



ATTENDANCE BOOK

15

Academic Year : 2022-23
Semester : I Sem Section: A
Period of the Semester : From 1-12-2022 to 31-03-2023
Subject with Code : APPLIED CHEMISTRY, 21CHES12
Name of the Faculty : Dr. SAKSHI S. KAMATH
Department : CHEMISTRY

VISION OF THE INSTITUTE

"Transformative education by pursuing excellence in Engineering and Management through enhancing skills to meet the evolving needs of the community"

MISSION OF THE INSTITUTE

- To bestow quality technical education to imbibe knowledge, creativity and ethos to students community.
- To inculcate the best engineering practices through transformative education.
- To develop a knowledgeable individual for a dynamic industrial scenario.
- To inculcate research, entrepreneurial skills and human values in order to cater the needs of the society.



Alva's Institute of Engineering & Technology

Shobhavana Campus, Mijar, Moodbidri, D.K - 574225

Phone: 08258-262725, Fax: 08258-262726

VISION AND MISSION OF INSTITUTE

VISION STATEMENT

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Dr. Peter Fernandes
PRINCIPAL

Alva's Institute of Engg. & Technology,
Mijar, MOODBIDRI - 574 225, D.K.



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DEPARTMENT VISION & MISSION

Vision

"Nurturing enthusiasm and to promote research interests by applying chemical principles to meet the needs of the society"

Mission

- Impart quality education to achieve academic excellence by an effective teaching-learning environment.
- Awaken the young minds to explore their hidden potential with high ethical standards.
- Support the developmental activities of the college and make the department vibrant.
- Inculcate the basic principles of Chemistry for interdisciplinary innovative research programs.


HoD & IQAC Chairman

H. O. D.
Dept. of Chemistry
Alva's Institute of Engg. & Technology
Mijar, MOODBIDRI - 574 225



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)

"Juana Sangama" Belagavi-590018, Karnataka, India

Prof. Dr. B. E. Rangaswamy, Ph.D.
REGISTRAR(I/C)

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

REF: VTU/BGM/ACA/2022-23/4051

DATE: 14 NOV 2022

NOTIFICATION

Subject: - Tentative Academic Calendar of 1stst semesters of B.E./B.Tech./B.Arch./B.Plan., programs of University regarding...

Reference: Dean faculty of Engineering, VTU Belagavi approval dated 10.11.2022

Hon'ble Vice-Chancellor's approval dated: 14.11.2022

The tentative academic calendar concerned to **1st semesters of B.E./B.Tech./B.Arch./B.Plan .,** programs of University for academic year 2022-23 are hereby notified as mentioned below;

(Tentative) Academic Calendar for I Semester of UG programs for the Academic Year 2022-23			
Details	I semester B.E./B.Tech.	I semester B.Arch.	I semester B.Plan
Commencement of I semester (**Induction Program)	21.11.2022	21.11.2022	21.11.2022
Commencement of I semester Classes	01.12.2022	01.12.2022	01.12.2022
Last Working day of I Semester	18.03.2023	18.03.2023	18.03.2023
Practical Examinations	21.03.2023 To 31.03.2023	21.03.2023 To 31.03.2023	21.03.2023 To 31.03.2023
Theory Examinations	03.04.2023 To 28.04.2023	03.04.2023 To 28.04.2023	03.04.2023 To 28.04.2023
Commencement of II Semester	02.05.2023	02.05.2023	02.05.2023

Please Note:

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

** Induction Program shall be conducted for 11 days at the beginning of 1st semester and 10 days at the beginning of the 2nd semester.

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During induction program college has to brief about the new curriculum that implemented from the academic year 2022-23.

- The Institute needs to function for **six days** a week with Saturday being half working day. #If required, the college can also plan to have extra classes on Saturday afternoons and Sundays full day to complete academic activities within the duration mentioned.
- The faculty/staff shall be available to undertake any work assigned by the university.
- Notification regarding the Calendar of Events relating to the conduct of University **Examinations** will be issued by the Registrar (Evaluation) from time to time.
- Academic Calendar **may be modified** based on guidelines/directions issued in the future by MHRD/UGC/AICTE/State Government.
- Academic Calendar is also applicable for **Autonomous Colleges**. If any changes are to be effected by Autonomous Colleges in the academic terms and examination schedule, they could do so with the approval of the University.
- The college has to conduct offline classes to cover **80%** of the syllabus of the courses; however, **20%** of the syllabus can be covered in virtual model (Online) mode. **Attendance** of the students for offline and online classes is mandatory and records should be maintained and submitted to the university whenever informed.
- AICTE Activity point details circular will be issued by the Registrar's office separately.
- If any clarification/correction, please email to - sblvtuso@yahoo.com

The Principals of Affiliated, Constituent and Autonomous Engineering Colleges, Chairpersons of the University departments are hereby informed to bring the academic calendar to the notice of all concerned.

Sd/-

REGISTRAR

To,

1. The Principals of all affiliated/ constituent /Autonomous Engineering Colleges under the ambit of VTU Belagavi.
2. The chairperson, of the Department of Mechanical Engineering /Civil Engineering /Computer Science and Engineering Electronics & Communication Engineering Dept. of the University

Copy to.

1. To the Hon'ble Vice-Chancellor through the secretary to VC, VTU Belagavi for information
2. The Registrar (Evaluation), VTU Belagavi for information.
3. The Regional Directors (I/c) of all the regional offices of VTU for circulation.
4. The Director I/c. ITI SMU, VTU Belagavi for information and to make arrangements to upload Academic Calendar on the VTU web portal.
5. The Director of Physical Education, VTU Belagavi for information
6. OS for information and make arrangements to send the circular regarding AICTE Activity Points
7. All the concerned Special Officer/s and Caseworker/s of the academic section, VTU, Belagavi

Ray *BE*
14/11/2022

REGISTRAR

[Signature]

CALENDAR OF EVENTS (ODD SEMESTER 2022-23) BE & MBA


VISION

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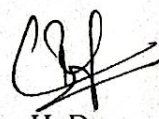
Week	Month	Days							Activities
		Mon	Tue	Wed	Thu	Fri	Sat	Sun	
1	SEP				1	2	3	4	19 th : Commencement of VII Semester BE 22-23 : Student Mentoring 26 - 30 : Technical Talk/Club and Social Activity
2		5	6	7	8	9	10	11	
3		12	13	14	15	16	17	18	
4		19	20	21	22	23	24	25	
5		26	27	28	29	30			
6	OCT						1	2	4 th : Maha Navami & 5 th : Vijaya Dashami 10 th : Commencement of V Semester BE 20-21 : Student Mentoring 24 th : Naraka Chaturdashi 24 - 29 : Technical Talk/Club and Social Activity 26 th : Deepavali 31 st : Commencement of III Semester BE
7		3	4	5	6	7	8	9	
8		10	11	12	13	14	15	16	
9		17	18	19	20	21	22	23	
10		24	25	26	27	28	29	30	
11		31							
12	NOV		1	2	3	4	5	6	1 st : Kannada Rajyothsava 10 th - 12 th : 1 st IA for VII Semester BE 24-25 - Student Mentoring 20- 25 Technical Talk/Club / Social Activity 28 th : Commencement of 3 rd Sem MBA
13		7	8	9	10	11	12	13	
14		14	15	16	17	18	19	20	
15		21	22	23	24	25	26	27	
16		28	29	30					
17	DEC				1	2	3	4	8 - 10 : 2 nd IA for VII Semester / 1 st IA V Semester BE 15 - 17 : 1 st IA for BE III Semester BE 22-23 : Student Mentoring 29 - 31 : 3 rd IA for VII Semester BE 26 - 31 : Technical Talk/Club / Social Activity 30-31 Second International Conference on Data Analytics & Learning-2022 (DAL'22) 31 : Last Working Day of VII Semester BE
18		5	6	7	8	9	10	11	
19		12	13	14	15	16	17	18	
20		19	20	21	22	23	24	25	
21		26	27	28	29	30	31		
22	JAN-2023							1	2 - 4 : 2 nd IA for V Semester BE / 1 st IA for MBA 3 rd Sem 14- Makara Sankranti 16-18 : 2 nd IA for III Semester BE 20-21 : Student Mentoring 23 - 28 : Technical Talk/Club / Social Activity 24 th , 25 th and 27 th : 3 rd IA for V Sem BE 26-Republic Day 27 : Last Working Day of V Semester BE
23		2	3	4	5	6	7	8	
24		9	10	11	12	13	14	15	
25		16	17	18	19	20	21	22	
26		23	24	25	26	27	28	29	
27		30	31						
28	FEB-2023			1	2	3	4	5	8 - 10 : 3 rd IA for III Semester BE / 2 nd IA for MBA 3 rd sem 18- Maha Shivaratri 11 : Last Working Day of III Semester BE
29		6	7	8	9	10	11	12	
30		13	14	15	16	17	18	19	
31		20	21	22	23	24	25	26	
32		27	28						
33	MAR-2023			1	2	3	4	5	9-11 : 3 rd IA for MBA 3 rd sem 18 : Last Working Day of MBA 3 rd Sem
34		6	7	8	9	10	11	12	
35		13	14	15	16	17	18	19	



PRINCIPAL
Alva's Institute of Engg. & Technology,
Mijar, MOODBIDRI - 574 225, D.K

Approved by IQAC Chairman

Group		Chemistry Cycle		CLASS TIME TABLE			
Semester		First					
Academic Year		2022-2023					
Section: IT1 (A)				Room No: 401			
Class Coordinator: Dr. Sakshi S Kamath (Department of Chemistry)							
Day/ Period	P1 (9.00-9.50)	P2 (9.50-10.40)	P3 (11.00-11.50)	P4 (11.50-12.40)	P5 (1.40-2.30)	P6 (2.30-3.20)	P7 (3.30-5.00)
Monday	22ESC143	22CHES12	22MATS11 Lab (MMC+LV+LA)		22CHES12 A1 batch-Chemistry Lab A2 batch-Library		
Tuesday	22CED13				22MATS11	22ESC143	Mentor Meeting
Wednesday	22CHES12	22PLC15B (Lab)			22PWS16	22ESC143	Library
Thursday	22ESC143	22CHES12 (SSK + NA) A2 batch-Chemistry Lab A1 batch-Library			22CHES12	22MATS11	Library
Friday	22MATS11	22CHES12	22KBK17	22ESC143	22CED13		
Saturday	22CHES12	22MATS11	22PWS16	Library			
COURSE	COURSE CODE	COURSE TITLE				FACULTY	
ASC(IC)	22MATS11	Applied Science Course Mathematics for CSE Stream-I				Mrs. Kavitha Mrs. Melita Mary Cardoza (MMC) Mrs. Lata Vaman Das(LV) Ms.Lavanya(LA)	
ASC(IC)	22CHES12	Applied Science Course Chemistry for CSE Stream-I				Dr. Sakshi S Kamath (SSK) Ms.Nandini (NA)	
ESC	22CED13	Engineering Science Course Computer-Aided Engineering Drawing				Dr. G B Vaggar	
ESC-I	22ESC143	Engineering Science Course-I (Introduction to Electronics Engineering)				Mrs. Ansha Prathiba	
PLC-I	22PLC15B	Programming language Course-I (Introduction to Python Programming)				Ms.Rashmi Suvarna	
AEC	22PWS16	Ability Enhancement Course Professional Writing Skills in English				Mr. Ajith Peter	
HSMS	22KBK17	Humanity & Social Science & Management Course Balake Kannada				Dr. Jyothi Rai	
A1 batch-Roll No 1-32, A2 batch-Roll No 33-64							


