MANONMANIAM SUNDARANAR UNIVERISTY,
TIRUNELVELI-12

SYLLABUS

UG - COURSES – AFFILIATED COLLEGES

Course Structure for B. Sc. Chemistry
(Choice Based Credit System)
(with effect from the academic year 2021-2022 onwards)

Semester-III				
Part	**Subject Status**	**Subject Title**	**Subject Code**	**Credit**
I	Language	TAMIL/MALAYALAM/HINDI	C1TL31/ C1MY31 /C1HD31	4
II	Language	ENGLISH	C2EN31	4
III	Core	PHYSICAL CHEMISTRY – I	CMCH31	4
III	Major Practical III	ORGANIC PREPARATION & INORGANIC QUALITATIVE ANALYSIS - I	CMCHP3	2
III	Allied Course II	ALLIED PHYSICS	CAPH11	3
III	Allied Practical II	ALLIED PHYSICS PRACTICAL- I	CAPHP1	2
III	Skilled Based Course I	FOOD CHEMISTRY	CSCH32	4
IV	Non-Major Elective I	APPLIED PHYSICS /அறிமுகத்தமிழ்	CNPH32/ CNTL31	2
IV	Common	YOGA	CYOG31	2

Total Marks: 100 Internal Exam: 25 marks + External Exam: 75 marks

A. **Scheme for internal Assessment**:
Maximum marks for written test: **20 marks**
3 internal tests, each of **I hour** duration shall be conducted every semester.
To the average of the **best two** written examinations must be added the marks scored in. The **assignment** for 5 marks.

The break up for internal assessment shall be:
Written test- 20 marks; Assignment -5 marks Total - 25 marks

B. Scheme of External Examination
3 hrs. examination at the end of the semester
A – Part : 1 mark question two - from each unit
B – Part : 5 marks question one - from each unit
C – Part : 8 marks question one - from each unit

- **Conversion of Marks into Grade Points and Letter Grades**

S.No	Marks	Letter Grade	Grade point (GP)	Performance
1	90-100	O	10	Outstanding
2	80-89	A+	9	Excellent
3	70-79	A	8	Very Good
4	60-69	B+	7	Good
5	50-59	B	6	Above Average
6	40-49	C	5	Pass
7	0-39	RA	-	Reappear
8	0	AA	-	Absent

- **Cumulative Grade Point Average (CGPA)**

$$\mathbf{CGPA} = \frac{\mathbf{\Sigma\,(GP \times C)}}{\mathbf{\Sigma C}}$$

- **GP** = Grade point, **C** = Credit
- CGPA is calculated only for Part-III courses
- CGPA for a semester is awarded on cumulative basis

- **Classification**
  a) First Class with Distinction : CGPA $\geq$ 7.5*****
  b) First Class : CGPA $\geq$ 6.0
  c) Second Class : CGPA $\geq$ 5.0 and $<$ 6.0
  d) Third Class : CGPA$<$ 5.0

பொதுத்தமிழ்

பாடத்திட்டத்தின் நோக்கங்கள் (Course Objectives) **காப்பியங்கள் வாயிலாகத் தமிழரின் விழுமியங்களை உணரச் செய்தல்**		
எதிர்பார்க்கும் படிப்பின் முடிவுகள் (Course Outcomes)		
CO1.	மாணவர் காப்பியங்கள் மூலம் பண்டைத் தமிழரின் வாழ்வியலை அறிந்து செய்தல்	K_1, K_2, K_5
CO2.	யாப்பு, பா, அணி இவற்றின் இலக்கணத்தைக் கற்றுச் செய்யுள் இயற்றும் திறனைப் பெறுவர்	K_2, K_4
CO3.	இலக்கிய ஆய்வுத்திறனில் மேம்படுவர்	K_2, K_3, K_4
CO4.	நேர்மையான வழியில் வாழ அறிந்து கொள்வர்	K_2, K_5
CO5.	தூப்பியங்கள் மற்றும் சிற்றிலக்கியங்களின் வரலாற்றை அறிந்து கொள்வர்	K_1, K_2, K_4
K1 – நினைவில் கொள்ளுதல் (Remember) K2 – புரிந்து கொள்ளுதல் (understand) K3 – விண்ணப்பித்தல் (Apply) K4 – பகுத்தாய்தல் (Analyze) K5 – மதிப்பிடு செய்தல் (Evaluate) K6 – உருவாக்குதல் (Create)		

அலகு-1: செய்யுள்

சிலப்பதிகாரம் முதல் நந்திக் கலம்பகம் வரை
நியூ செஞ்சுரி புக் ஹவுஸ் (பி) லிட்., திருநெல்வேலி – 1
தொலைபேசி எண் : 0462-2323990

அலகு-2: இலக்கணம்

யாப்பு - இலக்கணம்
அணி - இலக்கணம்
மொழிபெயர்ப்பு

அலகு-3: உரைநடை

இலக்கிய ஆய்வுத்திறன் தொகுப்பாசிரியர் - முனைவர் கரு.முரகன்
நியூ செஞ்சுரி புக் ஹவுஸ் (பி) லிட்., சென்னை – 50
தொலைபேசி எண் : 044-26251968, 26258410, 48601884

