplating? Describe the electrolessplating of copper in the manufacture of double sided PCB.	5	CO1	L2	1	1.5.1

CO1: Identify the terms and processes involved in scientific and engineering applications.
CO3: Solve the problems in chemistry that are pertinent in engineering applications.

Prashanth GK
Prepared and verified by 25.11.2022
QPSC Member

Prashanth GK
Approved by 25/11/2022
HOD



USN

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Sir M. Visvesvaraya Institute of Technology

Bengaluru 562 157

INTERNAL TEST PAPER

TEST NO

COURSE/EST NO
TITLE

: I

SEM : I

COURSE /
BRANCH /
SECS: BE /ECE, ETE, EEE/
A, B, C, D, & EMAX.
MARKS

: 25

DURATION : 60 Mins

COURSE
TITLE : Applied Chemistry for EEE &
Allied branches

Faculty Names : GKP, HMS, DK, & PS

SCHEME OF EVALUATION

Q. No	Question	Marks
PART A		
1	a) Definition of metallic corrosion	2
	Anodic reaction	1
	Cathodic reactions	3
	Formation of rust	2
	b) Sources	2
	Types	2
	Effects	3
OR		
2	a) Definition	2
	CPR = KW/DAT	1+1
	mpy: 38.58 (Substitution and calculation)	1+1
	mmpy: 0.9812 (Substitution and calculation)	1+1
	b) Pre treatment	2
	Chemical treatment with reaction	2
	Metal recovery stage	1
	Advantages of recycling	2
PART B		
3	a) Mechanism (Oxidative/Reductive)	4
	Explanation	1
	b) Mn and Mw formulae	1 + 1
	Mn: 31,250 g/mol	1
	Mw: 62,000 g/mol	1
	PDI: 1.98	1
OR		
4	a) Diagram	1
	Explanation	4
	b) Definition	1
	Pre treatment	1
	Bath composition	1
	Reactions	2

Prashanth SK 25.11.2023
Prepared and verified by
QPSC Member

Prashanth SK
25/11/2023
Approved by
HOD

Date 28 12 2023

Course Code BCHEE102

USN

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Sir M. Visvesvaraya Institute of Technology
Bengaluru 562 157
INTERNAL TEST PAPER

TEST NO : II SEM : I COURSE/BRANCH/SECS : BE /ECE, EEE, & ETE/ A, B, C, D & E MAX. MARKS : 25 DURATION : 60 Mins

COURSE TITLE : Applied Chemistry for Electrical and Electronics Engineering stream Faculty Names : Dr. G.K. Prashanth, Mr. H.M. Sathyananda, Ms. D. Kavya, Ms. S. Punitha, & Ms. Kavya MS

Instructions: Answer any one Question from each PART

BL – Bloom's Taxonomy Levels (1- Remembering, 2- Understanding, 3 – Applying, 4 – Analyzing, 5 – Evaluating, 6 - Creating)
CO – Course Outcomes PO – Program Outcomes; PI – Performance Indicator

Q.No	Question	Marks	CO	BL	PO
PART A					
1	a) Explain the construction and working of Lithium-polymer battery. Give its applications.	8	CO2	L2	1 1.2
	b) What are batteries? How are they classified? Give examples.	7	CO2	L2	1 1.2.1
OR					
2	a) What are fuel cells? Discuss the construction and working of CH ₃ OH-O ₂ fuel cell.	8	CO2	L2	1 1.2
	b) Explain the construction and working of Na-ion battery. Give its applications.	7	CO2	L2	1 1.2.1
PART B					
3	a) What is a reference electrode? Explain the construction and working of calomel electrode.	5	CO5	L2	1 1.2
	b) Explain the construction and working of glass electrode.	5	CO5	L2	1 1.2.1
OR					
4	a) Discuss the determination of pH of a solution using glass electrode.	5	CO5	L2	1 1.2
	b) The EMF of the cell: Cu / CuSO ₄ (0.0093M) // CuSO ₄ (XM) / Cu is 0.0861 V at 25°C. Find the value of X.	5	CO5	L3	2 1.2.1

CO2: Explain the phenomena of chemistry to describe the methods of engineering processes.

CO5: Analyze properties and processes associated with chemical substances in multidisciplinary situations.

Prashanth GK

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(Dr. G.K. Prashanth)

22.12.2023
Approved by
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(Dr. G.M. Krishnaiah)

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Sir M. Visvesvaraya Institute of Technology
Bengaluru 562 157
INTERNAL TEST PAPER

TEST NO : II SEM : I COURSE/ BRANCH/ SECS : BE /ECE, ETE, & EEE A to E MAX. MARKS : 30 DURATION : 60 Mins
COURSE TITLE : Applied Chemistry for EEE stream Faculty Names : Dr. G.K. Prashanth, Mr. H.M. Sathyananda, Ms. D. Kavya, Ms. S. Punitha, & Ms. Kavya MS

SCHEME OF EVALUATION

Q. No	Question	Marks
PART A		
1	a) Diagram Anode, Cathode, & Electrolyte with explanation Reactions Applications (any 2)	2 3 2 1
	b) Definition of batteries Classification with example	1 2+2+2
OR		
2	a) Definition Diagram Anode, Cathode, Electrolyte, Fuel, & Oxidant with explanation Reactions	1 2 3 2
	b) Diagram Anode, Cathode, & Electrolyte with explanation Reactions Applications (any 2)	2 2 2 1
PART B		
3	a) Definition Diagram Electrode reaction Electrode representation Explanation	1 1 1 1 1
	b) Diagram Construction Working	1 2 2
OR		
4	a) Diagram Cell representation Derivation of pH	2 1 2
	b) $E_{\text{cell}} = 0.0591/n \log (C_2/C_1)$ Substitution $X = 7.55 \text{ M}$	1 2 2

Prashanth G K
Prepared and verified by
QPSC Member

Approved by
HOD

Dr. G. M. KRISHNALAH Ph.D
Professor & HOD of Chemistry
Sir M. Visvesvaraya Institute of
Technology, Bengaluru-562 157

Sir M. Viswesvaraya Institute of Technology, Bengaluru-562157.

Department of Chemistry

COURSE TITLE: B.E

SEM: I

SECTION: B

BRANCH: ECE

AY: 2023-24

Sl No.	USN	NAME	THEORY MARKS							LAB MARKS				Signature
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1	B1 048	M.U. ROHITH	13	25	11	10	10	10	21	15	10	25	46	Rohith.
2	B2 117	TEJAS D NAGARAJ	13	11	7	10	10	10	17	13	10	23	40	Tejas
3	B3 40	DHRUVAN A	19	23	13	10	10	10	23	15	10	25	48	Dhruvan
4	B4 88	RUJWATH-MANJUNATH	16	14	9	10	10	10	19	15	10	25	44	Rujwath
5	B5 126	YATHISH V	22	21	13	10	10	10	23	15	10	25	48	Yathish V
6	B6 83	RAJATH R	13	20	10	10	10	10	20	15	10	25	45	Rajath
7	B7 021	ANISH V PRASAD	23	21	13	10	10	10	23	15	10	25	49	Anish
8	B8 077	PRIYANKA K	9	23	10	10	10	10	20	15	10	25	45	Priyanka
9	B9 33	CHANDRASHEKHAR GANJI	15	24	12	10	10	10	22	15	10	25	47	Chandrashekhara
10	B10 47	H. SATHWIK HANDE	21	20	12	10	10	10	22	15	10	25	47	Sathwik
11	B11 102	SHILPA V S.	21	24	14	10	10	10	24	15	10	25	49	Shilpa V.S.
12	B12 106	SHRIDHAR S KURIHULI	16	24	12	10	10	10	22	15	10	25	47	Shridhar
13	B13 093	SABGANESG S NUGGANATTI	21	24	14	10	10	10	24	15	10	25	49	Sabganess
14	B14 123	VIKAS	17	25	13	10	10	10	23	15	10	25	48	Vikas
15	B15 100	SHASHANK S BEDRE	15	25	12	10	10	10	22	15	10	25	47	Shashank
16	B16 39	DHARMARAJ SURESH WALI	20	24	13	10	10	10	23	15	10	25	48	Dharmaraj
17	B17 118	THEERTHANA P REDDY	15	19	10	10	10	10	20	15	10	25	45	Theerthana
18	B18 116	T S SAILIKHITH	24	25	15	10	10	10	25	15	10	25	50	T.S. Sailikith
19	B19 014	AISHWARYA S NAYKODI	18	24	13	10	10	10	23	14	10	24	47	A.S. Naykodi
20	B20 066	MANJUNATH BHIMAPPA MURAMAN	16	21	11	10	10	10	21	14	10	24	45	Manjunath
21	B21 017	AMBIKA S	19	23	13	10	10	10	23	15	10	25	48	Ambika S
22	B22 091	RAHUL KUMAR	10	23	10	10	10	10	20	15	10	25	45	Rahul Kumar
23	B23 089	S. V. VIKAS	16	25	12	10	10	10	22	15	10	25	47	S.V. Vikas
24	B24 053	K. TEJASVI	23	24	14	10	10	10	24	15	10	25	49	K. Tejasvi