Timetable Co-ordinātor


HoD
H. O. D.
Dept. Of Chemistry
Alva's Institute of Engg. & Technology
Mijar, MOODBIDRI - 574 225


Principal
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Alva's Institute of Engg. & Technology,
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Visvesvaraya Technological University, Belagavi
Scheme of Teaching and Examinations-2022
 Outcome-Based Education(OBE)and Choice Based Credit System(CBCS)
 (Effective from the academic year 2022-23)

I Semester (CSE Stream)**(For Chemistry Group)**

Computer (CSE Stream)				(For Chemistry Group)									
Sl No	Course and Course Code		Course Title	TD/PSB	Teaching Hours/Week				Examination				Credits
					Theory Lecture	Tutorial	Practical/ Drawing	SDA	Duration in hours	CIE Marks	SEE Marks	Total Marks	
1	*ASC(IC)	22MATS11	Mathematics for CSE Stream-I	Maths	2	2	2	0	03	50	50	100	04
2	#ASC(IC)	22CHES12	Chemistry for CSE Stream	Chemistry	2	2	2	0	03+02	50	50	100	04
3	ESC	22CED13	Computer-Aided Engineering Drawing	Civil/Mech Engg dept	2	0	2	0	03	50	50	100	03
4	ESC-I	22ESC14x	Engineering Science Course-I	Respective Engg Dept	3	0	0	0	03	50	50	100	03
5	ETC-I	22ETC15x	Emerging Technology Course-I	Any Engg Dept	3	0	0	0	03	50	50	100	03
	OR												
	PLC-I	22PLC15x	Programming Language Course-I		2	0	2	0	03+02				
6	AEC	22PWS16	Professional Writing Skills in English	Humanities	1	0	0	0	01	50	50	100	01
7	HSMS	22ICO17	Indian Constitution	Humanities	1	0	0	0	01	50	50	100	01
		OR											
		22KSK17/ 22KBK17	Sanskritika Kannada/ Balake Kannada		1	0	0	0					
8	HSMS	22SFH18	Scientific Foundations of Health	Any Dept	1	0	0	0	01	50	50	100	01
		OR											
		22IDT18	Innovation and Design Thinking		1	0	0	0	02				
TOTAL										400	400	800	20
SDA-Skill Development Activities, TD/PSB- Teaching Department / Paper Setting Board, ASC-Applied Science Course, ESC- Engineering Science Courses, ETC- Emerging													

Computer Science and Engineering and allied branches (Chemistry group)

Course Title:	Applied Chemistry for Computer Science & Engineering stream		
Course Code:	22CHES12/22	CIE Marks	50
Course Type (Theory/Practical/Integrated)	Integrated	SEE Marks	50
		Total Marks	100
Teaching Hours/Week (L:T:P: S)¹	2:2:2:0	Exam Hours	03
Total Hours of Pedagogy	40 hours Theory + 10 to 12 Lab slots	Credits	04
Course objectives <ul style="list-style-type: none"> To enable students to acquire knowledge on principles of chemistry for engineering applications. To develop an intuitive understanding of chemistry by emphasizing the related branches of engineering. To provide students with a solid foundation in analytical reasoning required to solve societal problems. 			
Teaching-Learning Process These are sample strategies, which teacher can use to accelerate the attainment of the various course outcomes and make Teaching-Learning more effective <ul style="list-style-type: none"> Tutorial & remedial classes for needy students (not regular T/R) Conducting Makeup classes / Bridge courses for needy students Demonstration of concepts either by building models or by industry visit Experiments in laboratories shall be executed in blended mode (conventional or non-conventional methods) Use of ICT – Online videos, online courses Use of online platforms for assignments / Notes / Quizzes (Ex. Google classroom) 			
MODULE 1: Sensors and Energy Systems (8hr)			
Sensors: Introduction, working, principle and applications of Conductometric sensors, Electrochemical sensors, Thermometric sensors (Flame photometry) and Optical sensors (colorimetry). Sensors for the measurement of dissolved oxygen (DO). Electrochemical sensors for the pharmaceuticals. Electrochemical gas sensors for SO _x and NO _x . Disposable sensors in the detection of biomolecules and pesticides.			
Energy Systems: Introduction to batteries, construction, working and applications of Lithium ion and Sodium ion batteries. Quantum Dot Sensitized Solar Cells (QDSSC's)- Principle, Properties and Applications.			
Self-learning: Types of electrochemical sensor, Gas sensor - O ₂ sensor, Biosensor - Glucose sensors.			
MODULE 2: Materials for Memory and Display Systems (8hr)			
Memory Devices: Introduction, Basic concepts of electronic memory, History of organic/polymer electronic memory devices, Classification of electronic memory devices,			

1. NOTE: Wherever the contact hours is not sufficient, tutorial hour can be converted to theory hours

types of organic memory devices (organic molecules, polymeric materials, organic-inorganic hybrid materials).

Display Systems: Photoactive and electroactive materials, Nanomaterials and organic materials used in optoelectronic devices. 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), Light emitting electrochemical cells.

Self-learning: Properties and functions of Silicon (Si), Germanium (Ge), Copper (Cu), Aluminium (Al), and Brominated flame retardants in computers.

MODULE 3: Corrosion and Electrode System (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.

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.

Analytical Techniques: Introduction, principle and instrumentation of Conductometry; its application in the estimation of weak acid. Potentiometry; its application in the estimation of iron.

Self-learning: IR and UV- Visible spectroscopy.

MODULE 4: Polymers and Green Fuels (8hr)

Polymers: Introduction, Molecular weight - Number average, weight average and numerical problems. Preparation, properties, and commercial applications of kevlar. Conducting polymers - synthesis and conducting mechanism of polyacetylene and commercial applications.

Green Fuels: Introduction, construction and working of solar photovoltaic cell, advantages, and disadvantages. Generation of energy (green hydrogen) by electrolysis of water and its advantages.

Self-learning: Regenerative fuel cells

MODULE 5: E-Waste Management (8hr)

E-Waste: Introduction, sources of e-waste, Composition, Characteristics, and Need of e-waste management. Toxic materials used in manufacturing electronic and electrical products, health hazards due to exposure to e-waste. Recycling and Recovery: Different approaches of recycling (separation, thermal treatments, hydrometallurgical extraction, pyrometallurgical methods, direct recycling). Extraction of gold from E-waste. Role of stakeholders in environmental management of e-waste (producers, consumers, recyclers, and statutory bodies).

Self-learning: Impact of heavy metals on environment and human health.

PRACTICAL MODULE

A - Demonstration (any two) offline/virtual:

A1. Chemical Structure drawing using software: ChemDraw or ACD/ChemSketch

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

A3. Synthesis of Iron-oxide Nanoparticles

A4. Electrolysis of water

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

B1. Conductometric estimation of acid mixture

B2. Potentiometric estimation of PAs 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 waste water sample

D – Open Ended Experiments (any two):

D1. Evaluation of acid content in beverages by using pH sensors and simulation.

D2. Construction of photovoltaic cell.

D3. Design an experiment to Identify the presence of proteins in given sample.

D4. Searching suitable PDB file and target for molecular docking

Course outcome (Course Skill Set)

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

CO1.	Identify the terms and processes involved in scientific and engineering applications
CO2.	Explain the phenomena of chemistry to describe the methods of engineering processes
CO3.	Solve 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 properties and processes associated with chemical substances in multidisciplinary 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



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Shobhavana Campus, Mijar-574225, Moodbidri, D.K., Karnataka

Phone: 08258-262725, Fax: 08258-262726

DEPARTMENT OF CHEMISTRY

SEMESTER—I

Academic year-2022-23, Odd Semester

Course Code: 22CHES12

Course Name: Applied Chemistry for Computer Science & Engineering stream.

Course Teacher: Dr. Ravi Kumar C, Dr. Damodara N & Dr. Sakshi S. Kamath

Course Outcomes: After studying this course, students will be able to,

CO Numbers	Course Outcomes	Blooms Level	Target Level
22CHES12.1	Enumerate the working principle of different types of sensors and its engineering applications, understand working & applications of batteries and quantum dot sensitized solar cells.	L2	2
22CHES12.2	Understand the basic chemistry principles behind memory devices & display systems to describe methods of engineering processes.	L2	2
22CHES12.3	Solve the problems in Chemistry with respect to electrode system and corrosion.	L3	2
22CHES12.4	Describe the synthesis, properties and applications of polymers and green fuel.	L2	2
22CHES12.5	Analyse the need of e-waste management by the stake holders towards green environment.	L4	2
22CHES12.6	Quantitative analysis of various engineering materials.	L4	2

CO-PO Mapping Matrix:

CO Numbers	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
22CHES12.1	2	1	-	-	-	-	1	-	-	-	-	-
22CHES12.2	2	-	-	-	-	-	-	-	-	-	-	-
22CHES12.3	2	1	-	-	-	1	1	-	-	-	-	-
22CHES12.4	1	-	-	-	-	1	2	-	-	-	-	-
22CHES12.5	2	-	-	-	-	2	2	-	-	-	-	-
22CHES12.6	1	-	-	-	-	1	1	-	-	-	-	-
SUM	10	2	-	-	-	5	7	-	-	-	-	-
AVERAGE	1.66	1.00	-	-	-	1.25	1.40	-	-	-	-	-

Justification of Course Outcome and Program Outcome mapping:

CO	POs	Level	Justification
22CHES12.1	1	2	Moderately mapped as the students will be able to understand the principle of sensors and its Engineering applications
	2	1	Slightly mapped as the students will be able to identify basic principles of sensors
	7	1	Slightly mapped as the students will be able to understand the impact of the sensors in societal environmental issues
22CHES12.2	1	2	Moderately mapped as the students will be able to acquire knowledge on principles of materials for memory & display systems
22CHES12.3	1	2	Module 3 deals with study of corrosion, its types and control measures. Hence it is mapped moderately to PO1 as it involves solution to certain engineering problems.



Alva's Education Foundation (R), Moodbidri.