அலகு-4: புதினம்

வேரில் பழுத்த பலா – ஆசிரியர் சு.சமுத்திரம்
அறிவுப் பதிப்பகம் (பி) லிட்., சென்னை -14 தொலைபேசி எண் : 044-28482441

அலகு-5: இலக்கிய வரலாறு

1. ஐம்பெருங்காப்பியங்கள்
2. ஐஞ்சிறு காப்பியங்கள்
3. சிற்றிலக்கியங்களின் தோற்றமும் வளர்ச்சியும் வகைகளும்
   (பிள்ளைத்தமிழ், பரணி, கலம்பகம், உலா)

மேற் பார்வை நூல்கள்

இலக்கணம் : யாப்பருங்கலகாரிகை

இலக்கிய வரலாறு : ஆசிரியர் முனைவர் சி. பாலசுப்பிரமணியன்.

பாவை பப்ளிகேஷன்ஸ் 142இ ஜானி ஜான் கான் சாலை இராயப்பேட்டை

சென்னை – 14 தொலைபேசி எண் : 28482441

முனைவர் பெ. சுயம்பு

பாரதி பதிப்பகம் 113இ இராஜீவ் தெரு திசையன்விளை -57

தொலைபேசி எண் :04637 - 272096

மாணவர்களைக் களஆய்விற்கு அழைத்துச் செல்லலாம்

Mapping with Programme Outcomes

CO_s	PO1	PO2	PO3	PO4	PO5
CO1	M	S	S	S	S
CO2	S	M	M	S	M
CO3	S	S	M	S	M
CO4	M	S	S	S	S
CO5	M	M	S	S	S

S- மிகையான (Strong) M- நடுநிலையான (Medium) L- குறைவான (Low)

MALAYALAM

UNIT – 1- Thullal- A Satirical Classical Visual Art Form

തുള്ളൽ

തുള്ളൽപ്രസ്ഥാനം – ചരിത്രം – സാമൂഹ്യമാറ്റങ്ങൾ - ആക്ഷേപഹാസ്യം – ജനകീയത – പ്രധാനപ്പെട്ട തുള്ളലുകൾ - ഇവയുടെ പരിചയം

FOR DETAILED STUDY

1. കുഞ്ചൻ നമ്പ്യാർ - ഘോഷയാത്ര
(ദ്വന്തെന്തെരസുഖരസികന്മാരായ്...
...പണ്ടക്കേകാളു പല വിക്രമപൗരുഷമുണ്ടിപ്പോളു മമ കൗരവവീരാ)

UNIT – 2-KADHAKALI- A Classical Visual Art Form

കഥകളി

ചരിത്രം - കാക്കാരിശ്ശി നാടകം – പൊറാട്ട് നാടകം – ചവിട്ടു നാടകം – തെയ്യം – എന്നിവയെ പരിചയപ്പെടുത്തുക – സംസ്കാരം – സാമൂഹ്യപ്രാധാന്യം – പുതിയ കാലത്തെ മാറ്റങ്ങൾ - സാങ്കേതിക കാര്യങ്ങൾ - അഭിനയരീതികൾ - വേഷം

FOR DETAILED STUDY

2. നളചരിതം ആട്ടക്കഥ നാലാം ദിവസം (എ. ആർ. രാജരാജവർമ്മയുടെ കാന്താരതാരകം) ഉണ്ണായിവാരിയർ
ആട്യത്തെ ആറു രംഗങ്ങൾ

UNIT – 3- Translation of a Sanskrit Drama

നാടകം (സംസ്കൃത നാടക വിവർത്തനം)

നാടകവുമായി ബന്ധപ്പെട്ട വിവർത്തനചരിത്രം – ആട്യകാലത്തെ വിവർത്തനങ്ങളുടെ പ്രത്യേകതകൾ - സംസ്കൃതനാടകവുമായി ബന്ധപ്പെട്ട സങ്കേതങ്ങൾ - നാടകാസ്വാദനവുമായി ബന്ധപ്പെട്ട ചുറ്റുപാടുകൾ - സാമൂഹ്യാവസ്ഥ – പ്രാധാന്യം

FOR DETAILED STUDY

3. മലയാളശാകുന്തളം – നാലാമങ്കം – വിവർത്തനം എ. ആർ. രാജരാജവർമ്മ

UNIT – 4- A Modern Drama in Malayalam

നാടകം (മലയാള നാടകം)

മലയാളനാടകചരിത്രം – പ്രധാനപ്പെട്ട നാടകാചാര്യന്മാർ - ആട്യകാലത്തെ പ്രവർത്തനങ്ങൾ - അരങ്ങും നാടകസാഹിത്യവും – പ്രധാനപ്പെട്ട നാടകങ്ങൾ - സാമൂഹ്യ മാറ്റങ്ങൾ - രാഷ്ട്രീയചരിത്രം – പ്രവർത്തനങ്ങൾ - നാടകത്തിന്റെ സമകാലികാവസ്ഥ – റേഡിയോ തുടങ്ങിയ മാധ്യമങ്ങൾ - പ്രൊഫഷണൽ നാടകങ്ങൾ - അമേച്വർ നാടകങ്ങൾ