25	B25 062	LAKSHITH K. L.	22	22	13	10	10	10	23	14	10	24	47	Keerthana
26	B26 056	KEERTHANA N	21	25	14	10	10	10	24	15	10	25	49	Keerthana
27	B27 032	BHAGYASHREE B PATIL	25	25	15	10	10	10	25	15	10	25	50	Patil
28	B28 054	KAVANA L	13	19	10	10	10	10	20	15	10	25	45	Kam
29	B29 046	H. M. PREMA	24	25	15	10	10	10	25	15	10	25	50	H.M. Prema
30	B30 110	SUDHANSHU KUMAR LAL	8	16	7	10	10	10	17	15	10	25	42	S.K.L.
31	B31 061	KUSHAL S. A.	20	24	13	10	10	10	23	15	10	25	48	Kushal
32	B32 064	MANDAN GOWDA J	23	25	14	10	10	10	24	15	10	25	49	Madan Gowda
33	B33 051	HARSHA R	16	21	11	10	10	10	21	15	10	25	46	Harsha R
34	B34 055	K. SAI GOKUL	22	25	14	10	10	10	24	15	10	25	49	Sai
35	B35 003	ABHAY B SHARMA	22	24	14	10	10	10	24	15	10	25	49	Abhay
36	B36 057	KESHAV ANAND	15	22	11	10	10	10	21	14	10	24	45	Keshav
37	B37 006	ABHINAV NAMAN	10	19	9	10	10	10	19	15	10	25	44	Abhinav
38	B38 112	SUHAS G	19	24	13	10	10	10	23	15	10	25	48	Suhas
39	B39 111	SUHAS D	17	22	12	10	10	10	22	15	10	25	47	Suhas
40	B40 076	PRITHVIK N	5	9	4	10	10	10	14	15	10	25	39	Prithvik
41	B41 093	G. LINGARAJ	8	16	7	10	10	10	17	15	10	25	42	G. Lingaraj
42	B42 124	VOGIRALA ADARSH	6	23	9	10	10	10	19	15	10	25	44	Vogirala Adarsh
43	B43 013	AFNAN JHADWALE	11	19	9	10	10	10	19	15	10	25	44	Afnan Jhadvale
44	B44 023	ARSHAD RAZA	9	13	7	10	10	10	17	15	10	25	42	Arshad
45	B45 036	CHITRANSHU RAJ	5	10	5	10	10	10	15	15	10	25	40	Chitranshu
46	B46 071	PYUSH SHRIVASTAWA	11	10	6	10	10	10	16	15	10	25	41	Pyush Shrivastawa
47	B47 087	ROUNAK KUMAR	8	19	8	10	10	10	18	14	10	24	42	Rounak Kumar
48	B48 120	VAIBHAV S TURAMARI	16	21	11	10	10	10	21	15	10	25	46	Vaibhav S Turamari
49	B49 113	SUJAN ARYA G	25	24	15	10	10	10	25	15	10	25	50	Sujan Arya
50	B50 115	SWETANGI RAY	6	25	9	10	10	10	19	15	10	25	44	Swetangi
51	B51 052	HONEY KRISHNA	13	24	11	10	10	10	21	15	10	25	46	Honey Krishna
52	B52 060	KUSHAL HARISH	23	25	14	10	10	10	24	15	10	25	49	Kushal Harish
53	B53 012	ADITYA KUMAR	10	19	9	10	10	10	19	15	10	25	44	Aditya Kumar
54	B54 004	ABHAY CHOUDHURY	5	19	7	10	10	10	17	14	10	25	42	Abhay Choudhury
55	B55 026	AYUSH	18	20	11	10	10	10	21	15	10	25	46	Ayush
56	B56 059	KUNAL BHARDWAJ	01	10	3	10	10	10	13	13	10	23	36	Kunal Bhardwaj
57	B57 074	PREETISH BIJLA	23	25	14	10	10	10	24	15	10	25	49	Preetish Bijla
58	B58 090	RAGHAV M	11	14	8	10	10	10	18	13	10	23	41	Raghav M
59	B59 018	AMRIT RAJ	17	18	11	10	10	10	21	15	10	25	46	Amrit Raj

60	B60 084	RISHAV RAJ	19	19	11	10	10	10	21	15	10	25	46	Rishav Raj
61	B61 087	AYUSH BHUSHAN	6	13	6	10	10	10	16	15	10	25	41	Ayush Bhushan
62	B62 029	AYUSH RAJ	20	23	13	10	10	10	23	15	10	25	48	Ayush Raj
63	B63 030	AYUSH SHIKHAR	11	18	9	10	10	10	19	15	10	25	44	Ayush Shikhar
64	B64 016	AMAN KUMAR TRIPATHI	7	16	7	10	10	10	17	13	10	23	40	Aman Kumar Tripathi

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18/1/24
STAFF

S-28
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Parashanti A/C
HOD

SIR M VISVESVARAYA INSTITUTE OF TECHNOLOGY, BANGALORE

Branch : EC

Semester : 1

Sl NO.	USN	BCHEE102
1	1MV23EC001	20 (TH) , 25 (PR)
2	1MV23EC002	21 (TH) , 24 (PR)
3	1MV23EC003	24 (TH) , 25 (PR)
4	1MV23EC004	17 (TH) , 25 (PR)
5	1MV23EC005	22 (TH) , 25 (PR)
6	1MV23EC006	19 (TH) , 25 (PR)
7	1MV23EC007	17 (TH) , 23 (PR)
8	1MV23EC008	24 (TH) , 25 (PR)
9	1MV23EC009	17 (TH) , 23 (PR)
10	1MV23EC010	22 (TH) , 25 (PR)
11	1MV23EC011	19 (TH) , 24 (PR)
12	1MV23EC012	19 (TH) , 25 (PR)
13	1MV23EC013	19 (TH) , 25 (PR)
14	1MV23EC014	23 (TH) , 24 (PR)
15	1MV23EC015	20 (TH) , 24 (PR)
16	1MV23EC016	17 (TH) , 23 (PR)
17	1MV23EC017	23 (TH) , 24 (PR)
18	1MV23EC018	21 (TH) , 25 (PR)
19	1MV23EC019	19 (TH) , 21 (PR)
20	1MV23EC020	23 (TH) , 25 (PR)
21	1MV23EC021	23 (TH) , 25 (PR)
22	1MV23EC022	21 (TH) , 24 (PR)
23	1MV23EC023	17 (TH) , 25 (PR)
24	1MV23EC024	19 (TH) , 24 (PR)
25	1MV23EC025	21 (TH) , 25 (PR)
26	1MV23EC026	21 (TH) , 25 (PR)
27	1MV23EC027	16 (TH) , 25 (PR)
28	1MV23EC028	15 (TH) , 20 (PR)
29	1MV23EC029	23 (TH) , 25 (PR)
30	1MV23EC030	19 (TH) , 25 (PR)
31	1MV23EC031	24 (TH) , 25 (PR)
32	1MV23EC032	25 (TH) , 25 (PR)
33	1MV23EC033	22 (TH) , 25 (PR)
34	1MV23EC034	22 (TH) , 25 (PR)
35	1MV23EC035	19 (TH) , 23 (PR)