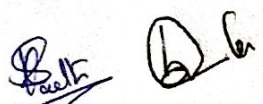
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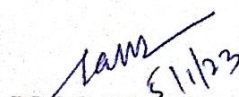
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	2	1	Using the principles of chemistry behind electrode systems, students can understand the concept for problem analysis. Hence, it is slightly mapped to PO2.
	6	1	Students can apply the knowledge gained in this module to overcome the problems in the society, hence CO3 is mapped slightly to PO6.
	7	1	CO3 is slightly mapped to PO7 as students learn the concepts and think in the perspective of sustainable society.
22CHES12.4	1	1	Students apply the basic knowledge of chemistry gained in this module related to polymer and its application will help them in solving complex problems to some extent. Hence, it is slightly mapped to PO1.
	6	1	The green fuel generation studied in Module 4 will help students to think about the betterment of the society, Hence it is slightly mapped with PO6.
	7	2	CO4 s mapped moderately to PO7 because after studying this module student will get idea about environment sustainability as it involves green fuel synthesis.
22CHES12.5	1	2	Need to address e-waste management matches moderately as an outcome for the PO1 -Applying knowledge of Science towards providing solutions engineering problems
	6	2	Involvement of all the stakeholders in dealing with e-waste effectively matches moderately with the Engineer and the Society
	7	2	As this CO deals with Recycling and Recovery: different approaches of recycling of e-waste, matches moderately with Environment and the Sustainability
22CHES12.6	1	1	Various quantitative analysis done in Practical align partially with PO1 dealing with applying knowledge of Science towards providing solutions engineering problems
	6	1	Experiments performed in lab align partially with PO6 outcomes in which Engineer and the society whereby reasoning can be applied to assess health issues and responsibility towards the same
	7	1	Experiments performed demonstrate partially the knowledge of, and need for sustainable development and bringing out environment concerns


Course Teacher


Criteria 8 Coordinator


IQAC Member
Signature with date


HoD & IQAC Chairman
Signature with date
H. O. D.
Dept. Of Chemistry
Alva's Institute of Engg. & Technology
Mijar, MOODBIDRI - 574 225

STUDENT LIST

A SECTION

Sl. No.	BRANCH	NAME
1	4AL22CS001	Abhishek B
2	4AL22CS002	Abhishek Gowda G R
3	4AL22CS003	Abhishek R Allapur
4	4AL22CS004	Adhya H Shetty
5	4AL22CS005	Advith V Suvana
6	4AL22CS009	Alan C Raju
7	4AL22CS010	Amith Gowda H M
8	4AL22CS011	Amrutha M
9	4AL22CS012	Ansil Kumar
10	4AL22CS018	Arvind Kumar Ojha
11	4AL22CS019	Ashritha
12	4AL22CS020	Ayeshatul Hafeeza
13	4AL22CS021	B B Naik
14	4AL22CS023	Bharath H D
15	4AL22CS027	Charan Kumar V
16	4AL22CS028	Charishma G
17	4AL22CS032	Chinmay Gowda H V
18	4AL22CS041	Diya Rai
19	4AL22CS042	Elluri Chaitanya Srinivas
20	4AL22CS043	Faiza
21	4AL22CS044	Gagan
22	4AL22CS047	Glanil Tauro
23	4AL22CS049	Gowda Miilee Madankumar
24	4AL22CS051	H I Akshay
25	4AL22CS055	Harsha C R
26	4AL22CS056	Harshith L S
27	4AL22CS057	Harshitha D Bangera
28	4AL22CS060	Harshitha M
29	4AL22CS061	Heetha Shree S
30	4AL22CS064	Indrajith S
31	4AL22CS066	Jeevan K
32	4AL22CS067	K Jeevan Kumar
33	4AL22CS069	Kanishka Shetty
34	4AL22CS073	Kavya S

35	4AL22CS076	Keerthana R S
36	4AL22CS078	Kiran Kumar
37	4AL22CS081	Lohith B R
38	4AL22CS086	Meghana N K
39	4AL22CS088	Merlyn Luvis Almeida
40	4AL22CS089	Mohammed Ahazar
41	4AL22CS090	Mohidin Ahmed Kabeer
42	4AL22CS091	Nausha Tendulkar
43	4AL22CS092	Neha N Rao
44	4AL22CS097	Padmaraj Praphull Kurundwade
45	4AL22CS105	Pranav Tirakanagoudar
46	4AL22CS107	Prathi U Shetty
47	4AL22CS108	Preetham Devadiga
48	4AL22CS109	Preety Kakchingtabam
49	4AL22CS115	Rakshith V Rao
50	4AL22CS117	Rashmitha M S
51	4AL22CS118	Ravitej C Neeli
52	4AL22CS119	Rithika P Shetty
53	4AL22CS121	Roshan S
54	4AL22CS124	Sakshi
55	4AL22CS125	Sakshi B K
56	4AL22CS128	Sameeksha Shetty
57	4AL22CS143	Shetty Samay Deepak
58	4AL22CS150	Shodhan Kumar Shetty
59	4AL22CS168	Sumanth
60	4AL22CS171	Suraj
61	4AL22CS190	Yumlembam Henba Singh
62	4AL22IS001	Adarsh
63	4AL22IS022	Meghana Mohan Naik
64	4AL22IS028	Nisarga Shridhar Naik

IQAC CHAIRMAN & HOD

H. O. D.

Dept. Of Chemistry

Alva's Institute of Engg. & Technology

Mijar, MOODBIDRI - 574 225

ALVA'S INSTITUTE OF ENGINEERING

TECHNOLOGY

Class : 2 Sem, A Section

Subject : Applied Chemistry for CSE

No. of Classes held : 53

ATTENDANCE CUM INTERN

MLD
BIDRI - 574 225

t : Applied Chemistry for CSE stream

Sl. No.	U.S.N.	Name	Date / Month																									
			12/12	13/12	14/12	15/12	16/12	17/12	18/12	19/12	20/12	21/12	22/12	23/12	24/12	14/12	15/12	16/12	17/12	18/12	19/12	20/12	21/12	22/12	23/12	24/12	25/12	26/12
1	AL22CS001	Abhishek B	1	2	3	4	5	6	7	A	A	A	8	9	10	18	19	20	21	22	23	24	25	26	27	28	29	30
2	CS002	Abhishek Gowda GR	1	2	3	4	5	6	7	A	A	A	A	A	A	14	15	16	17	18	19	20	21	22	23	24	25	26
3	CS003	Abhishek R Dllapua	1	2	3	4	5	6	7	A	8	9	10	11	12	15	16	17	18	19	20	21	22	23	24	25	26	27
4	IS001	Adarsh	1	2	3	4	5	6	7	8	9	10	11	12	13	16	17	18	19	20	21	22	23	24	25	26	27	28
5	CS004	Adhya H Shetty	1	2	3	4	5	6	7	8	9	10	A	A	11	17	18	19	20	21	22	23	24	25	26	27	28	29
6	CS005	Advith V Suvarna	1	2	3	4	5	6	7	8	9	10	11	12	13	16	17	18	19	20	21	22	23	24	25	26	27	28
7	CS009	Alan C Raju	1	2	3	4	5	6	7	A	A	A	A	A	A	10	11	12	13	14	15	16	17	18	19	20	21	22
8	CS010	Amith Gowda HM	1	2	3	4	5	6	7	8	9	10	11	12	13	16	17	18	19	20	21	22	23	24	25	26	27	28
9	CS011	Amrutha M	1	2	3	4	5	6	7	A	8	9	10	11	12	13	16	17	18	19	20	21	22	23	24	25	26	27
10	CS012	Anshu Kumar	1	2	3	4	5	6	7	8	A	A	A	A	A	12	13	14	15	16	17	18	A	19	20	21	22	23
11	CS018	Anvith Kumar Gha	1	2	3	4	5	6	7	8	9	10	11	12	13	16	17	18	19	20	21	22	23	24	25	26	27	28
12	CS019	Ashwita	1	2	3	4	5	6	7	8	9	10	11	12	13	16	17	18	19	20	21	22	23	24	25	26	27	28
13	CS020	Ayeshatul Hafeeza	1	2	3	4	5	6	7	8	9	10	11	12	13	16	17	18	19	20	21	22	23	24	25	26	27	28
14	CS021	B B Naik	1	2	3	4	5	6	7	8	9	10	11	12	13	16	17	18	19	20	21	A	A	A	22	23	24	25
15	CS023	Bharath H D	1	2	3	4	5	6	7	8	9	10	A	A	A	13	14	15	16	17	18	A	A	A	19	20	21	22
16	CS027	Charan Kumar V	1	2	3	4	5	6	7	A	8	9	A	10	11	13	14	15	16	17	18	19	20	21	22	23	24	25
17	CS028	Charishma G	1	2	3	4	5	6	7	8	9	10	11	12	13	16	17	18	19	20	21	22	23	24	25	26	27	28
18	CS032	Chimay Gowda HV	1	2	3	4	5	6	7	8	A	9	A	A	A	11	12	13	14	15	16	17	18	19	20	21	22	23
19	CS041	Diya Ren	1	2	3	4	5	6	7	8	9	10	11	12	13	14	17	18	19	20	21	22	23	24	25	26	27	28
20	CS042	ELURI CHAITANYA S	1	2	3	4	5	6	7	8	9	10	11	12	13	14	17	18	19	20	21	22	23	24	25	26	27	28
21	CS043	FOIZA	1	2	3	4	5	6	7	8	A	9	A	A	A	10	12	13	14	15	16	17	18	19	20	21	22	23
22	CS044	Gagan	1	2	3	4	5	6	7	8	9	10	11	12	13	14	17	18	19	20	21	22	23	24	25	26	27	28
23	CS047	GLORIA TAVRO	1	2	3	4	5	6	7	8	9	10	11	12	13	14	17	18	19	20	21	22	23	24	25	26	27	28
24	CS049	GOWDA MILKE M	1	2	3	4	5	6	7	A	A	A	A	A	8	11	12	13	14	15	16	17	18	19	20	21	22	23
25	CS051	H I PKshay	1	2	3	4	5	6	7	8	A	A	A	A	A	11	12	13	14	15	16	17	18	19	20	21	22	23
26	CS055	HARSHA C R	1	2	3	4	5	6	7	8	9	10	A	11	12	13	15	16	17	18	19	20	21	22	23	A	A	A
27	CS056	HARSHITHA L S	1	2	3	4	5	6	7	A	A	8	9	10	11	A	13	14	15	16	17	18	19	20	21	22	23	24
28	CS057	HARSHITHA D B	1	2	3	4	5	6	7	8	9	10	11	12	13	14	16	17	18	19	20	21	22	23	A	24	25	26
29	CS059	HARSHITHA M	1	2	3	4	5	6	7	8	A	A	A	A	A	9	11	12	13	14	15	16	17	18	19	A	20	21
30	CS061	HEETHA SHREE S	1	2	3	4	5	6	7	A	A	A	A	8	9	10	12	13	14	15	16	17	18	19	20	21	22	23
Staff Initials			12/12	13/12	14/12	15/12	16/12	17/12	18/12	19/12	20/12	21/12	22/12	23/12	24/12	12/12	13/12	14/12	15/12	16/12	17/12	18/12	19/12	20/12	21/12	22/12	23/12	24/12