FOR DETAILED STUDY

4. സി. എന്. ശ്രീകണ്ഠന്നായര് - കാഞ്ചനസീത
ആദ്യത്തെ രണ്ട് രംഗം

UNIT – 5- Cinema

സിനിമ

സിനിമയുടെ ചരിത്രം – ആദ്യകാലം – ഓരോ ഘട്ടത്തിലെയും വികാസം – സിനിമാ പഠനം – സിദ്ധാന്തങ്ങള് - മലയാള സിനിമ – ആദ്യകാലത്തെ സിനിമ – ശബ്ദചിത്രം – നിശ്ശബ്ദചിത്രം – ദൃശ്യഭാഷ – സംവിധാനം – തിരക്കഥയില് നിന്ന് സിനിമയിലേക്കുള്ള വികാസം

FOR DETAILED STUDY

5. അടൂര് ഗോപാലകൃഷ്ണന് - മതിലുകള്

REFERENCE BOOKS

കരൈളിയുടെ കഥ – പ്രൊഫ. എന്. കൃഷ്ണപിള്ള
നളചരിതം ആട്ടക്കഥ – കാന്തഹാരകം – എ. ആര്. രാജരാജവര്മ്മ
ഉയരുന്ന യവനിക – സി. ജെ. തോമസ്
മലയാളനാടകസാഹിത്യചരിത്രം – ഡോ. വയലാ വാസുദേവന് പിള്ള
മലയാളനാടകസാഹിത്യചരിത്രം – ജി. ശങ്കരപ്പിള്ള
സിനിമയുടെ വ്യാകരണം – ഡോ. ടി. ജിതേഷ്
തിരക്കഥാരചന – കലയും സിദ്ധാന്തവും – ജോസ്. കെ. മാനുവല്
കഥയും തിരക്കഥയും – ആര്. വി. എം. ദിവാകരന്
നാടോടി വിജ്ഞാനീയം – എം. വി. വിഷ്ണുനമ്പൂതിരി
മലയാള സംഗീതനാടകചരിത്രം – കെ. ശ്രീകുമാര്
ചവിട്ടുനാടകം – സബൈനാറാഫി
കേരളത്തിലെ നാടോടി നാടകങ്ങള് - ഡോ. എസ്. കെ. നായര്
ഫോക്ലോര് - രാഘവന് പയ്യനാട്

നാട്ടരങ്ങ് – ജി. ഭാര്ഗവന് പിള്ള
കുഞ്ചന്നമ്പ്യാരും അദ്ദേഹത്തിന്റെ കൃതികളും – വി. എസ്. ശര്മ്മ

HINDI

Objectives:

1. To acquire knowledge regarding fundamental concepts in Hindi grammar.
2. To acquire the ability to master translation skills
3. To develop writing skills for official documentation – Letter, Banking terminologies

C.O. NO	Upon the completion of this course, students will be able to	PSOs Addressed	Cognitive Level
CO 1	In depth knowledge regarding the plays	B,A	K1,K4
CO 2	Identify eminent ancient Hindi poets	B,C	K1,K2
CO 3	Understand the history of Hindi Literature – Adhikal , Bathikal	F,G	K3,K5
CO 4	Understand various aspects of Tourism	C,D	K5
CO 5	Knowledge regarding Journalism	A,C	K4,K5

K1 – Remember, K2 – Understand, K3 – Apply, K4 – Analyse, K5 – Evaluate, K6 – Create

UNIT I

DRAMA

1. Ek Aur Dronachary

.

UNIT II

ANCIENT POETRY

1. Kabir Das
2. Soor Das
3. Meera Bhai

UNIT III

HISTORY OF HINDI LITERATURE

1. Aadhikal
2. Bhakthikal

UNIT IV

TOURISM

UNIT V

JOURNALISM

Text book:

1. Ek Aur Dronachary – Shankar Shesh – Published by Kithabhar Praksthan, New Delhi
2. Kavya Ras – Dr. V Bhaskar – Published by Pachori Press, Sadar Bazar, Madurai, UP
3. Hindi Sahithy ka Saral Ithihas – Viswanath Tripathi – Published by Orient Publication Private Limited, Himayath Nagar, Hyderabad

Reference :

1. Hindi Vathayan – Dr. K M Chandra Mohan – Published by Viswavidyalay Prakashan, Varanasi – Page number 40-42
2. Hindi Vathayan – Dr. K M Chandra Mohan – Published by Viswavidyalay Prakashan, Varanasi – Page number 45-51

Mapping with POs

Cos	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8
CO 1	S	S	S	M	S	S	S	M
CO 2	S	S	S	S	S	S	M	S
CO 3	S	M	S	S	S	S	S	S
CO 4	S	S	S	S	S	S	S	L
CO 5	S	S	L	S	S	S	S	S
CO 6	S	S	S	S	M	M	S	S