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SI NO.	USN	BCHEE102
37	1MV23EC037	21 (TH) , 24 (PR)
38	1MV23EC038	18 (TH) , 23 (PR)
39	1MV23EC039	23 (TH) , 25 (PR)
40	1MV23EC040	23 (TH) , 25 (PR)
41	1MV23EC041	19 (TH) , 24 (PR)
42	1MV23EC042	21 (TH) , 25 (PR)
43	1MV23EC043	17 (TH) , 25 (PR)
44	1MV23EC044	21 (TH) , 24 (PR)
45	1MV23EC045	25 (TH) , 25 (PR)
46	1MV23EC046	25 (TH) , 25 (PR)
47	1MV23EC047	22 (TH) , 25 (PR)
48	1MV23EC048	21 (TH) , 25 (PR)
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50	1MV23EC050	23 (TH) , 25 (PR)
51	1MV23EC051	21 (TH) , 25 (PR)
52	1MV23EC052	21 (TH) , 25 (PR)
53	1MV23EC053	24 (TH) , 25 (PR)
54	1MV23EC054	20 (TH) , 25 (PR)
55	1MV23EC055	24 (TH) , 25 (PR)
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57	1MV23EC057	21 (TH) , 24 (PR)
58	1MV23EC058	18 (TH) , 22 (PR)
59	1MV23EC059	13 (TH) , 23 (PR)
60	1MV23EC060	24 (TH) , 25 (PR)
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62	1MV23EC062	23 (TH) , 24 (PR)
63	1MV23EC063	25 (TH) , 25 (PR)
64	1MV23EC064	24 (TH) , 25 (PR)
65	1MV23EC065	20 (TH) , 25 (PR)
66	1MV23EC066	21 (TH) , 24 (PR)
67	1MV23EC067	20 (TH) , 23 (PR)
68	1MV23EC068	21 (TH) , 25 (PR)
69	1MV23EC069	24 (TH) , 25 (PR)
70	1MV23EC070	23 (TH) , 25 (PR)
71	1MV23EC071	16 (TH) , 25 (PR)
72	1MV23EC072	23 (TH) , 25 (PR)
73	1MV23EC073	24 (TH) , 25 (PR)
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88	1MV23EC088	19 (TH) , 25 (PR)
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90	1MV23EC090	25 (TH) , 25 (PR)
91	1MV23EC091	24 (TH) , 25 (PR)
92	1MV23EC092	24 (TH) , 25 (PR)
93	1MV23EC093	24 (TH) , 25 (PR)
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SIR M. VISVESVARAYA INSTITUTE OF TECHNOLOGY

Department of Chemistry

Ref. No. CHE-/2023-24

Date: 02.01.2024

List of slow learners

Sl. No.	Section/Roll No.	Name of the student
1	C/C11	Jashmitha Pandipalu Shekhar
2	C/C33	Sangit Kumar
3	C/C60	Sachin Kumar
4	C/C61	Dhruv Singh Sengar
5	C/C62	Harsh Yadav
6	C/C4	Ananda Parashuram Natikar
7	C/C40	Aditya Kumar Agarwal
8	G/G1	Aditya Kumar
9	H/H27	Prabhulinga C
10	H/H32	Vinay C A
11	H/H41	H R Raviraj
12	H/H43	C V Sudhanva Rao
13	H/H47	Shreyas Gowda R
14	H/H49	Deepak D
15	B/B40	Prithvik N
16	B/B45	Chitranshu Raj
17	B/B56	Kunal Bharadwaj
18	B/B61	Ayush Bhushan
19	A/A8	Abhinav Shankar
20	A/A15	Dayananda Gowda TH
21	A/S29	Radhika M
22	A/A31	Rishi Raj
23	A/A36	Satvik Gupta
24	A/A47	Upendra Kumar
25	A/A53	Kshitiz Vishwakarma
26	A/A55	Ayush Raj
27	E/E4	Arya Prasad S
28	E/E15	Narsing Sarbal
29	E/E-20	Sanjota S Dalawai
30	E/E-23	Sushendra



SIR M. VISVESVARAYA INSTITUTE OF TECHNOLOGY

Department of Chemistry

31	E/E-29	Priyabrat KumarSharma
32	E/E30	Rohith Kumar
33	E/E37	Aryan Anil Rao Desale
34	E/E40	Ramakrishna Banti
35	E/E41	Nitish Kumar
36	E/E45	ShubhanAryan
37	F/F33	S Vishal
38	F/F49	Vishesh Bhat
39	F/F58	Aditya Utkarsh
40	F/F55	Aditya Raj
41	D/D4	Arya M
42	D/D15	Hemanth K D
43	D/D58	Vikas Nayaka K R
44	D/D59	Vinay N
45	D/D60	Vishwanath Vastrad
46	D/D62	Nimishith Gowda D P

HOD

HOD

Head

Department of Chemistry
Sir. MVIT, Bengaluru-562157



SIR M. VISVESVARAYA INSTITUTE OF TECHNOLOGY

Department of Chemistry

Ref. No. CHE- 162 /2023-24

Date: 02.01.2024

The following students are hereby informed to attend the remedial classes in Applied chemistry on 3rd, 10th, 17th and 24th January 2024 from 1.30 to 3.30 PM without fail.

Venue: B209 (Science Block)

Sl. No.	Section/Roll No.	Name of the student	Attendance (January 2024)			
			3 rd	10 th	17 th	24 th
1	C/C11	Jashmitha Pandipalu Shekhar	Jashmitha	Jashmitha	AB	Jashmitha
2	C/C33	Sangit Kumar	Sangit	Sangit	Sangit	Sangit
3	C/C60	Sachin Kumar	Sachin	Sachin	Sachin	Sachin
4	C/C61	Dhruv Singh Sengar	Dhruv	Dhruv	Dhruv	Dhruv
5	C/C62	Harsh Yadav	Harsh	Harsh		
6	C/C4	Ananda Parashuram Natikar	Ananda	Ananda		Ananda
7	C/C40	Aditya Kumar Agarwal	Aditya	AB	Aditya	Aditya
8	G/G1	Aditya Kumar	Aditya	Aditya	AB	Aditya
9	H/H27	Prabhulinga C	AB	Prabhulinga	AB	Prabhulinga
10	H/H32	Vinay C A	Vinay	Vinay	Vinay	Vinay
11	H/H41	H R Raviraj	Ravi	Ravi	Ravi	Ravi
12	H/H43	C V Sudhanva Rao				AB
13	H/H47	Shreyas Gowda R	Shreyas	Shreyas	Shreyas	Shreyas
14	H/H49	Deepak D	Deepak	Deepak	DD	DD
15	B/B40	Prithvik N	Prithvik	Prithvik		Prithvik
16	B/B45	Chitranshu Raj			AB	
17	B/B56	Kunal Bharadwaj		AB		
18	B/B61	Ayush Bhushan	Ayush	Ayush	Ayush	Ayush
19	A/A8	Abhinav Shankar	Abhinav	Abhinav	Abhinav	Abhinav
20	A/A15	Dayananda Gowda TH	Dayananda	Dayananda	AB	AB
21	A/S29	Radhika M	Radhika	Radhika	Radhika	Radhika
22	A/A31	Rishi Raj	Rishi	Rishi	AB	AB
23	A/A36	Satvik Gupta	Satvik	Satvik	Satvik	AB
24	A/A47	Upendra Kumar		AB		
25	A/A53	Kshitiz Vishwakarma	Kshitiz	Kshitiz	Kshitiz	AB
26	A/A55	Ayush Raj	Ayush	Ayush	Ayush	Ayush
27	E/E4	Arya Prasad S	AB	AB	Arya	Arya
28	E/E15	Narsing Sarbal	Narsing	Narsing	Narsing	Narsing
29	E/E-20	Sanjota S Dalawai	Sanjota	Sanjota	Sanjota	Sanjota
30	E/E-23	Sushendra	Sushendra	Sushendra	Sushendra	Sushendra

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Department of Chemistry

15

31	E/E-29	Priyabrat Kumar Sharma	Rohith	Priyabr	AB	Rohith
32	E/E30	Rohith Kumar	Pohit	Pohit	Pohit	Pohit
33	E/E37	Aryan Anil Rao Desale	Aryan	AB	Aryan	AB
34	E/E40	Ramakrishna Banti	Ram	Ram	Ram	Ram
35	E/E41	Nitish Kumar	AB	Nitish	Nitish	Nitish
36	E/E45	Shubhan Aryan	Shub	Shub	Shub	Shub
37	F/F33	S Vishal	Vishal	Vishal	Vishal	Vishal
38	F/F49	Vishesh Bhat	Vishesh	Vishesh	Vishesh	Vishesh
39	F/F58	Aditya Utakarsh	Aditya	AB	Aditya	Aditya
40	F/F55	Aditya Raj	Aditya Raj	Aditya Raj	Aditya Raj	Aditya Raj
41	D/D4	Arya M	Arya M	Arya M	Arya M	Arya M
42	D/D15	Hemanth K D	Hemanth	Hemanth	Hemanth	AB
43	D/D58	Vikas Nayaka K R	Vikas	Vikas	AB	Vikas
44	D/D59	Vinay N	Vinay	Vinay	Vinay	Vinay
45	D/D60	Vishwanath Vastrad	AB	Vishwanath	Vishwanath	Vishwanath
46	D/D62	Nimishith Gowda D P	Gowda	Gowda	Gowda	Gowda
No. of absentees:			04	05	04	05
Initials of the faculty engaged the class			HMC	Gowda	Kang	Kang