Class : 2 Sem, A Section

Subject : Applied Chemistry for CSE

No. of Classes held : 53

Sl. No.	U.S.N.	Name	Date / Month	12/12
1	AL22CS001	Abhishek B		1
2	CS002	Abhishek Gowda GR		1
3	CS003	Abhishek R Dhanu		1
4	IS001	Adarsh		1
5	CS004	Aditya H Chetty		1
6	CS005	Adithi Y Suvarna		1
7	CS009	Alan C Raju		1
8	CS010	Amith Gowda HM		1
9	CS011	Amrutha M		1
10	CS012	Anshi Kumar		1
11	CS018	Anvitha Kumar Gha		1
12	CS019	Ashmita		1
13	CS020	Ayeshatul Hafeeza		1
14	CS021	B B Naik		1
15	CS023	Bharath H D		1
16	CS027	Charan Kumar V		1
17	CS028	Charishma G		1
18	CS032	Chinmay Gowda HV		1
19	CS041	Diya Ren		1
20	CS042	ELLURI CHAITANYA S		1
21	CS043	FOIZA		1
22	CS044	Gagan		1
23	CS047	GANIK TEJRO		1
24	CS049	GOUDA MILKE M		1
25	CS051	H I PKshay		1
26	CS055	HARSHA C R		1
27	CS056	HARSHITHA L S		1
28	CS057	HARSHITHA D B		1
29	CS059	HARSHITHA M		1
30	CS061	HEERITHA SHREE S		1
Staff Initials				

15/12	16/12	17/12	18/12	19/12	20/12	21/12	22/12	23/12	24/12	25/12	26/12	27/12	28/12	29/12	30/12	31/12	1/1	2/1	3/1	4/1	5/1	6/1	7/1	8/1	9/1	10/1	11/1	12/1	13/1	14/1	15/1	16/1	17/1	18/1	19/1	20/1	21/1	22/1	23/1	24/1	25/1	26/1	27/1	28/1	29/1	30/1	31/1	1/2	2/2	3/2	4/2	5/2	6/2	7/2	8/2	9/2	10/2	11/2	12/2	13/2	14/2	15/2	16/2	17/2	18/2	19/2	20/2	21/2	22/2	23/2	24/2	25/2	26/2	27/2	28/2	29/2	30/2	31/2	1/3	2/3	3/3	4/3	5/3	6/3	7/3	8/3	9/3	10/3	11/3	12/3	13/3	14/3	15/3	16/3	17/3	18/3	19/3	20/3	21/3	22/3	23/3	24/3	25/3	26/3	27/3	28/3	29/3	30/3	31/3	1/4	2/4	3/4	4/4	5/4	6/4	7/4	8/4	9/4	10/4	11/4	12/4	13/4	14/4	15/4	16/4	17/4	18/4	19/4	20/4	21/4	22/4	23/4	24/4	25/4	26/4	27/4	28/4	29/4	30/4	31/4	1/5	2/5	3/5	4/5	5/5	6/5	7/5	8/5	9/5	10/5	11/5	12/5	13/5	14/5	15/5	16/5	17/5	18/5	19/5	20/5	21/5	22/5	23/5	24/5	25/5	26/5	27/5	28/5	29/5	30/5	31/5	1/6	2/6	3/6	4/6	5/6	6/6	7/6	8/6	9/6	10/6	11/6	12/6	13/6	14/6	15/6	16/6	17/6	18/6	19/6	20/6	21/6	22/6	23/6	24/6	25/6	26/6	27/6	28/6	29/6	30/6	31/6	1/7	2/7	3/7	4/7	5/7	6/7	7/7	8/7	9/7	10/7	11/7	12/7	13/7	14/7	15/7	16/7	17/7	18/7	19/7	20/7	21/7	22/7	23/7	24/7	25/7	26/7	27/7	28/7	29/7	30/7	31/7	1/8	2/8	3/8	4/8	5/8	6/8	7/8	8/8	9/8	10/8	11/8	12/8	13/8	14/8	15/8	16/8	17/8	18/8	19/8	20/8	21/8	22/8	23/8	24/8	25/8	26/8	27/8	28/8	29/8	30/8	31/8	1/9	2/9	3/9	4/9	5/9	6/9	7/9	8/9	9/9	10/9	11/9	12/9	13/9	14/9	15/9	16/9	17/9	18/9	19/9	20/9	21/9	22/9	23/9	24/9	25/9	26/9	27/9	28/9	29/9	30/9	31/9	1/10	2/10	3/10	4/10	5/10	6/10	7/10	8/10	9/10	10/10	11/10	12/10	13/10	14/10	15/10	16/10	17/10	18/10	19/10	20/10	21/10	22/10	23/10	24/10	25/10	26/10	27/10	28/10	29/10	30/10	31/10	1/11	2/11	3/11	4/11	5/11	6/11	7/11	8/11	9/11	10/11	11/11	12/11	13/11	14/11	15/11	16/11	17/11	18/11	19/11	20/11	21/11	22/11	23/11	24/11	25/11	26/11	27/11	28/11	29/11	30/11	31/11	1/12	2/12	3/12	4/12	5/12	6/12	7/12	8/12	9/12	10/12	11/12	12/12	13/12	14/12	15/12	16/12	17/12	18/12	19/12	20/12	21/12	22/12	23/12	24/12	25/12	26/12	27/12	28/12	29/12	30/12	31/12	1/13	2/13	3/13	4/13	5/13	6/13	7/13	8/13	9/13	10/13	11/13	12/13	13/13	14/13	15/13	16/13	17/13	18/13	19/13	20/13	21/13	22/13	23/13	24/13	25/13	26/13	27/13	28/13	29/13	30/13	31/13	1/14	2/14	3/14	4/14	5/14	6/14	7/14	8/14	9/14	10/14	11/14	12/14	13/14	14/14	15/14	16/14	17/14	18/14	19/14	20/14	21/14	22/14	23/14	24/14	25/14	26/14	27/14	28/14	29/14	30/14	31/14	1/15	2/15	3/15	4/15	5/15	6/15	7/15	8/15	9/15	10/15	11/15	12/15	13/15	14/15	15/15	16/15	17/15	18/15	19/15	20/15	21/15	22/15	23/15	24/15	25/15	26/15	27/15	28/15	29/15	30/15	31/15	1/16	2/16	3/16	4/16	5/16	6/16	7/16	8/16	9/16	10/16	11/16	12/16	13/16	14/16	15/16	16/16	17/16	18/16	19/16	20/16	21/16	22/16	23/16	24/16	25/16	26/16	27/16	28/16	29/16	30/16	31/16	1/17	2/17	3/17	4/17	5/17	6/17	7/17	8/17	9/17	10/17	11/17	12/17	13/17	14/17	15/17	16/17	17/17	18/17	19/17	20/17	21/17	22/17	23/17	24/17	25/17	26/17	27/17	28/17	29/17	30/17	31/17	1/18	2/18	3/18	4/18	5/18	6/18	7/18	8/18	9/18	10/18	11/18	12/18	13/18	14/18	15/18	16/18	17/18	18/18	19/18	20/18	21/18	22/18	23/18	24/18	25/18	26/18	27/18	28/18	29/18	30/18	31/18	1/19	2/19	3/19	4/19	5/19	6/19	7/19	8/19	9/19	10/19	11/19	12/19	13/19	14/19	15/19	16/19	17/19	18/19	19/19	20/19	21/19	22/19	23/19	24/19	25/19	26/19	27/19	28/19	29/19	30/19	31/19	1/20	2/20	3/20	4/20	5/20	6/20	7/20	8/20	9/20	10/20	11/20	12/20	13/20	14/20	15/20	16/20	17/20	18/20	19/20	20/20	21/20	22/20	23/20	24/20	25/20	26/20	27/20	28/20	29/20	30/20	31/20	1/21	2/21	3/21	4/21	5/21	6/21	7/21	8/21	9/21	10/21	11/21	12/21	13/21	14/21	15/21	16/21	17/21	18/21	19/21	20/21	21/21	22/21	23/21	24/21	25/21	26/21	27/21	28/21	29/21	30/21	31/21	1/22	2/22	3/22	4/22	5/22	6/22	7/22	8/22	9/22	10/22	11/22	12/22	13/22	14/22	15/22	16/22	17/22	18/22	19/22	20/22	21/22	22/22	23/22	24/22	25/22	26/22	27/22	28/22	29/22	30/22	31/22	1/23	2/23	3/23	4/23	5/23	6/23	7/23	8/23	9/23	10/23	11/23	12/23	13/23	14/23	15/23	16/23	17/23	18/23	19/23	20/23	21/23	22/23	23/23	24/23	25/23	26/23	27/23	28/23	29/23	30/23	31/23	1/24	2/24	3/24	4/24	5/24	6/24	7/24	8/24	9/24	10/24	11/24	12/24	13/24	14/24	15/24	16/24	17/24	18/24	19/24	20/24	21/24	22/24	23/24	24/24	25/24	26/24	27/24	28/24	29/24	30/24	31/24	1/25	2/25	3/25	4/25	5/25	6/25	7/25	8/25	9/25	10/25	11/25	12/25	13/25	14/25	15/25	16/25	17/25	18/25	19/25	20/25	21/25	22/25	23/25	24/25	25/25	26/25	27/25	28/25	29/25	30/25	31/25	1/26	2/26	3/26	4/26	5/26	6/26	7/26	8/26	9/26	10/26	11/26	12/26	13/26	14/26	15/26	16/26	17/26	18/26	19/26	20/26	21/26	22/26	23/26	24/26	25/26	26/26	27/26	28/26	29/26	30/26	31/26	1/27	2/27	3/27	4/27	5/27	6/27	7/27	8/27	9/27	10/27	11/27	12/27	13/27	14/27	15/27	16/27	17/27	18/27	19/27	20/27	21/27	22/27	23/27	24/27	25/27	26/27	27/27	28/27	29/27	30/27	31/27	1/28	2/28	3/28	4/28	5/28	6/28	7/28	8/28	9/28	10/28	11/28	12/28	13/28	14/28	15/28	16/28	17/28	18/28	19/28	20/28	21/28	22/28	23/28	24/28	25/28	26/28	27/28	28/28	29/28	30/28	31/28	1/29	2/29	3/29	4/29	5/29	6/29	7/29	8/29	9/29	10/29	11/29	12/29	13/29	14/29	15/29	16/29	17/29	18/29	19/29	20/29	21/29	22/29	23/29	24/29	25/29	26/29	27/29	28/29	29/29	30/29	31/29	1/30	2/30	3/30	4/30	5/30	6/30	7/30	8/30	9/30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Alva's Education Foundation (R), Moodbidri.