S – Strong, M – Medium, L – Low

ENGLISH

COURSE OUTCOMES: At the end of the course students will be able to

CO	Course Outcomes	Cognitive Level
CO1	Enable the students to critically summarise prose	K1, K2, K4
CO2	Enrich the students through various perspectives reading in poetry	K1, K2, K3, K4
CO3	Familiarise the cultural diversity through reading fiction	K1, K2, K4
CO4	Grasp meaning of words and sentences ssss and use	K1, K2. K3
	appropriate vocabulary	
CO5	Spell English correctly	K2, K3

PROSE, POETRY, FICTION, GRAMMAR, LANGUAGE STUDY AND ORAL COMMUNICATION SKILLS

UNIT I - PROSE

1. Character is Destiny – Dr Radhakrishnan.
2. How to be a Doctor? – Stephen Leacock.
3. How to win? – Shiv Kera
4. On doing Nothing – J.B.Priestley

UNIT II - POETRY

1. Summer Woods – Sarojini Naidu.
2. Ode to the West Wind – P.B.Shelley.
3. Once upon a Time – Gabriel Okkara
4. Beat Beat drums – Walt Whitman

UNIT III – FICTION

Abridged Version of The Dark Room - R.K.Narayan

UNIT IV – GRAMMAR

1. Reported Speech
2. Rearrange the Jumbled words
3. Verb Patterns and Sentences

UNIT V – LANGUAGE STUDY AND ORAL COMMUNICATION

1. Phonetics – consonants
2. Foreign Words and Phrases
3. Homophones
4. Developing Hints

MAPPING OF COURSE OUTCOMES

CO/ PO/ POS	PO1	PO2	PO3	PO4	PO5	POS1	POS2	POS3	POS4	POS5
CO1	M	M	S	M	S	S	S	S	M	M
CO2	S	S	S	M	M	M	M	M	S	S
CO3	M	S	M	S	M	S	M	S	M	S
CO4	M	M	S	M	S	S	M	S	M	S
CO5	M	S	M	S	M	M	S	M	M	M

S – Strongly correlated, M – Moderately Correlated, w- weakly correlated, No Correlation - 0

PHYSICAL CHEMISTRY I

Course Objectives

The main objectives of this course are to

- Understand the basics of gaseous substances.
- Learn the basics of liquid and solutions.
- Know the structure of solids.
- Gain knowledge in isotopes, nuclear energy and applications.
- Study on photochemical reactions and photo physical process of excited molecules.

UNIT I

GASEOUS STATE

Concept of ideal and real gases-Postulates of kinetic theory of gases- Collision frequency, collision diameter, mean free path and viscosity of gases including their temperature and pressure dependence-Relation between mean free path and coefficient of viscosity – Calculation of σ from η - Effect of temperature and pressure on coefficient of viscosity. Maxwell‟s law of distribution of molecular velocities-Effect of temperature on distribution of molecular velocities-Types of molecular velocities and their interrelations- Degrees of freedom-Principle of Equipartition of energy- molecular basis of heat capacity - Real gases-Compressibility factor-Deviation from ideal gases-Intermolecular forces.

UNIT II

LIQUID STATE

Structure of liquids – Vapour pressure –effect of temperature on vapour pressure - Determination of vapour pressure –The Static method –The Dynamic method – Effect of vapour pressure on boiling points –Heat of vaporization-Trouton‟s rule –Surface tension –Surface energy -Solutions of liquids in liquids-Raoult‟s law-Ideal solutions - Gibbs-Duhem-Margules equation-Non ideal solutions-Vapour pressure-Composition curves of completely miscible solution-Fractional distillation-Azeotropic distillation – Lever Rule . Partially miscible liquids- CST- Effects of impurity on CST-System with upper CST and lower CST.

UNIT III

SOLID STATE

Solids- Types of Solids - Symmetry in crystal systems- Law of constancy of interfacial angles – Law of symmetry: Definitions of lattice point, space lattice and unit cell-Bravais lattices-Lattice energy-Born- Lande equation-Law of rational indices-Miller indices -Bragg equation-Derivation and applications-Determination of

structure of crystals by X-ray diffraction method-Rotating crystal method and Powder method. Structure of NaCl, KCl and CsCl. Imperfections in a crystal-Schottky defects, Frenkel defects and Non-stoichiometric defects- Metallic crystals-Energy band theory of conductors, insulators and semiconductors.

UNIT –IV

NUCLEAR CHEMISTRY

Natural radioactivity-Detection and measurement of radioactivity-Geiger Nuttal rule-Rate of disintegration and half life period-Average life period-Nuclear stability, n/p ratio, magic number, packing fraction , mass defect and binding energy-Liquid drop model-Shell model-Isotopes, isobars, isotones and isomers . Artificial radioactivity-Nuclear fission and Nuclear fusion-Mechanisms- Applications -Stellar energy-Nuclear reactors - Separation of isotopes-Hazards of radiations. Applications of radio isotopes-C14 dating, Rock dating, Neutron activation analysis.