Prashanth H/C

HOD
Head

Department of Chemistry
Sir. MVIT, Bengaluru-562157



SIR M. VISVESVARAYA INSTITUTE OF TECHNOLOGY

16

Department of Chemistry

ACTION FOR FAST LEARNERS

Course/Course Code: Applied Chemistry/BCIIEE102

Section/Branch: A to E/ECE

Presentation of the following topics in groups by the students:

Sl. No.	TOPICS	CO
1	Technological importance of metal finishing and distinction between electroplating and electrolessplating.	1
2	Electrodes for electrostatic double layer capacitors, pseudocapacitors, and hybridcapacitor	2
3	Recycling of PCB and battery components	3
4	Properties & electrochemical applications of carbon nanotubes and graphene	4
5	Principles and working of IR and UV-Visible spectroscopy	5

P. S. Hanth A/c
Head
Department of Chemistry
Sir. MVIT, Bengaluru-562157

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SIR M. VISVESVARAYA INSTITUTE OF TECHNOLOGY

Department of Chemistry

LIST OF FAST LEARNERS

Course/Course Code: Applied Chemistry/BCHEE102
Section/Branch: B/ECE

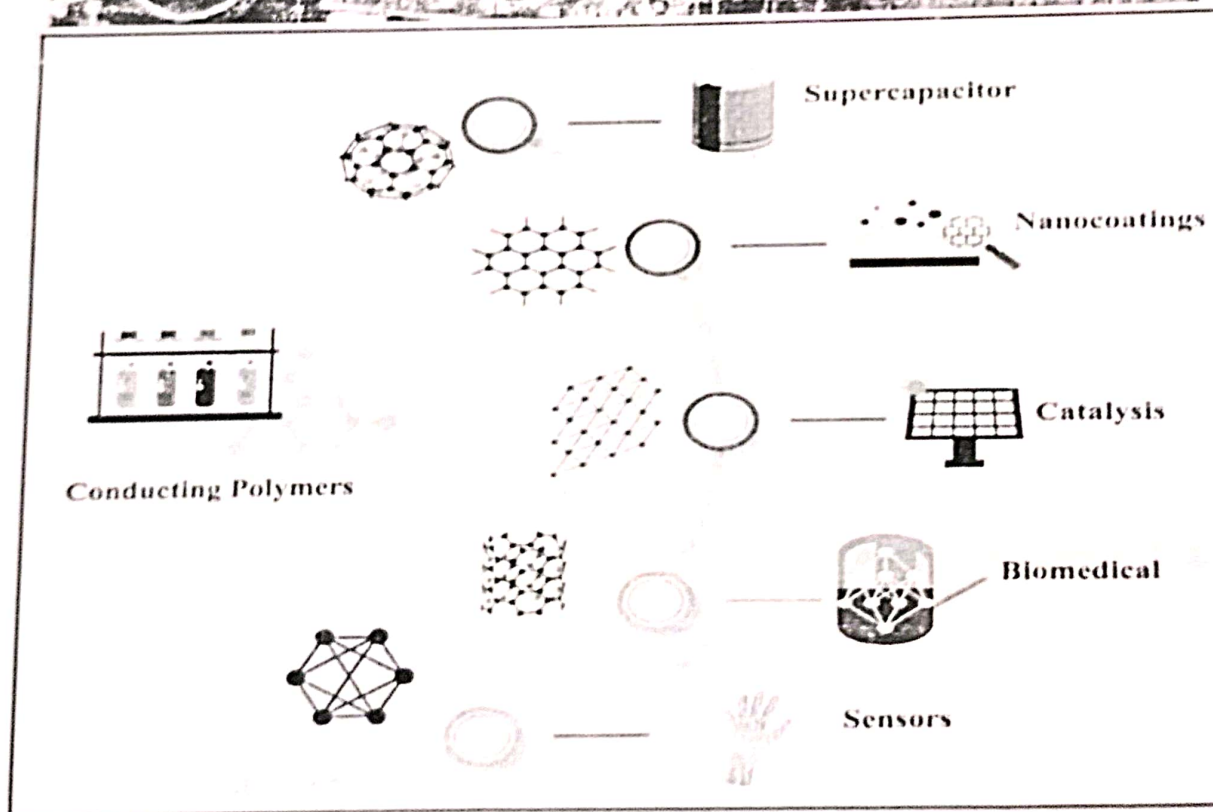
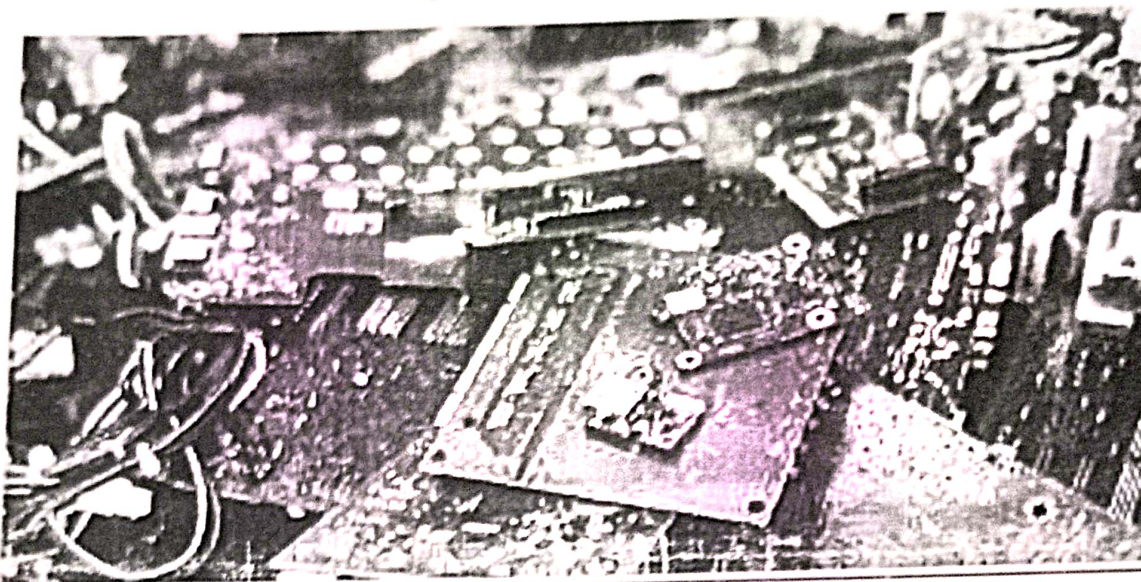
Sl. No.	Roll No.	Name of the student
1	YATHISH	1MV23EC126
2	ANISH V PRASAD	1MV23EC021
3	H SATHWIK HANDE	1MV23EC047
4	SHILPA V S	1MV23EC102
5	SANGAMESH S NUGGANATTI	1MV23EC093
6	DHARMARAJ SURESHWLI	1MV23EC039
7	T S SAI LIKITH	1MV23EC116
8	K. TEJASVI	1MV23EC053
9	LAKSHITH K L	1MV23EC062
10	KEERTHANA N	1MV23EC056
11	BHAGYASHREE B PATIL	1MV23EC032
12	H M PREMA	1MV23EC046
13	KUSHAL S A	1MV23EC061
14	MANDAN GOWDA J	1MV23EC064
15	K SAI GOKUL	1MV23EC055
16	ABHAY B SHARMA	1MV23EC003
17	SUJAN ARYA G	1MV23EC113
18	KUSHAL HARISH	1MV23EC060
19	PREETISH BIJLA	1MV23EC074
20	AYUSH RAJ	1MV23EC029

P. Shankar
Head
Department of Chemistry
Sir. MVIT, Bengaluru-562157

MODULE 1

Chemistry of Electronic Materials

(For EEE stream- ECE, EEE, and ETE branches)



G.K. Prashanth

Dept. of Chemistry, Sir MVIT

INTRODUCTION

Materials can be divided into three categories: conductors that allow electrons to flow through them, insulators that prevent the flow of electrons, and semiconductors that only let electrons flow under certain conditions. The difference between them may be best explained by the difference in their band gaps.