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(Affiliated to Visvesvaraya Technological University, Belagavi, Approved by AICTE, New Delhi)

Shobhavana Campus, Mijar-574225, Moodbidri, D.K., Karnataka

Phone: 08258-262725, Fax: 08258-262726

ACADEMIC YEAR- 2022-23 (ODD SEMESTER)

FACULTY INCHARGE

Dr. Sakshi S Kamath

Semester & Section

First semester, A Section

Date of Commencement

01-12-2022

Last working day of the Semester

31-03-2023

Source Materials List

1. Wiley Engineering Chemistry, Wiley India Pvt.Ltd.NewDelhi,2013-2ndEdition.
2. Engineering Chemistry,Satyaprakash&ManishaAgrawal,KhannaBookPublishing,Delhi
3. A Text Book of Engg. Chemistry,ShashiChawla,DhanpatRai&Co.(P)Ltd.
4. Essentials of Physical Chemistry, Bahl&Tuli,S.ChandPublishing
5. Applied Chemistry,SunitaRattan,Kataria5.EngineeringChemistry,Baskar,Wiley
6. Engineering Chemistry-I,D.Groukrishana,VikasPublishing
7. A Text book of Engineering Chemistry,SSDara&Dr.SSUmare,SChand&CompanyLtd.,12thEdition,2011.
8. A Text Book of Engineering Chemistry,R.V.GadagandNityanandaShetty,I.K.InternationalPublishinghouse. 2ndEdition,2016.
9. Text Book of Polymer Science, F.W.Billmeyer,JohnWiley&Sons,4thEdition,1999.
10. Nanotechnology A Chemical Approach to Nanomaterials,G.A.Ozin&A.C.Arsenault,RSCPublishing,2005
11. Laboratory Manual Engg. Chemistry, Anupma Rajput, Dhanpat Rai&Co.

Subject/Course Name- Applied Chemistry for CSE stream/BCHES102

Lesson Planned

Lesson Execution

Period	Date	Topic	Source material needed	Topic	Date	Source material referred
1.	12-12-22	MODULE1:Sensors and Energy Systems-General introduction	1-10	MODULE 3: Corrosion and Electrode System- general introduction	12-12-22	1-10
2.	14-12-22	Sensors: Introduction, working, principle and applications of Conductometric sensors, Electrochemical sensors.	1-10	Corrosion Chemistry: Introduction, electrochemical theory of corrosion,	12-12-22	1-10
3.	15-12-22	Thermometric sensors and Optical sensors (Colorimetry).	1-10	Types of corrosion- differential metal and differential aeration.	14-12-22	1-10
4.	16-12-22	Sensors for the measurement of dissolved oxygen (DO). Electrochemical sensors for the pharmaceuticals.	1-10	Corrosion control-galvanization, anodization and sacrificial anode method.	16-12-22	1-10
5.	17-12-22	Electrochemical gas sensors for Sox and NOx.	1-10	Corrosion Penetration Rate (CPR) – Numericals	17-12-22	1-10
6.	19-12-22	Disposable sensors in the detection of biomolecules and pesticides.	1-10	Electrode system: Introduction to reference electrode Calomel electrode-construction, working and applications	18-12-22	1-10
7.	21-12-22	Energy Systems: Introduction to batteries, construction, working and applications of	1-10	Ion selective electrode-construction, working and applications	21-12-22	1-10



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		Lithium ion and Sodium ion batteries				
8.	22-12-22	Quantum Dot Sensitized Solar Cells (QDSSC's)-Principle, Properties and Applications	1-10	pH determination using glass electrode	28-12-22	1-10
9.	23-12-22	MODULE 2: Materials for Memory and Display Systems-general introduction	1-10	Concentration cells and Numericals	29-12-22	1-10
10.	24-12-22	Memory Devices: Introduction, Basic concepts of electronic memory, History of Organic /polymer electronic memory devices, Classification of electronic memory devices	1-10	Analytical Techniques: Introduction, principle and instrumentation of Conductometry; its application in the estimation of weak acid.	30-12-22	1-10
11.	26-12-22	Types of organic memory devices	1-10	Potentiometry; its application in the estimation of iron.	31-12-22	1-10
12.	28-12-22	Display Systems: Photoactive and electro active materials	1-10	MODULE 4: Polymers & green fuels-general introduction	2-1-23	1-10
13.	29-12-22	Nano materials and organic materials used in optoelectronic devices	1-10	Polymers: Introduction, Molecular weight- Number average, weight average- Numericals	4-1-23	1-10
14.	30-12-22	Nano materials and organic materials used in optoelectronic devices	1-10	Synthesis, properties and applications of Kevlar	5-1-23	1-10
15.	31-12-22	Liquid crystals (LC's) - Introduction, classification, properties and application in Liquid Crystal Displays (LCD's)	1-10	Conducting polymers- Synthesis and conducting mechanism of polyacetylene and commercial applications.	6-1-23	1-10
16.	2-1-23	Properties and application of Organic Light Emitting Diodes (OLED's) and Quantum Light Emitting Diodes (QLED's), Light emitting electro chemical cells.	1-10	Green Fuels: Introduction, construction and working of solar photovoltaic cell, advantages, and disadvantages	7-1-23	1-10
17.	4-1-23	MODULE 3: Corrosion and Electrode System- general introduction	1-10	Generation of energy (green hydrogen) by electrolysis of water and its advantages.	14-1-23	1-10
18.	5-1-23	Corrosion Chemistry: Introduction, electrochemical theory of corrosion,	1-10	MODULE 5: E-waste management-general introduction	18-1-23	1-10
19.	6-1-23	Types of corrosion-differential metal and differential aeration.	1-10	Introduction, sources of e-waste, Composition, Characteristics, and Need of e- waste management.	19-1-23	1-10
20.	7-1-23	Corrosion control- galvanization, anodization and sacrificial anode method.	1-10	Toxic materials used in manufacturing electronic and electrical products,	20-1-23	1-10
21.	9-1-23	Corrosion Penetration Rate (CPR) – Numericals	1-10	Health hazards due to exposure of e-waste	21-1-23	1-10



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22.	11-1-23	Electrode system: Introduction to reference electrode Calomel electrode-construction, working and applications	1-10	Different approaches of recycling separation, thermal treatments	27-1-23	1-10
23.	12-1-23	Ion selective electrode-construction, working and applications	1-10	Hydrometallurgical extraction, pyro metallurgical methods, direct recycling.	28-1-23	1-10
24.	13-1-23	pH determination using glass electrode	1-10	Extraction of gold from E-waste.	30-1-23	1-10
25.	14-1-23	Concentration cells and Numericals	1-10	Role of stakeholders in environmental management of e-waste (producers, consumers, recyclers, and statutory bodies).	8-2-23	1-10
26.	18-1-23	Analytical Techniques: Introduction, principle and instrumentation of Conductometry; its application in the estimation of weak acid.	1-10	MODULE1: Sensors and Energy Systems-General introduction	9-2-23	1-10
27.	19-1-23	Potentiometry; its application in the estimation of iron.	1-10	Sensors: Introduction, working, principle and applications of Conductometric sensors, Electrochemical sensors.	10-2-23	1-10
28.	20-1-23	MODULE 4: Polymers & green fuels-general introduction	1-10	Thermometric sensors and Optical sensors (Colorimetry).	11-2-23	1-10
29.	21-1-23	Polymers: Introduction, Molecular weight- Number average, weight average- Numericals	1-10	Sensors for the measurement of dissolved oxygen (DO). Electrochemical sensors for the pharmaceuticals.	13-2-23	1-10
30.	1-2-23	Synthesis, properties and applications of Kevlar	1-10	Electrochemical gas sensors for Sox and NOx.	15-2-23	1-10
31.	2-2-23	Conducting polymers- Synthesis and conducting mechanism of polyacetylene and commercial applications.	1-10	Disposable sensors in the detection of biomolecules and pesticides.	16-2-23	1-10
32.	3-2-23	Green Fuels: Introduction, construction and working of solar photovoltaic cell, advantages, and disadvantages	1-10	Energy Systems: Introduction to batteries, construction, working and applications of Lithium ion and Sodium ion batteries	1-3-23	1-10
33.	6-2-23	Generation of energy (green hydrogen) by electrolysis of water and its advantages.	1-10	Quantum Dot Sensitized Solar Cells (QDSSC's)-Principle, Properties and Applications	2-3-23	1-10
34.	8-2-23	MODULE 5: E-waste management-general introduction	1-10	MODULE 2: Materials for Memory and Display Systems-general introduction	3-3-23	1-10
35.	9-2-23	Introduction, sources of e-waste, Composition, Characteristics, and Need of e- waste management.	1-10	Memory Devices: Introduction, Basic concepts of electronic memory, History of Organic/polymer electronic memory devices, Classification of electronic memory devices	04-3-23	1-10
36.	10-2-23	Toxic materials used in manufacturing electronic and electrical products,	1-10	Types of organic memory devices	06-3-23	1-10



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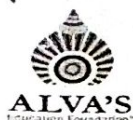
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37.	11-2-23	Health hazards due to exposure of e-waste	1-10	Display Systems: Photoactive and electro active materials	08-3-23	1-10
38.	13-2-23	Different approaches of recycling separation, thermal treatments	1-10	Nano materials and organic materials used in optoelectronic devices	09-3-23	1-10
39.	15-2-23	Hydrometallurgical extraction, pyro metallurgical methods, direct recycling.	1-10	Nano materials and organic materials used in optoelectronic devices	10-3-23	1-10
40.	16-2-23	Extraction of gold from E-waste.	1-10	Liquid crystals (LC's) - Introduction, classification, properties and application in Liquid Crystal Displays (LCD's)	11-3-23	1-10
41.	17-2-23	Role of stakeholders in environmental management of e-waste (producers, consumers, recyclers, and statutory bodies).	1-10	Properties and application of Organic Light Emitting Diodes (OLED's) and Quantum Light Emitting Diodes (QLED's), Light emitting electro chemical cells.	13-3-23	1-10
42.	20-2-23	Conductometric estimation of acid mixture	11	Conductometric estimation of acid mixture	Conducted according to the time table (2 batches-1 lab slot for each batch per week)	11
43.	22-2-23	Potentiometric estimation of FAS	11	Potentiometric estimation of FAS		11
44.	01-3-23	Determination of pKa using pH sensors	11	Determination of pKa using pH sensors		11
45.	02-3-23	Estimation of total hardness of water using EDTA method	11	Estimation of total hardness of water using EDTA method		11
46.	03-3-23	Estimation of Copper present in electroplating effluent by optical sensor	11	Estimation of Copper present in electroplating effluent by optical sensor		11
47.	04-3-23	Determination of viscosity coefficient of the lubricant	11	Determination of viscosity coefficient of the lubricant		11
48.	06-3-23	Estimation of iron in TMT bar using external indicator	11	Estimation of iron in TMT bar using external indicator		11
49.	08-3-23	Determination of COD of industrial waste water sample	11	Determination of COD of industrial waste water sample		11
50.	09-3-23	Demonstration experiments (any two)	11	Demonstration experiments (any two)		11
51.	10-03-2023	Revision until last working day	15-03-2023 to last working day (31-03-2023)- revision classes conducted			


Faculty in-charge


HoD Chemistry & IQAC Co-ordinator
H. O. D.