UNIT- V

PHOTOCHEMISTRY

Laws of photochemistry - Beer-Lambert law - Grothus-Draper Law - Stark-Einstein law of photochemical equivalence - Quantum yield of a photochemical reaction - Determination of quantum yield - Primary photochemical processes - Secondary photochemical processes - Excited states - Fluorescence - Phosphorescence - Chemiluminescence - Thermoluminescence - Bioluminescence -Kinetics of decomposition of hydrogen iodide - Photochemical combination of hydrogen and chlorine - Decomposition of acetaldehyde - Photosensitization - Importance of photosensitization.

Text Books

1. Principles of Physical Chemistry – B.R.Puri, L.R. Sharma and M.S.Pathania, 47th Edition, Vishal Publishing Co,2020
2. A textbook of Physical Chemistry - K.K Sharma, L.K Sharma , 6th Edition, Vikas Publishing House Pvt Ltd, 2016.
3. A Text book of Physical Chemistry, A.S.Negi, S.C. Anand 1st Edition, NewAge publishers intertiol(P) Ltd, 2022
4. Source book of Atomic Energy, Samuel Glasstone, East West Press 3rdEdition , Krieger Publications and Co,1979

Reference Books

1. Essentials of Physical Chemistry- B.S Bahl, G.D. Tuli, Arun Bahl, S.Chand & Company Ltd, 2010.
2. Elements of Physical Chemistry, S.Glasstone and D. Lewis, Second Edition, East West Press,2018.
3. Fundamental of Photochemistry - K.K. Rohatgi-Mukherjee, Revised Second Edition-New Age International (P) Limited Publishers, Reprint 2006.
4. Advanced Physical Chemistry, N.Bajpai, S.Chand, Publishers 2001.

COURSE OUTCOMES

COURSE OUTCOMES		COGNITIVE LEVEL
CO1	Compare the behaviour of ideal and real gases.	K2
CO2	Develop knowledge on the concept of vapour pressure and Distinguish ideal solutions from non ideal solutions	K3, K4
CO3	Analyze the structure of crystals and explains the imperfections in crystal systems	K4, K5
CO4	Explain the activity of isotopes and Discuss the applications of radio isotopes	K5, K6
CO5	Discuss the kinetics of photochemical reactions and Illustrate the photo physical process	K6 , K2

K 1 –Remember K 2 – Understand K 3 - Apply K 4 – Analyze K 5 –Evaluate K 6 - Create

Mapping of COs with POs &PSOs :

CO/PO /PSO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5	PSO 6
CO1	S	M	L	S	M	M	L	S	M	S	M	S	S
CO2	S	S	S	S	S	M	L	M	M	S	S	M	S
CO3	S	M	M	S	S	L	M	M	M	L	M	L	M
CO4	M	L	M	S	L	S	L	M	S	M	S	S	L
CO5	M	S	S	M	M	S	L	S	S	S	M	L	M

S – Strongly Correlated ; M – Medium Correlated ; L – Low Correlated

MAJOR PRACTICAL III
ORGANIC PREPARATION & INORGANIC QUALITATIVE ANALYSIS I

Course Objectives

- To make the students thorough in the preparation of organic compounds
- To enable the students to understand various procedures in salt analysis.
- To create an awareness on ecofriendly approach in salt analysis

II Organic preparation

1. Preparation of salicylic acid from methyl salicylate (or) benzoic acid from ethylbenzoate
2. Preparation of benzoic acid from benzamide
3. Preparation of benzoquinone oxime from benzoquinone
4. Preparation of benzoic acid from benzaldehyde

5. Preparation of p-bromoacetanilide from acetanilide
6. Preparation of 2-naphthyl benzoate from 2-naphthol
7. Preparation of picric acid from phenol
8. Preparation of methyl orange from sulphanilic acid
9. Preparation of glucosazone from glucose

II Qualitative analysis of inorganic single salt containing acidic and one basic radicals.

1. Acidic radicals

Non-Interfering acidic radicals

Carbonate, Nitrate, Sulphate and Chloride

Interfering acidic radicals

Borate, Fluoride, Oxalate and Phosphate.

2. Basic radicals

Group I : Lead
Group II : Copper, Cadmium, Bismuth.
Group IV : Cobalt, Nickel, Manganese,
Group V : Barium, Strontium,
Group VI : Magnesium, Ammonium.

Internal – 50 marks

20 marks - Regularity
30 marks – Average of best Eight experiments(Four preparations & Four single salts) in regular class work

External -50 marks

10 marks – Record (atleast Four preparations & Four single salts)*
20 marks – Procedure-5 and Preparation-15
20 marks – Single salt (One Acidic & one Basic Radicals)

*Experiments done in the class alone should be recorded

(Students having a bonafide record only should be permitted to appear for the practical examination)

Text Books

1. N.S. Gnanapragasam and G. Ramamurthy, Organic Chemistry – Lab manual, S. Viswanathan Co. Pvt., 1998.
2. V.V. Ramanujam, Inorganic Semi Micro Qualitative Analysis, 3rd edition, The National Publishing Company, Chennai, 1974.
3. Vogel‟s Text Book of Quantitative Chemical Analysis. 5th Edition., ELBS/Longman England, 1989.