A band gap is an energy range in a material where no electron can exist. Conductors have no band gap, so electrons can freely move through them to generate an electric current. Metals including iron, copper, silver, gold, and aluminium are representative conductors. Insulators such as oil, glass, rubber, and ceramics have a large band gap which prevents the flow of electrons. Semiconductors, in contrast, have a small band gap, and the flow of electrons and electron holes can be controlled by adding impurities to the material.

ELECTRONIC MATERIALS

Electronic materials are the materials used in electrical industries, electronics and microelectronics, and the substances for the building up of integrated circuits, circuit boards, packaging materials, communication cables, optical fibres, displays, and various controlling and monitoring devices

Conductors: A conductor is a substance or material that allows electricity to flow through it. In conductors, electrical charge carriers (electrons or ions), move easily from atom to atom when voltage is applied and also, conduction band and valence band are overlapped. Therefore there is easy flow of electrons and thus they are good conductors of heat and electricity. Typically, metals, metal alloys, electrolytes and even few non-metals, like graphite and liquids, including water, are good electrical conductors. Pure elemental silver is one of the best electrical conductors. Other examples include copper, steel, gold, silver, platinum, aluminium, brass, etc.

Insulators: Materials that don't allow electrical current or heat to pass through them are known as insulators. In insulators, due to a large forbidden gap between conduction and valence band, there is no easy flow of charge carriers. Therefore,

12

they are bad conductors of heat and electricity. Most insulators are solids in nature. Examples: wood, glass, quartz, plastic, etc.

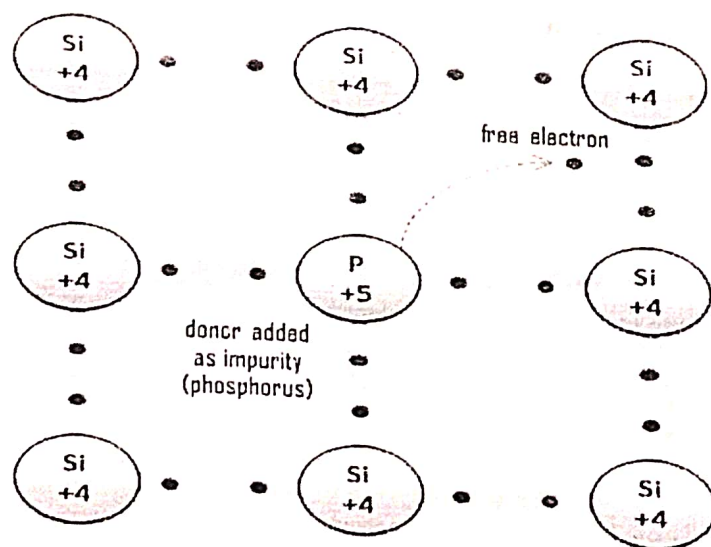
Semiconductor: Any of a class of solids (such as germanium or silicon) whose electrical conductivity is between that of a conductor and an insulator. In semiconductors, because of small gap (forbidden gap) in between conduction band and valence band, their conductivity lies between that of conductors and insulators. However, their conductivity can be increased by increasing temperature or by adding dopants. The conductivity of Silicon is 16.7 S/m .

(a) **Intrinsic semiconductor:** Conductivity of a pure semiconductor increases with increase in temperature.

(b) **Extrinsic semiconductor:** Conductivity of a semiconductor increases with the addition of dopants.

(i) **n-type Semiconductor:** In n-type semiconductor, negatively charged (electrons) species are responsible for conduction.

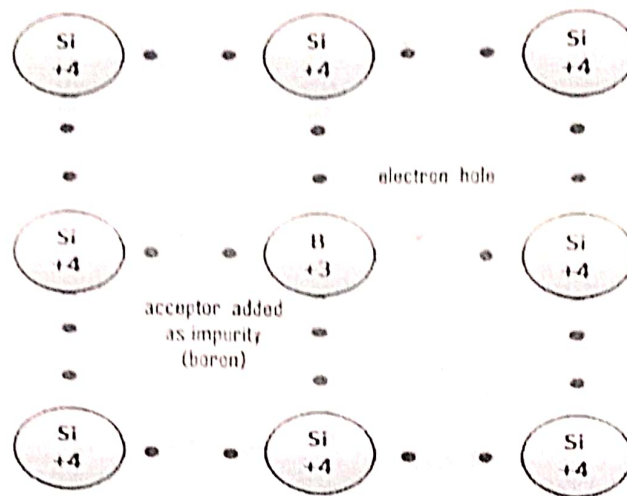
Example: When pentavalent dopant like phosphorus (P) is added to tetravalent silicon (Si), four of five electrons of P form four covalent bonds with four Si atoms and one electron remain free in the lattice of Si.



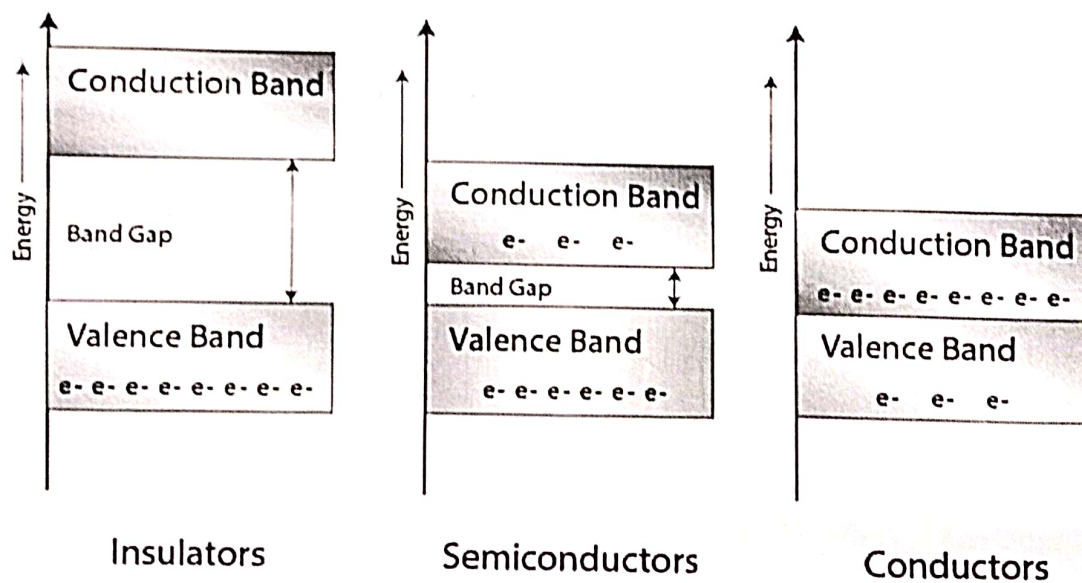
(ii) **p-type Semiconductor:** In p-type semiconductor, positively charged species (holes) are responsible for conduction.

Example: When a trivalent dopant like boron (B) is added to tetravalent silicon (Si), three electrons of B form three covalent bonds

with three Si atoms and fourth covalent bond contains only one electron from Si. So hole is created in the lattice of Si.



PRINCIPLE OF CONDUCTOR, INSULATOR, AND SEMICONDUCTOR WITH EXAMPLE



The valence band is the lower energy level of electrons and the conduction band is the higher energy level of electrons.

Conductors have no band gap, so electrons can freely move through them to generate electricity. A conductor conducts electricity since it offers little or no resistance to the flow of electrons, thus leading to a flow of electrical current. Conductors have free electrons on their surface which allow current to pass through easily. This is the reason why conductors are able to conduct electricity. Typically, metals, metal alloys, electrolytes and even some nonmetals, like graphite and liquids, including water, are good electrical conductors.

The nucleus of the copper atom contains 29 protons. A neutral copper atom must therefore have 29 electrons distributed amongst its various shells. Shells k, l, and m are filled to capacity with a total of 28 electrons, so there is only one electron in the n shell. The outermost shell of an atom, the n shell in this case, is called the valence shell, and the number of electrons it contains strongly influences the electrical properties of the element that the atom represents.

Since copper is least expensive, it is widely used in the electrical and electronic industries. A cubic centimeter of copper (about the size of a thimble) contains approximately 8.4×10^{23} free electrons at room temperature.

The best conductors (in order) are: Silver, Copper, Gold.