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FIRST IA TEST

22CHES12: Applied Chemistry for Computer Science & Engineering Stream

Date-23-01-2023

Time 3.00-4.30 PM

Marks 20

Section- A

Faculty: Dr. Sakshi S Kamath

Note: Answer one full question from each PART.

Marks CO BT

PART A

- | | | | | | |
|---|---|---|---|---|---|
| 1 | a | What is corrosion? Discuss the electrochemical theory of corrosion by taking rusting of iron as an example. | 5 | 3 | 2 |
| | b | What are ion-selective electrodes? Explain the construction & working of Glass electrode. | 5 | 3 | 2 |

OR

- | | | | | | |
|---|---|--|---|---|---|
| 2 | a | What are Concentration cells? Find X in $\text{Al}/\text{AlCl}_3(0.015\text{M})//\text{AlCl}_3(x)/\text{Al}$ at 298K, when E_{Cell} is 0.0197V. Write half-cell & net cell reactions. | 5 | 3 | 3 |
| | b | Explain the Principle, instrumentation and applications of Conductometry. | 5 | 3 | 2 |

PART B

- | | | | | | |
|---|---|---|---|---|---|
| 3 | a | A polymer sample contains 100 molecules of molecular mass 1000g/mol, 200 molecules of molecular mass 2000g/mol & 500 molecules of molecular mass 5000g/mol. Calculate number average and weight average molecular weight. | 5 | 4 | 3 |
| | b | What are Conducting polymers? Explain the mechanism of oxidative doping in conduction of Polyacetylene. | 2 | 4 | 2 |

OR

- | | | | | | |
|---|---|---|---|---|---|
| 4 | a | Explain synthesis, properties and applications of Kevlar. | 5 | 4 | 2 |
| | b | What is a photovoltaic cell? Explain the construction and working of a Photovoltaic cell. | 5 | 4 | 2 |

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21/01/23
Faculty in-charge

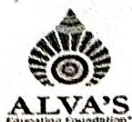
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HoD & IQAC Chairman

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FIRST IA TEST

22CHES22: Applied Chemistry for Computer Science & Engineering Stream

Date-23-01-2023

Time 3.00-4.30 PM

Marks 20

Section- A

Faculty: Dr. Sakshi S Kamath

SCHEME OF EVALUATION

Marks CO BT

PART A

- | | | | | | |
|---|---|---|---|---|---|
| 1 | a | What is corrosion? Discuss the electrochemical theory of corrosion by taking rusting of iron as an example.
Definition of corrosion-1 marks
Anodic reaction-1 marks
Cathodic reactions (any 2)-1 marks
Formation of $\text{Fe}(\text{OH})_2$ -1 marks
Rust formation-1 marks | 5 | 3 | 2 |
| | b | What are ion-selective electrodes? Explain the construction & working of Glass electrode.
Definition-1 marks
Diagram-1 marks
Construction-1 marks
Working-2 marks | 5 | 3 | 2 |

OR

- | | | | | | |
|---|---|---|---|---|---|
| 2 | a | What are Concentration cells? Find X in $\text{Al}/\text{AlCl}_3(0.015\text{M})//\text{AlCl}_3(x)/\text{Al}$ at 298K, when E_{cell} is 0.0197V. Write half-cell & net cell reactions.
Definition-1 marks
Reactions-1 marks
Formula-1 marks
Substitution & Answer-2 marks (0.15M) | 5 | 3 | 3 |
| | b | Explain the Principle, instrumentation and applications of Conductometry.
Principle-2 marks
Instrumentation explanation with diagram-2 marks
Applications-1 marks | 5 | 3 | 2 |



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FIRST IA TEST

22CHES22: Applied Chemistry for Computer Science & Engineering Stream


PART B

- 3 a A polymer sample contains 100 molecules of molecular mass 1000g/mol, 200 molecules of molecular mass 2000g/mol & 500 molecules of molecular mass 5000g/mol. Calculate number average and weight average molecular weight. 5 4 3
2 formulas-2 marks
Substitution for both-2 marks
Answers- 1mark (Number average-3750 g/mol & weight average 4.46×10^3 g/mol)


- b What are Conducting polymers? Explain the mechanism of oxidative doping in conduction of Polyacetylene. 2 4 2
Definition-1 marks
Oxidative doping stepwise with appropriate structures-4 marks

OR

- 4 a Explain synthesis, properties and applications of Kevlar. 5 4 2
Synthesis-2 marks
Properties(any4)-2 marks
Applications (any 4)-1 marks
- b What is a photovoltaic cell? Explain the construction and working of a Photovoltaic cell. 5 4 2
Definition-1 marks
Diagram-1 marks
Construction-1 marks
Working-2 marks


Faculty in-charge


IQAC Member


HoD & IQAC Chairman
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SECOND IA TEST

22CHES12: Applied Chemistry for Computer Science & Engineering Stream

Date-23-02-2023

Time: 9:30-10:30 AM

Marks 20

Section- A

Faculty: Dr. Sakshi S Kamath

Note: Answer one full question from each PART.

Marks CO BT

PART A

- | | | | | | |
|---|---|---|---|---|---|
| 1 | a | Explain synthesis and conduction mechanism (reductive doping) of polyacetylene. | 5 | 4 | 2 |
| | b | What is green hydrogen? Explain Proton Exchange Membrane (PEM) electrolysis of water. | 5 | 4 | 2 |

OR

- | | | | | | |
|---|---|---|---|---|---|
| 2 | a | Explain alkaline water electrolysis involved in the production of green hydrogen. | 5 | 4 | 2 |
| | b | Elaborate synthesis, properties and applications of graphene oxide. | 5 | 4 | 2 |

PART B

- | | | | | | |
|---|---|--|---|---|---|
| 3 | a | Mention the sources of e-waste and explain the need of e-waste management. | 5 | 5 | 3 |
| | b | Explain pyrometallurgical extraction of e-waste. | 2 | 5 | 2 |

OR

- | | | | | | |
|---|---|---|---|---|---|
| 4 | a | Explain the extraction of gold from e-waste. | 5 | 5 | 2 |
| | b | Elaborate the role of stakeholders in e-waste management. | 5 | 5 | 3 |

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SECOND IA TEST

22CHES12: Applied Chemistry for Computer Science & Engineering Stream

Date-23-02-2023

Time: 9:30-10:30 AM

Marks 20

Section- A

Faculty: Dr. Sakshi S Kamath

SCHEME OF EVALUATION

Marks CO BT

PART A

- | | | | | | |
|---|---|---|---|---|---|
| 1 | a | Explain synthesis and conduction mechanism (reductive doping) of polyacetylene. | 5 | 4 | 2 |
| | | Synthesis of polyacetylene-1 marks | | | |
| | | Conduction mechanism-structures with explanation-4 marks | | | |
| | b | What is green hydrogen? Explain PEM electrolysis of water. | 5 | 4 | 2 |
| | | Defintion-1 marks | | | |
| | | PEM electrolysis-diagram-1 marks | | | |
| | | Reactions-1 marks | | | |
| | | Explanation-2 marks | | | |

OR

- | | | | | | |
|---|---|---|---|---|---|
| 2 | a | Explain alkaline water electrolysis involved in the production of green hydrogen. | 5 | 4 | 2 |
| | | Diagram-1 marks | | | |
| | | Reactions-2 marks | | | |
| | | Explanation-2 marks | | | |
| | b | Elaborate synthesis, properties and applications of graphene oxide. | 5 | 4 | 2 |
| | | Synthesis of grapheme oxide-1 marks | | | |
| | | Properties-1 marks | | | |
| | | Explanation-3 marks | | | |



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SECOND IA TEST

22CHES12: Applied Chemistry for Computer Science & Engineering Stream

PART B


- 3 a Mention the sources of e-waste and explain the need of e-waste management. 5 5 3
Sources of e-waste-2 marks
Need of e-waste management-6 points- 3 marks

- b Explain pyrometallurgical extraction of e-waste. 2 5 2
Detailed explanation- each step 1 marks

OR

- 4 a Explain the extraction of gold from e-waste. 5 5 2
Detailed explanation-4 marks
Reaction-1 marks

- b Elaborate the role of stakeholders in e-waste management. 5 5 3
To explain 4 different stakeholders-5 marks


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THIRD IA TEST

22CHE\$12: Applied Chemistry for Computer Science & Engineering Stream

Date-05-03-2023

Time: 3:15-4:15 PM

Marks 20

Section- A, B, C & D

Faculty: Dr. Ravi Kumar C, Dr. Damodara N & Dr. Sakshi S Kamath

Note: Answer one full question from each PART.

Marks CO BT

PART A

- | | | | | | |
|---|---|---|---|---|---|
| 1 | a | What are electrochemical sensors? Explain its application in the measurement of Dissolved oxy gen (DO). | 5 | 1 | 3 |
| | b | What are secondary batteries? Explain construction and working of Li-ion battery with neat labeled diagram. | 5 | 1 | 3 |

OR

- | | | | | | |
|---|---|--|---|---|---|
| 2 | a | Describe the application of electrochemical gas sensors in sensing NO _x and SO _x . | 5 | 1 | 3 |
| | b | What are Quantum dot sensitized solar cells? Explain its construction and working with neat labeled diagram. | 5 | 1 | 2 |

PART B

- | | | | | | |
|---|---|---|---|---|---|
| 3 | a | What are memory devices? Explain the classification of electronic memory devices. | 5 | 2 | 2 |
| | b | What is QLED? Mention any 4 properties and applications of QLED. | 2 | 2 | 3 |

OR

- | | | | | | |
|---|---|--|---|---|---|
| 4 | a | Explain the type of organic memory devices taking an example of p-type (pentacene) and n-type (perfluoropentacene) semiconducting materials. | 5 | 2 | 2 |
| | b | What are liquid crystals? Mention any 4 properties and applications of liquid crystals. | 5 | 2 | 3 |

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THIRD IA TEST

22CHES12: Applied Chemistry for Computer Science & Engineering Stream

Date-05-03-2023

Time: 9:30-10:30 AM

Marks 20

Section- A,B,C & D

Faculty: Dr. Ravi Kumar C, Dr. Damodara N & Dr. Sakshi S Kamath

Scheme of evaluation

Marks CO BT

PART A

- | | | | | | |
|---|---|---|---|---|---|
| 1 | a | What are electrochemical sensors? Explain its application in the measurement of Dissolved oxy gen (DO).
Definition-1 marks
Detailed procedure-4 marks | 5 | 1 | 3 |
| | b | What are secondary batteries? Explain construction and working of Li-ion battery with neat labeled diagram.
Definition-1 marks
Diagram-1 marks
Construction-1 marks
Working-2 marks (Both discharge & charge) | 5 | 1 | 3 |