Reference Books

1. P.R.Singh, D.C.Gupta, K.S.Bajpal, Experimental Organic Chemistry Vol.I and

II, 1980.
2. V.K.Ahluwalia, Sunitha Dhingra, Adarsh Gulate College Practical Chemistry, Universities Press (India) Pvt Ltd Reprint 2008.
3. Sundaram, Krishnan, Raghavan, Practical Chemistry (Part III), S. Viswanathan Co. Pvt., 1996.
4. O.P. Pandey, D.N Bajpai, S. Gini, Practical Chemistry, for I, II & III BSc. Students. S.Chand & Company Ltd, Reprint 2009.
5. J.N. Gurthu and R. Kapoor, Advanced Experimental Chemistry (Organic), S. Chand and Co., 1987.

COURSE OUTCOMES

COURSE OUTCOMES		COGNITIVE LEVEL
CO1	List out the compounds to be prepared and discuss the procedure for preparations	K 1, K 6
CO2	Discuss the principle of qualitative analysis and apply the principle for the analysis of given salt.	K 6, K 3
CO3	Analyse systematically the given salt mixture and determine the acidic and basic radicals present in it.	K4, K5

K 1 –Remember K 2 – Understand K 3 - Apply K 4 – Analyze K 5 –Evaluate K 6 - Create

Mapping of Cos with POs & PSOs

CO/PO /PSO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5	PSO 6
CO 1	M	S	M	M	S	M	L	S	M	S	L	M	S
CO 2	S	M	S	M	S	S	M	S	S	S	M	M	S
CO 3	M	S	S	S	M	S	M	S	S	S	M	L	S

S – Strongly Correlated ; M – Medium Correlated ; L – Low Correlated

FOOD CHEMISTRY

Course Objectives

The main objectives of the course are to

1. Learn basics of foods.
2. Know importantce of Nutrients, Vitamins and Minerals.
3. Study food additives and Preservations.
4. Know food adulterations.
5. Gain knowledge in food quality standards

UNIT I

INTRODUCTION TO FOOD CHEMISTRY

Definition of Food – Functions of Food – Constituents of Food, properties and their significance – Major Food Groups: Carbohydrates,Lipids, Proteins, Vitamins and Minerals – Calorific values of food – Rice, Wheat, Fruits, Vegetables, Legumes, Milk, Poultry, Eggs and Sea Foods.

UNIT II

NUTRIENTS, VITAMINS AND MINERALS

Nutrients : Classifications, Function, Di etary sources, Recommended Dietary Allowances – Fat soluble Vitamins : A,D,E and K. Water soluble Vitamins:Thiamine, Riboflowin, Niacin, Pyridoxine, Vitamin B12 and Vitamin C - Minerals: Role of Ca, P,Fe,Na, K, I, F,Se.

UNIT III

FOOD ADDITIVES AND PRESERVATIVES

Food Additives : Definition – Functions of Food Additives – Advantages of Food Additives – Types of Additives – Antioxidants, Acid modifiers, Foaming agents, Sweeteners, Emulsifiers, Thickners, Nutritive agents, Flavours and Flavours enhancers, Humectants, Food Colourants.

Food Preservatives : Definition – Principles of Food Preservations – Role of Food Preservations- Methods of Food Preservations – Physical, Chemical and Biological methods.

UNIT IV

FOOD ADULTERATIONS

Adulteration – Definition of Adulterants - Types of Adulterants – Common Adulterants and their determination in Milk, Oils, Ghee, Honey, ChillI powder, Coriander powder, Turmeric powder, Coffee powder. Adulteration through additives – Food poisoning and its prevention – Prevention of Food Adulteration Act – Food laboratories and their functions.

UNIT V

FOOD QUALITY STANDARDS

Quality characteristics – Deteriorative factors and their control – Quality Assurance : Regulations, Standards, Grades and Codes – FA, FDA, WTO and WHO Standards – ISI Specifications, Packing and labeling Foods – Essential Commodities Act, Consumer Protection Act – Agricultural Produce (Grading and Marketing) Act 1937 (AGMARK) - Codex Aimentarius Commision (CAC).

Text Books

1. B. Sivasankar, Food Processing and Preservation, Prentice Hall of India, Pvt Ltd, New Delhi, 2002.
2. Nutrition Science, B.Lakshmi, 7th Edition, NewAge International Pvt Ltd,2021,
3. M. Swaminathan, Text Book on Food Chemistry, Printing and Publishing Co, Ltd, Bangalore 1993.
4. S.R.Mudambi, S.R. Rao and M.V.Rajagopal, Food Science, 2nd edition, New Age International Publishers, 2006.