An electrical insulator is a material in which electric current does not flow freely. The atoms of the insulator have tightly bound electrons which cannot readily move. Materials whose valence electrons are tightly held to their parent atoms produce relatively few free electrons. Such materials are poor conductors of electricity. Most materials, including plastics, ceramics, rubber, paper, and most liquids and gases, fall into that category. Of course, there are many practical uses for insulators in the electrical and electronic industries, including wire coatings, safety enclosures, and power-line insulators. Some of the more common insulating materials are: Polyvinyl chloride (PVC), Polycarbonate, Rubber compounds, Ceramics, Glass.

Summary:

- ✦ The valence shell is the outermost shell in an atom.
- ✦ A free electron is one which has broken away from the valence shell of its parent atom.
- ✦ A positive ion is produced when a parent atom loses an electron.



SIR M. VISVESVARAYA INSTITUTE OF TECHNOLOGY

18

Department of Chemistry

DEPARTEMNT ACADEMIC ADVISORY COMMITTEE

Department Academic Advisory Committte has been constituted with effect from 5th January 2024. All the members are requested to accept the assignment and extend their cooperation in the effective functioning of the committee.

Sl. No.	Name of the faculty	Designation	Role
1	Dr. G.K. Prashanth	Associate Professor & HoD	Chairman
2	Dr. G.M. Krishnaiah	Professor	Member
3	Mr. H.M. Sathyananda	Asst. Professor	Member

Prashanth AC

Signature of the HoD
Head

Department of Chemistry
Sir. MVIT, Bengaluru-562157



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Department of Chemistry

ACTION FOR FAST LEARNERS

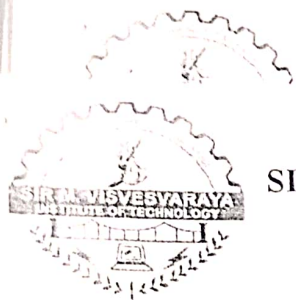
Course/Course Code: Applied Chemistry/BCHEE102

Section/Branch: A to E/ETE, ECE, EEE

Presentation of the following topics in groups by the students:

Sl. No.	TOPICS	CO
1	Technological importance of metal finishing and distinction between electroplating and electrolessplating.	1
2	Electrodes for electrostatic double layer capacitors, pseudocapacitors, and hybridcapacitor	2
3	Recycling of PCB and battery components	3
4	Properties & electrochemical applications of carbon nanotubes and graphene	4
5	Principles and working of IR and UV-Visible spectroscopy	5

P. S. Hanthi
Head
Department of Chemistry
Sir. MVIT, Bengaluru-562157



SIR M. VISVESVARAYA INSTITUTE OF TECHNOLOGY

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Department of Chemistry

DEPARTEMENT ACADEMIC ADVISORY COMMITTEE

NOTICE

The students of the I semester are hereby instructed to attend the expert talks mentioned against their sections as per the schedule given below.

Sl. No.	Section/Branch	Date of expert talk & Venue	Topic	Resource person
1	A, & B/CSE	13.01.2024, Saturday 9.00 to 11.00 AM, Science Seminar Hall	Analytical techniques	Dr. G.K. Prashanth
2	C. & D/ETE. & EEE	13.01.2024, Saturday 9.00 to 11.00 AM, MCA Seminar Hall	Polymers	Mr. H. M. Sathyananda
3	F, & G/ISE	13.01.2024, Saturday 9.00 to 11.00 AM, B209	Electrode System & Energy storage system	Dr. G.M. Krishnaiah
4	E/EEE	19.01.2024, Saturday 9.00 to 10.30 AM, B209	Analytical Techniques	Dr. G.K. Prashanth
5	H/ME	19.01.2024, Saturday 9.00 to 11.00 AM, B102	Polymers & Phase Rule	Dr. G.M. Krishnaiah

Prashanth AK
Head HOD
Department of Chemistry
Sir, MVIT, Bengaluru-562157



SIR M. VISVESVARAYA INSTITUTE OF TECHNOLOGY

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Department of Chemistry

DEPARTEMNT ACADEMIC ADVISORY COMMITTEE

NOTICE

The students of the I semester are hereby instructed to attend the expert talks mentioned against their sections as per the schedule given below.

Sl. No.	Section/Branch	Date of expert talk & Venue	Topic	Resource person
1	F, & G/ISE	10.01.2024, Wednesday 1.35 to 3.00 PM, Science Seminar Hall	Polymers	Dr. G.K. Prashanth
2	A, & B/CSE	10.01.2024, Wednesday 1.35 to 3.00 PM, MCA Seminar Hall	Electrode System & Energy storage system	Dr. G.M. Krishnaiah
3	C, & D/ETE, & EEE	10.01.2024, Wednesday 1.35 to 3.00 PM, B209	Analytical Techniques	Mr. H. M. Sathyananda
4	E/EEE	12.01.2024, Friday 2.30 to 4.00 PM, B209	Electrode System & Energy storage system	Dr. G.K. Prashanth
5	H/ME	12.01.2024, Friday 2.30 to 4.00 PM, B209	Corrosion Science Engineering & Phase Rule	Dr. G.M. Krishnaiah

Prashanth R

Head HOD
Department of Chemistry
Sir. MVIT, Bengaluru-562157

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SIR M. VISVESVARAYA INSTITUTE OF TECHNOLOGY

Department of Chemistry

DEPARTEMNT ACADEMIC ADVISORY COMMITTEE

NOTICE

The students of the I semester are hereby instructed to attend the expert talks mentioned against their sections as per the schedule given below.

Sl. No.	Section/Branch	Date of expert talk & Venue	Topic	Resource person
1	A. & B/CSE	03.01.2024, Wednesday 1.35 to 3.00 PM, Science Seminar Hall	Polymers	Dr. G.K. Prashanth
2	C, & D/ETE, & EEE	03.01.2024, Wednesday 1.35 to 3.00 PM, MCA Seminar Hall	Electrode System & Energy storage system	Dr. G.M. Krishnaiah
3	F, & G/ISE	03.01.2024, Wednesday 1.35 to 3.00 PM, B209	Analytical Techniques	Mr. H. M. Sathyananda
4	E/EEE	08.01.2024, Monday 2.30 to 4.00 PM, B209	Polymers	Dr. G.K. Prashanth
5	H/ME	08.01.2024, Monday 2.30 to 4.00 PM, B209	Electrode System & Energy storage system	Dr. G.M. Krishnaiah

Prashanth H K
Head HOD
Department of Chemistry
Sir. MVIT, Bengaluru-562157

**SIR M. VISVESVARAYA INSTITUTE OF
TECHNOLOGY
DEPARTMENT OF CHEMISTRY
COURSE END SURVEY**

BRANCHES/SECTIONS: ECE/B
COURSE NAME : Applied chemistry

COURSE CODE: BCHEE102
SEM : I

FACULTY NAME: Ms. Kavya .D

The course has taught me/given me

CO1: Identify the terms and application processes involved in scientific and engineering contexts.

CO2: Explain the phenomena of chemistry to describe the methods of engineering processes.

CO3: Solve the problems in chemistry that are pertinent to engineering applications.

CO4: Apply the basic concepts of chemistry to explain chemical properties and processes.

CO5: Analyze properties associated with chemicals in multidisciplinary situations.

**Students are supposed to rate their experience with the
Course (CO's) listed above. Use the scale points as given below:**

Levels	Excellent	Very Good	Good	Average	Bad
Points	5	4	3	2	1

4)
117

Subject Code : BCHEE102									
Subject Name : Applied Chemistry for EEE stream									
Faculty Name : Ms.Kavya .D									
Semester : I									
Section/Branch : B/ECE									
Sl.No.	USN	Students Name	C01	C02	C03	C04	C05	Signature of student	
1	1MV23EC048	M.U. ROHITH	5	5	5	5	5	Roby	
2	1MV23EC117	TEJAS D NAGARAJ	5	5	5	5	5	Nago	
3	1MV23EC040	DHRUVAN A	5	5	5	5	5	Dhu	
4	1MV23EC088	RUJWATH MANJUNATH	5	5	5	5	5	Manju	
5	1MV23EC126	YATHISH V	5	5	5	5	5	Yathish	
6	1MV23EC082	RAJATH R	5	5	5	5	5	Raja	
7	1MV23EC021	ANISH V PRASAD	5	5	5	5	5	Prasad	
8	1MV23EC077	PRIYANKA K	5	5	5	5	5	Priyanka	
9	1MV23EC033	CHANDRASHEKHAR GANJI	5	5	5	5	5	Chandra	
10	1MV23EC047	H. SATHWIK HANDE	5	5	5	5	5	Sathwik	
11	1MV23EC102	SHILPA V S.	5	5	5	5	5	Shilpa	
12	1MV23EC106	SHRIDHAR S KURIHULI	5	5	5	5	5	Shridhar	
13	1MV23EC093	SABGANESG S NUGGANATTI	5	5	5	5	5	Sabgan	
14	1MV23EC123	VIKAS	5	5	5	5	5	Vikas	