OR

- | | | | | | |
|---|---|---|---|---|---|
| 2 | a | Describe the application of electrochemical gas sensors in sensing NO _x and SO _x .
In analyzing NO _x - Both explanation & reaction-2.5 marks
In analyzing SO _x -Both explanation & reaction-2.5 marks | 5 | 1 | 3 |
| | b | What are Quantum dot sensitized solar cells? Explain its construction and working with neat labeled diagram.
Definition-1 marks
Diagram-1 marks
Construction explanation-1 marks
Working with reactions-2 marks | 5 | 1 | 2 |



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THIRD IA TEST

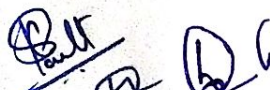
22CHES12: Applied Chemistry for Computer Science & Engineering Stream

PART B


- 3 a What are memory devices? Explain the classification of electronic memory devices. 5 2 2
Definition-1 marks
Explain classifications-4 marks
- b What is QLED? Mention any 4 properties and applications of QLED. 2 2 3
Definition-1 marks
Any 4 properties-2 marks
Any 4 applications-2 marks

OR

- 4 a Explain the type of organic memory devices taking an example of p-type (pentacene) and n-type (perfluoropentacene) semiconducting materials. 5 2 2
p-type-structure of pentacene and explanation (1+1.5 marks)
n-type-structure of perfluoropentacene and explanation (1+1.5 marks)
- b What are liquid crystals? Mention any 4 properties and applications of liquid crystals. 5 2 3
Definition of liquid crystals-1 marks
Any 4 properties-2 marks
Any 4 applications-2 marks


Course Teacher


IQAC Member


IQAC Chairman & HoD
H. O. D.
Dept. Of Chemistry
Alva's Institute of Engg. & Technology
Mijar, MOODBIDRI - 574 225



DEPARTMENT OF CHEMISTRY

ASSIGNMENT QUESTIONS: APPLIED CHEMISTRY FOR COMPUTER SCIENCE & ENGINEERING STREAM (BCHES102)

10-03-2023


Faculty in-charge: Dr. Ravi Kumar C, Dr. Damodara N & Dr. Sakshi S Kamath

Section: A,B,C & D


Course Outcome: 1,2,3, 4,5 & 6

1. Write a detailed note on Quantum Dot Sensitized Solar Cells(QDSSC's) stressing on its principle and working
2. Explain properties and application of Organic Light Emitting Diodes (OLED's)
3. Write a note on Potentiometry; its application in the estimation of iron.
4. Discuss the synthesis of Green Hydrogen and its advantages.
5. Elaborate the hydrometallurgical extraction of metals in e-waste
6. Explain the principle, working and the application of optical sensor in estimation of Copper in electroplating effluent sample.

Note: Last date for the submission of assignment is 20-03-2023


Faculty in-charge


IQAC Member


IQAC Chairman & HoD
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ALVA'S Education Foundation (P), Moodbidri.

ALVA'S INSTITUTE OF ENGINEERING & TECHNOLOGY

(Affiliated to Visvesvaraya Technological University, Belagavi, Approved by AICTE, New Delhi)

Shobhavana Campus, Mijar-574225, Moodbidri, D.K., Karnataka

Phone: 08258-262725, Fax: 08258-262726

ACADEMIC YEAR 2022-23 (ODD SEMESTER)

A SECTION

FACULTY INCHARGE-Dr. Sakshi S Kamath

APPLIED CHEMISTRY FOR CSE STREAM (BCHE102)

Sl No	USN	STUDENT NAME	First IA	Second IA	Third IA	Assignment	Total	Average	Theory Round off for 30	Lab IA for 20	Total IA for 50
01	4AL22CS001	Abhishek B	10	16	14	20	60	22.5	23	19	42
02	4AL22CS002	Abhishek Gowda G R	15	11	16	20	62	23.25	24	10	34
03	4AL22CS003	Abhishek R Allapur	9	10	11	20	50	18.75	19	9	28
04	4AL22CS004	Adhya H Shetty	8	16	18	20	62	23.25	24	18	42
05	4AL22CS005	Advith V Suvarna	16	8	8	20	52	19.5	20	18	38
06	4AL22CS009	Alan C Raju	19	13	19	20	71	26.625	27	19	46
07	4AL22CS010	Amith Gowda H M	14	15	20	20	69	25.875	26	18	44
08	4AL22CS011	Amrutha M	19	16	17	20	72	27	27	18	45
09	4AL22CS012	Ansil Kumar	20	18	20	20	78	29.25	30	18	48
10	4AL22CS018	Arvind Kumar Ojha	20	13	15	20	68	25.5	26	19	45
11	4AL22CS019	Ashritha	20	17	20	20	77	28.875	29	20	49
12	4AL22CS020	Ayeshatul Hafeeza	11	10	13	20	54	20.25	21	18	39
13	4AL22CS021	B B Naik	20	15	19	20	74	27.75	28	19	47
14	4AL22CS023	Bharath H D	15	12	18	20	65	24.375	25	19	44
15	4AL22CS027	Charan Kumar V	19	19	17	20	75	28.125	29	20	49
16	4AL22CS028	Charishma G	20	18	20	20	78	29.25	30	20	50
17	4AL22CS032	Chinmay Gowda H V	6	8	6	20	40	15	15	13	28
18	4AL22CS041	Diya Rai	19	16	20	20	75	28.125	29	19	48
19	4AL22CS042	Elluri Chaitanya Srinivas	14	20	20	20	74	27.75	28	19	47
20	4AL22CS043	Faiza	16	18	20	20	74	27.75	28	18	46



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ACADEMIC YEAR 2022-23 (ODD SEMESTER)

A SECTION

FACULTY INCHARGE-Dr. Sakshi S Kamath

APPLIED CHEMISTRY FOR CSE STREAM (BCHE102)

Sl No	USN	STUDENT NAME	First IA	Second IA	Third IA	Assignment	Total	Average	Theory Round off for 30	Lab IA for 20	Total IA for 50
01	4AL22CS001	Abhishek B	10	16	14	20	60	22.5	23	19	42
02	4AL22CS002	Abhishek Gowda G R	15	11	16	20	62	23.25	24	10	34
03	4AL22CS003	Abhishek R Allapur	9	10	11	20	50	18.75	19	9	28
04	4AL22CS004	Adhya H Shetty	8	16	18	20	62	23.25	24	18	42
05	4AL22CS005	Advith V Suvarna	16	8	8	20	52	19.5	20	18	38
06	4AL22CS009	Alan C Raju	19	13	19	20	71	26.625	27	19	46
07	4AL22CS010	Amith Gowda H M	14	15	20	20	69	25.875	26	18	44
08	4AL22CS011	Amrutha M	19	16	17	20	72	27	27	18	45
09	4AL22CS012	Ansil Kumar	20	18	20	20	78	29.25	30	18	48
10	4AL22CS018	Arvind Kumar Ojha	20	13	15	20	68	25.5	26	19	45
11	4AL22CS019	Ashritha	20	17	20	20	77	28.875	29	20	49
12	4AL22CS020	Ayeshatul Hafeeza	11	10	13	20	54	20.25	21	18	39
13	4AL22CS021	B B Naik	20	15	19	20	74	27.75	28	19	47
14	4AL22CS023	Bharath H D	15	12	18	20	65	24.375	25	19	44
15	4AL22CS027	Charan Kumar V	19	19	17	20	75	28.125	29	20	49
16	4AL22CS028	Charishma G	20	18	20	20	78	29.25	30	20	50
17	4AL22CS032	Chinmay Gowda H V	6	8	6	20	40	15	15	13	28
18	4AL22CS041	Diya Rai	19	16	20	20	75	28.125	29	19	48
19	4AL22CS042	Elluri Chaitanya Srinivas	14	20	20	20	74	27.75	28	19	47
20	4AL22CS043	Faiza	16	18	20	20	74	27.75	28	18	46



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21	4AL22CS044	Gagan	18	15	20	20	73	27.375	28	20	48
22	4AL22CS047	Glanil Tauro	14	13	15	20	62	23.25	24	20	44
23	4AL22CS049	Gowda Miilee Madankumar	20	11	18	20	69	25.875	26	20	46
24	4AL22CS051	H I Akshay	11	20	20	20	71	26.625	27	18	45
25	4AL22CS055	Harsha C R	9	6	15	20	50	18.75	19	18	37
26	4AL22CS056	Harshith L S	8	4	8	20	40	15	15	17	32
27	4AL22CS057	Harshitha D Bangera	17	11	13	20	61	22.875	23	19	42
28	4AL22CS059	Harshitha M	15	12	15	20	62	23.25	24	19	43
29	4AL22CS061	Heetha Shree S	9	4	20	20	53	19.875	20	19	39
30	4AL22CS064	Indrajith S	7	12	15	20	54	20.25	21	17	38
31	4AL22CS066	Jeevan K	8	10	9	20	47	17.625	18	18	36
32	4AL22CS067	K Jeevan Kumar	19	15	20	20	74	27.75	28	18	46
33	4AL22CS069	Kanishka Shetty	11	10	15	20	56	21	21	18	39
34	4AL22CS073	Kavya S	13	17	20	20	70	26.25	27	19	46
35	4AL22CS076	Keerthana R S	12	11	20	20	63	23.625	24	19	43
36	4AL22CS078	Kiran Kumar	14	17	18	20	69	25.875	26	20	46
37	4AL22CS081	Lohith B R	20	14	20	20	74	27.75	28	17	45
38	4AL22CS086	Meghana N K	18	18	20	20	76	28.5	29	19	48
39	4AL22CS088	Merlyn Luvis Almeida	17	20	20	20	77	28.875	29	19	48
40	4AL22CS089	Mohammed Ahazar	15	12	14	20	61	22.875	23	15	38
41	4AL22CS090	Mohidin Ahmed Kabeer	13	17	15	20	65	24.375	25	19	44
42	4AL22CS091	Nausha Tendulkar	19	14	20	20	73	27.375	28	19	47
43	4AL22CS092	Neha N Rao	10	8	14	20	52	19.5	20	19	39
44	4AL22CS097	Padmaraj Praphull Kurundwade	17	17	18	20	72	27	27	17	44
45	4AL22CS105	Pranav Tirakanagoudar	13	14	16	20	63	23.625	24	15	39
46	4AL22CS107	Prathi U Shetty	18	18	16	20	72	27	27	19	46
47	4AL22CS108	Preetham Devadiga	14	13	12	20	59	22.125	23	20	43