Reference Books

1. Hand Book of Food and Nutrition, BAPPCO.
2. S. Damodran, K.I. Parkin and D.R. Fennema, Fennema‟s Food chemistry, 4th edition, CRC Press, 2007.
3. M.N.Shakuntala and M.Shadakshara way, Fundamentals of foods and Nutrition, 4th edition, New Age International Publishers, 2013.
4. B.Sri Lakshmi, Food Science,7th Edition, New Age International Publishers (Indian),2003.
5. L. M. Meyer, Food Chemistry, CBS Publishers, ISBN:9788123911496.

COURSE OUTCOMES

COURSE OUTCOMES		COGNITIVE LEVEL
CO1	Analyse the needs of foods to human and other living things.	K4
CO2	List out important Nutrients, Vitamins and Minerals to the human	K1
CO3	Discuss on food additives and preservative methods	K6
CO4	Explain the food adulterations and analyse adulterants available in the common foods	K5, K4
CO5	Illustrate the various food regulation laws and standards.	K2

K 1 –Remember K 2 – Understand K 3 - Apply K 4 – Analyze K 5 –Evaluate K 6 - Create

Mapping of COswith POs & PSOs with COs :

CO/PO/ PSO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5	PSO 6
CO 1	M	S	S	M	S	M	L	M	L	M	S	L	S
CO 2	S	M	S	M	S	S	M	M	M	L	S	M	S
CO 3	S	M	S	L	M	S	L	S	M	M	S	S	M
CO 4	S	S	M	M	L	S	M	S	S	S	M	S	M
CO 5	L	S	S	M	S	S	S	S	M	L	M	S	S

S – Strongly Correlated ; M – Medium Correlated ; L – Low Correlated

ALLIED PHYSICS– I

Course Outcome:

CO. No.	Upon completion of this course, students will be able to	PSO addressed	CL
CO-1	Define the fundamentals of elasticity, concept of stress, strain, bending moment and to solve the problems related.	1	Re, Ap
CO-2	Understand the principles of elasticity through the study of Young Modulus and modulus of rigidity.	1,4	Un
CO-3	Understand principles of surface tension and Viscosity	1	Un
CO-4	Describe the properties of fluids such as viscosity and surface tension and evaluate the value of coefficient of viscosity	1,3,4	An, Ev
CO-5	Explain the phenomena of simple harmonic motion and the properties of systems executing such motions.	1,4	An, Ev
CO-6	Determine the frequency of tuning fork by Melde's string experiment and apply the knowledge of simple harmonic motion.	1,3,4	Ca, Un, Ap
CO-7	Understand the laws of thermodynamics, concepts of transport phenomena.	1	Un
CO-8	Demonstrate the experiments to determine the thermal conductivity and specific heat capacity and apply the knowledge of transport phenomena.	1,4	An, E,Ap
CO-9	Acquire mastery of the fundamental principles and applications of interference, diffraction and polarization	1	Ac
CO-10	Demonstrate the experiments to find the wavelength of different colours of light by normal incidence using grating and apply the knowledge of diffraction principle.	1,3,4	An, Ap

ALLIED PHYSICS– I

PREAMBLE:

- To understand the concept of strength of materials, viscous properties of liquids, heat transformation from one place to another converting heat to do mechanical work and basic properties of light such as interference and diffraction

Unit I: Elasticity and bending moment

Hooke's law – Elastic moduli – Relation between elastic constants – Work done in stretching a wire–Expression for bending moment-uniform bending-Experiment to determine Young's modulus using pin and microscope-Twisting couple of a wire – Expression for couple per unit twist–Work done in twisting – Experimental determination of rigidity modulus of a wire using Torsion pendulum with theory

Unit II: Surface tension and Viscosity

Surface tension – Definition– Examples –Molecular interpretation– Expression for excess of pressure inside a synclastic and anticlastic surface-Application to spherical and cylindrical drops and bubbles

Viscosity: Coefficient of viscosity – Rate of flow of liquid in a capillary tube (Poisueuille's formula) –Analogy between liquid flow and current flow– Stokes' formula for highly viscous liquid (Dimension method) – Experimental determination of viscosity of highly viscous liquid (stokes' method)

Unit III: Sound

Simple harmonic motion – Free, damped, forced vibrations and resonance – Composition of two SHMs along a straight line and in perpendicular direction – Melde's string experiment –Determination of frequency of tuning fork (both longitudinal and transverse mode)

Unit IV :

Thermal physics : Mean free path- Expression for mean free path (Zero order approximation) – Transport phenomena – Expression for viscosity and thermal conductivity –Conduction in solids – coefficient of thermal conductivity – Lee's disc method to determine thermal conductivity of a bad conductor –Wiedmann–Franz's law–Convection : Newton's law of cooling – Experimental verification – Radiation : Black body radiation – Distribution of energy in black body spectrum –Important features.

Unit V: Optics

Interference: Condition for interference-Air wedge-determination of thickness of a thin wire by air wedge method

Diffraction: Fresnel & Fraunhofer diffraction-Plane diffraction grating- theory and experiment to determine wavelength (normal incidence)

Polarization: Double refraction- half wave and quarter wave plate – Production and detection of plane, elliptically and circularly polarized light.