15	1MV23EC100	SHASHANK S BEDRE	5	5	5	5	5	5	Shashank
16	1MV23EC039	DHARMARAJ SURESH WALI	5	5	5	5	5	5	DM
17	1MV23EC118	THEERTHANA P REDDY	5	5	5	5	5	5	Reddy
18	1MV23EC116	T S SAI LIKHITH	5	5	5	5	5	5	Likhith
19	1MV23EC014	AISHWARYA S NAYKODI	5	5	5	5	5	5	NP
20	1MV23EC066	MANJUNATH BHIMAPPA MURAMAN	5	5	5	5	5	5	Manjunath
21	1MV23EC017	AMBIKA S	5	5	5	5	5	5	Arabi
22	1MV23EC081	RAHUL KUMAR	5	5	5	5	5	5	Rahul
23	1MV23EC089	S. V. VIKAS	5	5	5	5	5	5	Vikas
24	1MV23EC053	K. TEJASVI	5	5	5	5	5	5	Tejasvi
25	1MV23EC062	LAKSHITH K. L.	5	5	5	5	5	5	Lakshith
26	1MV23EC056	KEERTHANA N	5	5	5	5	5	5	Keerthana
27	1MV23EC032	BHAGYASHREE B PATIL	5	5	5	5	5	5	Bhagya
28	1MV23EC054	KAVANA L	5	5	5	5	5	5	Kavana
29	1MV23EC046	H. M. PREMA	5	5	5	5	5	5	H.M.
30	1MV23EC110	SUDHANSHU KUMAR LAL	5	5	5	5	5	5	Sudhanshu
31	1MV23EC061	KUSHAL S. A.	5	5	5	5	5	5	Kushal
32	1MV23EC064	MANDAN GOWDA J	5	5	5	5	5	5	Mandan
33	1MV23EC051	HARSHA R	5	5	5	5	5	5	Harsha
34	1MV23EC055	K. SAI GOKUL	5	5	5	5	5	5	Sai
35	1MV23EC003	ABHAY B SHARMA	5	5	5	5	5	5	Abhay

63	1MV23EC030	AYUSH SHIKHAR	S	S	S	S	S	Ayush
64	1MV23EC016	AMAN KUMAR TRIPATHI	S	S	S	S	S	Aman



Faculty : Ms. Kavya D
Program : BE - IS
Filled By : 30

Subject : BCHES102 - Applied Chemistry for CSE Stream
Semester : 1
Division : ISE (G Sec) -1- (2022 Scheme) - C cycle – 2023

Sr. No.	Question	Weight	Score Obtained	%	No. of students who have said				
					Excellent(5)	Very Good (4)	Good(3)	Fair(2)	Bad(1)
1	Planning of lectures and Presentation of subject matter in logical sequence	3	351	78.00	11	10	6	1	2
2	Presentation and Communication skills	3	351	78.00	13	6	8	1	2
3	Subject knowledge	3	354	78.67	13	7	7	1	2
4	Willingness to clarify doubts and provide guidance	3	354	78.67	13	7	7	1	2
5	Class Room Management	3	351	78.00	11	10	6	1	2
6	Use of Black board and other teaching aids	3	348	77.33	10	11	6	1	2
7	Preparedness for class	2	234	78.00	12	7	9	0	2
8	Fostering punctuality through his / her example	2	236	78.67	12	8	8	0	2
9	Confidence level of the teacher	2	234	78.00	12	8	7	1	2
10	Attire and mannerism	2	230	76.67	11	9	7	0	3
11	Overall assessment of the teacher	3	360	80.00	13	8	7	0	2
					Most of the times(5)	Rarely(3)	Never(1)		
12	Relates theory to applications of real world problems	1	136	90.67	24	5	1		
					Always(5)	Most of the time(3)	Rarely(1)		
13	Teaching in a way resulting in real learning / understanding and motivation	2	212	70.67	13	12	5		
					Impartial(5)	Justifiable(3)	Partial(1)		
14	Fairness in evaluation	1	118	78.67	17	10	3		
					Acceptable (5)	Slow(3)	Fast(1)		
15	Pace at which the subject is taught	2	272	90.67	26	1	3		

Overall Score		
Max. Possible points	Obtained	Percentage
5250	4141	78.88%



Faculty : Ms. Kavya D

Subject : BCHEE102 - Chemistry for EEE Stream

Program : B.E. - EC

Semester : 1

Filled By : 61

Division : ECE (B Sec) -1- (2022 Scheme) - C cycle – 2023

Sr. No.	Question	Weight	Score Obtained	%	No. of students who have said				
					Excellent(5)	Very Good (4)	Good(3)	Fair(2)	Bad(1)
1	Planning of lectures and Presentation of subject matter in logical sequence	3	810	88.52	35	18	7	1	0
2	Presentation and Communication skills	3	792	86.56	34	16	8	3	0
3	Subject knowledge	3	789	86.23	31	21	6	3	0
4	Willingness to clarify doubts and provide guidance	3	795	86.89	35	16	7	2	1
5	Class Room Management	3	792	86.56	33	17	9	2	0
6	Use of Black board and other teaching aids	3	810	88.52	38	13	8	2	0
7	Preparedness for class	2	540	88.52	36	17	6	2	0
8	Fostering punctuality through his / her example	2	524	85.90	33	18	6	3	1
9	Confidence level of the teacher	2	534	87.54	33	19	8	1	0
10	Attire and mannerism	2	536	87.87	37	15	5	4	0
11	Overall assessment of the teacher	3	819	89.51	36	19	5	1	0
					Most of the times(5)	Rarely(3)	Never(1)		
12	Relates theory to applications of real world problems	1	259	84.92	42	15	4		
					Always(5)	Most of the time(3)	Rarely(1)		
13	Teaching in a way resulting in real learning / understanding and motivation	2	486	79.67	33	25	3		
					Impartial(5)	Justifiable(3)	Partial(1)		
14	Fairness in evaluation	1	213	69.84	20	36	5		
					Acceptable (5)	Slow(3)	Fast(1)		
15	Pace at which the subject is taught	2	578	94.75	55	4	2		

Overall Score		
Max. Possible points	Obtained	Percentage
10675	9277	86.9%

**SIR M. VISVESVARAYA INSTITUTE OF TECHNOLOGY
BANGALORE**

**RECORD FORMATS
(ISO 9001-2008)**

DEPARTMENT OF CHEMISTRY (Result statistics)

Form No : 251

I Semester B.E. A to H Sections: Result Statistics (VTU) 2023-2024 BATCH

Course (Course code): Applied Chemistry for EEE/CSE/ME streams BCHEE/S/M102

No. 251

Date.. 12.03.2024

Sl. No.

Name of the Staff members handled the subject

Sl. No.	Section	Branch	Course code	Strength	No. of students absent	No. of students appeared	No. of students failed	No. of students passed	Percentage of pass	Name of the Staff members handled the subject
1	A	ECE	BCHEE102	62	NIL	62	2	60	96.77	Mr. H. M. Sathyananda
2	B	ECE	BCHEE102	64	NIL	64	1	63	98.43	Ms. Kavya D
3	C	ETE	BCHEE102	61	02	59	NIL	59	100	Dr. G. K. Prashanth
4	D	EEE	BCHEE102	66	NIL	66	2	64	97	Ms. Punitha. S
5	E	EEE	BCHEE102	48	NIL	48	6	42	87.5	Mr. H. M. Sathyananda
6	F	ISE	BCHEE102	63	01	62	02	60	96.7	Dr. G. M. Krishnaiah
7	G	ISE	BCHEE102	63	01	62	NIL	62	100	Dr. G. K. Prashanth
8	H	ME	BCHEE102	53	01	52	15	37	71.1	Ms. Kavya M. S
Total				BCHEE/S/M102: 480	05	475	28	447	94.1	

Prepared by: Ms. Kavya M. S

Designation: Asst. Professor

Signature: *[Signature]*

Approved by: Dr. G. K. Prashanth

Designation: Associate Professor & HOD - 2/2

Signature: *[Signature]*

Copy to : 1. The Principal for kind information
2. Dept. Result analysis file

Course Completion Report

4 copies

Date :- 19.01.2024

Course Title: Applied Chemistry

Course Code:

Semester: I

Program: B.E.