48	4AL22CS109	Preety Kakchingtabam	10	16	18	20	64	24	24	17	41
49	4AL22CS115	Rakshith V Rao	17	16	17	20	70	26.25	27	20	47
50	4AL22CS117	Rashmitha M S	20	10	20	20	70	26.25	27	19	46
51	4AL22CS118	Ravitej C Neeli	12	12	12	20	56	21	21	11	32
52	4AL22CS119	Rithika P Shetty	20	20	20	20	80	30	30	19	49
53	4AL22CS121	Roshan S	16	16	17	20	69	25.875	26	18	44
54	4AL22CS124	Sakshi	17	14	18	20	69	25.875	26	19	45
55	4AL22CS125	Sakshi B K	12	12	13	20	57	21.375	22	20	42
56	4AL22CS128	Sameeksha Shetty	17	17	20	20	74	27.75	28	19	47
57	4AL22CS143	Shetty Samay Deepak	20	18	20	20	78	29.25	30	20	50
58	4AL22CS150	Shodhan Kumar Shetty	20	16	18	20	74	27.75	28	17	45
59	4AL22CS168	Sumanth	15	13	19	20	67	25.125	26	20	46
60	4AL22CS171	Suraj	17	17	15	20	69	25.875	26	19	45
61	4AL22CS190	Yumlembam Henba Singh	15	15	16	20	66	24.75	25	20	45
62	4AL22IS001	Adarsh	19	18	20	20	77	28.875	29	19	48
63	4AL22IS022	Meghana Mohan Naik	20	20	20	20	80	30	30	19	49
64	4AL22IS028	Nisarga Shridhar Naik	15	18	19	20	72	27	27	18	45



Dr. Sakshi S Kamath



HoD & IQAC Chairman

Department of Chemistry

H.O.D.
Dept. Of Chemistry
Alva's Institute of Engineering & Technology
Mijar, Moodbidri - 574 225

CBCS SCHEME

USN

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BCHES102

First Semester B.E./B.Tech. Degree Examination, Jan./Feb. 2023

Applied Chemistry for CSE Stream

Time: 3 hrs.

Max. Marks: 100

- Note: 1. Answer any FIVE full questions, choosing ONE full question from each module.
2. VTU Formula Hand Book is permitted.
3. M : Marks, L: Bloom's level, C: Course outcomes.*

Module – 1				M	L	C
Q.1	a.	What are batteries? Explain the working principle, properties and applications of quantum Dot sensitized solar cells.	7	L2	CO1	
	b.	Explain the working principle of electrochemical sensors, and mention its applications.	6	L2	CO1	
	c.	What are sensors? Explain the detection of ascorbic Acid and Glyphosate using sensors.	7	L2	CO1	
OR						
Q.2	a.	What are electro chemical sensors? Explain its applications in the measurement of dissolved oxygen (DO).	7	L2	CO1	
	b.	Describe the construction working and applications of Lithium – ion batteries and mention any four applications.	6	L2	CO1	
	c.	Explain about detection of Diclofenac and hydro carbons (PAH's) with electro chemical oxidation sensors.	7	L2	CO1	
Module – 2						
Q.3	a.	What are photoactive and electro active materials and explain their working principle in display system.	6	L2	CO1	
	b.	Explain any four properties and applications of light emitting materials – poly [9 – Vinyl Carbazole] (PVK) suitable for opto electronic devices.	6	L2	CO1	
	c.	Discuss the working and liquid crystal display.	8	L2	CO1	
OR						
Q.4	a.	Explain the types of organic memory devices by taking P-type and n-type semi conducting materials.	6	L2	CO1	
	b.	What are nano materials? Explain any four properties and applications of polythiophenes (P3HT) suitable for optoelectronic devices.	7	L2	CO1	
	c.	What is QLED? Mention any four properties and applications of QLED.	6	L2	CO1	
Module – 3						
Q.5	a.	Define metallic corrosion. Describe the electrochemical theory of corrosion taking iron as an example.	6	L2	CO2	
	b.	What are Ion-selective electrodes? Explain the determination of pH of a solution using glass electrode.	7	L2	CO2	
	c.	Define concentration cell. The EMF of the cell $\text{Ag}/\text{AgNO}_3(\text{C}_1\text{M})//\text{AgNO}_3(0.2\text{M})/\text{Ag}$ is 0.8V at 25°C. Find the value of C_1 .	7	L3	CO2	

OR					
Q.6	a.	Briefly explain the principle, instrumentation and working of potentiometry taking estimation of Iron as example.	6	L2	CO1
	b.	What are reference electrode? Explain the construction, working and application of Calomel electrode.	7	L2	CO1
	c.	What is CPR? A piece of corroded steel plate was found in a submerged ocean vessel. It was estimated that the original area of the plate was 10 inch ² and that approx 2.6kg had corroded away during the submersion. Assuming a corrosion penetration rate of 200 mpy for this alloy in sea water, estimate the time of submersion in years. The density of steel is 7.9g/cm ³ .	7	L3	CO2
Module – 4					
Q.7	a.	In sample of a polymer, 20% molecules have molecular mass 15000 g/mol, 45% molecules have molecular mass 25000 g/mol, and remaining molecules have molecular mass 27000g/mol, calculate the number average and weight average molecular mass of the polymer.	6	L3	CO3
	b.	Explain the preparation, properties and commercial application of Kevlar.	7	L2	CO3
	c.	What are green fuels? Explain the generation of hydrogen by Alkaline water electrolysis with its advantages.	7	L2	CO3
OR					
Q.8	a.	Explain the construction and working of photovoltaic cells. Mention the advantages and disadvantages.	6	L2	CO4
	b.	Explain the preparation, properties, and commercial applications of graphene oxide.	7	L2	CO4
	c.	What are conducting polymer? Discuss the conduction mechanism in polyacetylene through oxidative doping technique and its uses.	7	L2	CO4
Module – 5					
Q.9	a.	Explain the ill effects of toxic materials used in manufacturing electrical and electronic products.	7	L2	CO5
	b.	Write a brief note on role of stake-holders for example, producers, consumers, recyclers and statutory bodies.	6	L2	CO5
	c.	Briefly discuss the various chemical methods involved in hydrometallurgy process of recovery of E-waste.	7	L2	CO5
OR					
Q.10	a.	Explain the pyro metallurgical recycling methods.	7	L2	CO5
	b.	Explain the steps involved in extraction of gold from e-waste.	7	L2	CO5
	c.	Mention the sources of e-waste and explain the need for e-waste management.	6	L2	CO5



COURSE OUTCOMES (COs) ASSESSMENT MATRIX
Alva's Institute of Engineering and Technology, Moodbidri
Department of Chemistry

Academic Year:		2022-23			CO Attainment Indirect	CO Attainment
Course Name & Course Code		Applied Chemistry for CSE stream /BCHES102				
Faculty Name:		Dr. Ravi Kumar C, Dr. Damodara N, Dr. Sakshi S Kamath				
CO Attainment - Direct						
Cos	Formative Assessment	Summative Assessment	Total Attainment Direct			
BCHES102.1	3	3	3.00	0	3	
BCHES102.2	3	3	3.00	0	3	
BCHES102.3	3	3	3.00	0	3	
BCHES102.4	3	3	3.00	0	3	
BCHES102.5	3	3	3.00	0	3	
BCHES102.6	3	3	3.00	0	3	
Average			3.00	0	3	

Attainment Level 1: 50% students rated more than or equal to 50% of maximum marks

Attainment Level 2: 60% students rated more than or equal to 50% of maximum marks

Attainment Level 3: 70% students rated more than or equal to 50% of maximum marks

Note:

Total Attainment Direct = (Weightage*Formative Assessment)+(Weightage*Summative Assessment) Weightage for Formative Assessment = 50%; Weightage for Summative Assessment = 50%

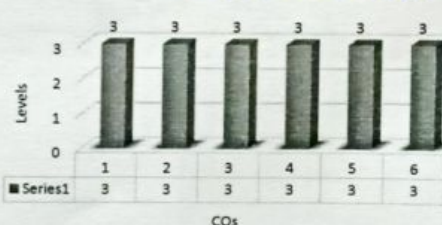
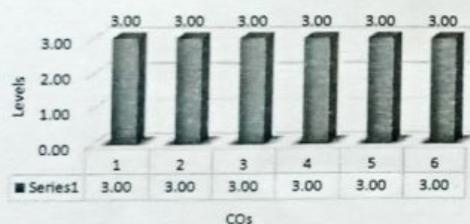
Faculty Name & Signature:		IQAC Chairman & HOD Signature:	
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H. O. D.

Dept. of Chemistry

Alva's Institute of Engg. & Technology
Moodbidri - 574 225

Total Attainment Direct



	PROGRAMME OUTCOME & PROGRAMME SPECIFIC OUTCOME ASSESSMENT MATRIX Alva's Institute of Engineering and Technology, Moodbidri Department of Chemistry
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Academic Year: 2022-23 Course Name: Applied Chemistry for CSE stream Course Code: BCHES102 Faculty Name: Dr. Ravi Kumar C, Dr. Damodara N, Dr. Sakshi S Kamath

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
BCHES102.1	2	1					1								
BCHES102.2	2														
BCHES102.3	2	1				1	1								
BCHES102.4	1					1	2								
BCHES102.5	2					2	2								
BCHES102.6	1					1	1								
AVG	1.66666667	1				1.25	1.4								

Key Words (POs)	Apply Knowledge	Solve Problems	Design/ Development of Solution	Conduct Investigations	Use Modern Tools	Engineer and Society	Environment and Sustainability	Professional Ethics	Individual and Team Work	Communicate Effectively	Project Management and Finance	Life-long Learning	PSO 1	PSO 2	PSO 3
BCHES102 Direct (X)	1.67	1				1.25	1.4								
BCHES102 Indirect (Y)	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!
Attainment Level															

PO Attainment Calculation Direct

COs	CO Attainment Grade	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
BCHES102.1	3.00	2	1	0	0	0	0	1	0	0	0	0	0	0	0	0
BCHES102.2	3	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0
BCHES102.3	3	2	1	0	0	0	1	1	0	0	0	0	0	0	0	0
BCHES102.4	3	1	0	0	0	0	1	2	0	0	0	0	0	0	0	0
BCHES102.5	3	2	0	0	0	0	2	2	0	0	0	0	0	0	0	0
BCHES102.6	3	1	0	0	0	0	1	1	0	0	0	0	0	0	0	0
	Weighted Sum -->	10	2	0	0	0	5	7	0	0	0	0	0	0	0	0
	Max Weight -->	10	2	0	0	0	5	7	0	0	0	0	0	0	0	0
PO Attainment in percentage		100.00	100.00	0.00	0.00	0.00	100.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	PO Attained Grade	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
		1.67	1				1.25	1.4								

Faculty Name & Signature:	
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IQAC Chairman & HOD Signature:	
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