Books for study

1. Optics–Brijlal & Subramanian
2. Properties of matter – R.Murugesan
3. Heat & Thermodynamics – D.S.Mathur

Books for Reference

1. Heat and thermodynamics –Brijlal & Subramanian, S Chand & Co., New Delhi
2. Fundamentals of Optics by Jenkins A Francis and White E Harvey, McG Raw Hill Inc., New Delhi, 1976.
3. Elements of Properties of Matter by Mathur D S, Shyamlal Charitable Trust, New Delhi, 1993

ALLIED PRACTICAL - I

(6 experiments compulsory)

1. Youngs modulus – non uniform bending – pin and microscope
2. Youngs modulus – uniform bending – optic lever and telescope
3. Torsional pendulum – Rigidity modulus
4. Co-efficient of viscosity - Stoke's method
5. Thermal conductivity of a bad conductor -Lee's disc method.
6. Spectrometer–dispersive power
7. Spectrometer-grating—normal incidence method.
8. Airwedge – thickness of a wire

APPLIED PHYSICS

Preamble:

- This paper enables the students to understand variable energy sources and the need for finding alternate energy source.

UNIT-I: Conventional energy sources

Conventional energy sources –world's reserve of conventional energy sources–various forms of energy-renewable and conventional energy systems- comparison

UNIT-II: Fossil fuels

Fossil fuels – coal, oil and natural gas-availability-statistical details- applications-merits and demerits

UNIT-III:

Biomass energy: Biomass energy-biomass classification-biomass conversion process-biogas plants-Deena bandhu model gas plant-wood gasification-advantages and disadvantages of biomass

UNIT-I V: Renewable energy sources

Renewable energy sources-solar energy - importance - storage of solar energy - applications of solar energy -solar pond - solar water heater-solar crop dryers-solar cookers- solar green house - solar cell

UNIT-V: Geothermal energy

Geothermal energy-Geothermal power plant-wind energy and wind farms- wind mills - types – ocean thermal energy conversion - energy from tides-energy from waves

Books for study and Reference

1. Non-conventional energy sources - G.D Rai - Khanna Publishers, New Delhi
2. Solar energy - M P Agarwal - S Chand & Co. Ltd.
3. Solar energy - Suhas P Sukhative Tata McGraw - Hill Publishing Company Ltd., New Delhi.

அறிமுகத்தமிழ் -தாள் - 1

பொருளடக்கம்

கடவுள் வாழ்த்து

எங்கும் மனிதர் உனைத்தேடி
இரவும் பகலும் அலைகின்றனார்
எங்கும் உள்ளது உன் வடிவாம்
எனினும் குருடர் காண்பாரோ?
எங்கும் எழுவது உன் குரலாம்:
எனினும் செவிடர் கேட்பாரோ?
எங்கும் என்றும் எவ்வுயிரும்
யாவு மான இறையவனே!

-கவிமணி

அலகு- 1 எழுத்துக்கள்

அ) எழுத்துக்களின் அறிமுகம் --பிறப்பிடம்
ஆ) தமிழ் எழுத்துக்களின் எண்ணிக்கை
இ) எழுத்துக்களின் புணர்ச்சி

அலகு:2

அ) சொல்
ஆ) தொடர்
இ) வாக்கியம்

அலகு- 3

அ) வாய்மொழிப் பயிற்சி
ஆ) இனிய சொற்றொடரும், மரபுத் தொடரும்
இ) உவமைகள்
ஈ) பழமொழிகள்
உ) இனிய செய்யுள் வரிகள்
ஊ) பறவை விலங்கினங்களின் ஒலிகள், அவற்றின் இளமைப் பெயர்கள்
எ) மாணவர் ஆசிரியர் உரையாடல்
ஏ) ஒரு பொருள் குறித்துப் பேசுதல்.

அலகு- 4

எண்கள்
நாட்கள்

மாதங்கள்

அலகு- 5

அ) கையெழுத்துப் பயிற்சி கொடுத்தல்

ஆ) சுவரொட்டிகள், துண்டு பிரசுரங்களை வாசித்தல்

இ) படங்களைக் காட்டிப் பெயர் சொல்ல வைத்தல் மற்றும் கருத்துப்படங்களைப் பார்த்து சூழல்களைப் பேச வைத்தல்

ஈ) வாக்கியம் அமைத்தல்

உ) மொழித்திறன் பயிற்சி

ஊ) கையெழுத்துப் பயிற்சி

எ) வாய்மொழிப் பயிற்சி

ஏ) சரியான வாக்கியமாக மாற்றுதல்

ஐ) இனமில்லாதவற்றை எடுத்து எழுதுதல்

ஒ) விடுபட்ட எழுத்துக்களை இணைத்தல்

ஓ) ஏதேனும் ஒரு தலைப்பில் ஐந்து பெயர்களை எழுத வைத்தல் (வினாவுக்குரிய விடையளித்தல்)

ஔ) தன் விவரப்பட்டியல் தயாரித்தல்