Branch/Section: ECE/ B

Faculty: Ms. Kavya D

Course description:


The Applied Chemistry course aims to provide engineering students with a foundational understanding of chemistry principles and their applications in engineering fields. The curriculum is designed to bridge theoretical concepts with practical applications, fostering a comprehensive understanding of material properties, chemical reactions, and environmental considerations.

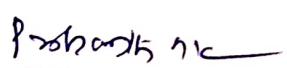
Comments:

The students demonstrated remarkable enthusiasm and dedication throughout the course. Their active participation in lectures and laboratory sessions contributed significantly to their understanding of Applied Chemistry. The innovative approaches observed in their assignments and presentations are commendable. I am confident that the knowledge and skills acquired in this course will greatly benefit their engineering careers.

Completion status:

This is to certify that the students have satisfactorily completed the Applied Chemistry course for the I semester B.E. program.

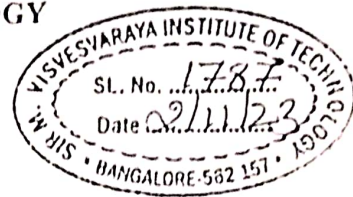

FACULTY SIGNATURE


HOD 19.01.24

Head
Department of Chemistry
Sir, MVIT, Bengaluru-562157



SIR M VISVESVARAYA INSTITUTE OF TECHNOLOGY
Bengaluru - 562 157



DISCIPLINARY COMMITTEE

Date: 02.11.2023

CIRCULAR

Subject: VERVE 2023 - Disciplinary Arrangements - Reg.

Dear Members

The following disciplinary arrangements have been made for the smooth conduct of VERVE - 2023 ~~to be conducted~~ on 04.11.2023. All the members of the disciplinary committee are requested to be present at the assigned venue during the timings of the specific events. If the committee member (s) is involved in any other activities, please do inform. I request all your cooperation.

VENUE	EVENT	TIMINGS	COORDINATORS
Main Auditorium	Group Songs (Indian)	09.00 AM - 10.30 AM	ME/PHY
	Group Songs (Western)	10.30 AM - 11.30 AM	BT/ETE
	Filmy Dance	11.30 AM - 02.00 PM	CSE/EEE/CHE/MATHS
	Group Dance	02.00 PM - 04.00 PM	ECE/ISE/MCA/CV
Quadrangle New Block	Rangoli & Photography	09.00 AM - 01.00 PM	MBA

02.11.2023
Dr K S Shanmukharadhya
Chairman - Disciplinary Committee

Salamb
PRINCIPAL
PRINCIPAL
Sir M. VISVESVARAYA INSTITUTE OF TECHNOLOGY
Krishnadevarayanagar, Hunasamaranahalli,
International Airport Road, Bangalore-562 157,

Enclosed: List of members and VERVE - Event Schedule

- For circulation among the members
- For information to HODs

Mechanical
AK

LIST OF DISCIPLINARY COMMITTEE MEMBERS

Sl No	Department	Name of the Coordinator	Designation	Mobile No
1	BT	Dr Rajendra Singh C	Associate Professor	9341809544
		Dr Rashmi K V	Associate Professor	9900322322
2	CSE	Dr Sreenivasa B C	Associate Professor	9986235930
		Dr Soumya Patil	Associate Professor	9663016443
3	CV	Dr Shivanna S	Associate Professor	8762042262
		Ms Pradeepa S	Assistant Professor	9886610709
4	ECE	Dr Sasmita Mohapatra	Associate Professor	9035960301
		Mr Phanindar Ravi P	Assistant Professor	9880389503
5	EEE	Dr R Sivapriyan	Associate Professor	9945603061
		Ms D Beula	Associate Professor	9902289616
6	ETE	Ms Savitaha Harkude	Associate Professor	7975880949
		Mr Faiz Mohammad Karobari	Assistant Professor	9036502380
7	ISE	Mr Vitesh Babu M	Assistant Professor	8722435211
		Mr Vijayakumar Y M	Assistant Professor	9741901680
8	MBA	Ms Deepthi J R	Assistant Professor	9611184762
		Ms Priya Choudhary	Assistant Professor	8095184214
9	MCA	Ms Vani Harave	Assistant Professor	9901996025
		Mr Muthuramalingam R	Assistant Professor	9611980959
10	ME	Mr Kumar Swamy R	Assistant Professor	9964227454
		Ms Asha Rani A	Assistant Professor	9945290193
11	PHY	Mr Sasikumar N	Assistant Professor	9845044469
		Mr Prashanth B B	Assistant Professor	9986042929
12	CHE	Mr H M Sathyananada	Assistant Professor	9108285249
		Ms Kavya D	Assistant Professor	7624890579
13	MATHS	Mr Aravind P N	Assistant Professor	9741874459
		Ms Malashri S	Assistant Professor	9886513559

List of Class Advisors for I Year BE Students (AY: 2023-24)

Sl. No	Section Dept	(Basic Science & Humanities)				(Engg. Depts.)			
		Faculty Name	Designation	Email-id	Contact No	Faculty Name	Designation	Email-id	Contact No
1	A/ECE	Mr H.M. Sathyananda	Asst. Professor Chemistry	sathya_chem@ sirmvit.edu	9108285249	Mrs. Krishnapriya Sharma	Associate Professor	krishnapriyasharma_ec@sirmvit.edu	9586110901
2	B/ECE	Mrs. Malashri S	Asst. Professor Mathematics	malasree_math@ sirmvit.edu	9886513559	Mrs. Swetha L	Assistant Professor	swetha_ec@sirmvit.edu	9108526377
3	C/ECE	Mrs. S. Uma	Asst. Professor Mathematics	9901133611	9901133611	Mrs. Shwetha B M	Asst professor	shwethabm25@gmail.com	91961156738
4	D-1/EEE	Ms. Jayashree	Asst. Professor Physics			Mrs. Vijayalakshmi	Asst professor		80732 59720
5	D-2/EEE	Ms. D. Kavya	Asst. Professor Chemistry	kavya_che@sir mvit.edu		Mrs. Harshithanandha	Asst professor		91486 72613
6	E/ISE	Mr. Aravind P. N	Asst. Professor Mathematics		9741874459	Mr. Vijay Kumar	Asst professor	vijayakumar_is@sirmvit.edu	9741901680
7	F/ISE	Mrs. Shubha R. N	Asst. Professor Mathematics	subha_math@s irmvit.edu	9620442126	Mr. Raghav	Associate Professor	raghav_is@sirmvit.edu	9449623102
8	G/ME	Ms. Deepthi S	Asst. Professor Mathematics	hi_maths@sirmv	9686777048	Mrs. Asha Rani A	Asst Professor	asharani_mech@sirmvit.edu	9945290193
9	H/CSE	Mr. Sasikumar N	Asst. Professor Physics	sasikumar_phy@ sirmvit.edu	9845044469	Mr. Prithvi B S	Asst Professor	prithvib_cse@sirmvit.edu	8095111776
10	I/CSE	Dr. Chaya T. Y	Asst. Professor Mathematics	chaya_math@s irmvit.edu	9986252606	Ms. Trisha VS	Asst Professor	trisha_cs@sirmvit.edu	9480897425
11	J/CSE	Mrs. Purnimaa S. Dait	Asst. Professor Physics	purnimaa_phy@ sirmvit.edu	994544699	Mr. Chikkakrishnappa	Asst Professor	chikkakrishnappa_ic@sirmvit.edu	9902393863
12	K/IOT	Ms. Vasudha D. K	Asst. Professor Mathematics		9591956171	Ms. Divya	Asst Professor	dhivya_cs@sirmvit.edu	9500217723
13	L/AI&ML	Dr. B. Yamiswamy	Associate Professor Chemistry		6281873728	Dr. S. N. Sheshappa	Associate Professor	sheshappa_is@sirmvit.edu	9901974957
14	M/BI	Ms. Sai Shreeya Anwesha	Asst. Professor English		9535038889	Dr. H. G. Nagendra	Professor & Head	nagendra_biotech@sirmvit.edu	7019670589
15	N/CV	Mr. Prashantha B. B	Asst. Professor Humanities		9986042929	Ms. Tamil Selvi	Asst. Professor	tamilselvi_cv@sirmvit.edu	9632600580