PERIYAR UNIVERSITYPERIYAR PALKALAINAGARSALEM–636011

DEGREEOFBACHELOROFSCIENCEC

HOICEBASEDCREDITSYSTEM

SYLLABUSFORBRANCHIV-B.Sc.CHEMISTRY

FORTHESTUDENTSADMITTEDFROMTHEACADEMI

CYEAR2017–2018ONWARDS

CONTENTS

NON-MAJORELECTIVE COURSES

REGULATIONS

1. Preamble and objectives ofthe Course:

ChemistryiscentraltothecurrentrevolutionsinScience.NoeducatedpersontodaycanunderstandthemodernworldwithoutabasicknowledgeofChemistry.TheexistenceofalargenumberofchemicalfactoriesminesandrelatedindustriesinthecatchmentoftheUniversitynecessitatesChemistryeducation.

Themajor objectivesof B.Sc. Chemistrycourse are

1. To impartknowledge in fundamentalaspects of allbranchesofChemistry.
2. ToacquirebasicknowledgeinthespecializedareaslikePolymerChemistry,EnvironmentalChemistry,DyeChemistry,PharmaceuticalChemistryetc.
3. To create manpower in Chemicalindustries andhelp theirgrowth.
4. To prepare candidates for acareer in Chemical industries.

2. Conditionfor Admission

AcandidatewhohaspassedtheHigherSecondaryExaminationofTamilnaduHigherSecondaryBoardoranexaminationofsomeotherboardacceptedbythesyndicateasequivalenttheretowithChemistryandPhysicsandanyoneofthefollowingsubjectsnamelyMaths,Botany,ZoologyorBiologyshallbeeligibleforadmissionintoB.Sc., coursein Chemistry.

3. Durationofthe Course:

Thecourse for the degreeof Bachelor ofScience shall consist of threeacademicyearsdivided into sixsemesters.

4. Courseofstudy:

ThecourseofstudyfortheB.Sc.DegreeintheBranchIV-Chemistryshallcompriseofthe followingsubjectsaccordingto the syllabusand books prescribed from timeto time.

Part -I – Tamil / Otherlanguages

Part -II – English

Part -III – Core subjects

Allied subjects

Project /Elective with three courses

Part -IV 1. Non Major elective comprisingof twocourses.

2. Skill basedsubjects(Elective)

3. EnvironmentalStudies

4. ValueEducation

Part -V – Extension Activities

NSS/ NCC /Sports / YRCand othercoand extra curricularactivitiesofferedunder part V ofthe programmes.

Thetwoalliedsubjectsmaybechosenbytherespectivecollegesandthesame must be communicated to the University.

Nonmajorelectivecoursesubjectsmaybechosenbytherespectivecollegesand the same must be communicated to the University.

Thecollegemayalsochoosethealliedsubjectoftheirchoiceinthefirstandsecondyear.

I- SEMESTER:

1. Language-PaperI
2. English -PaperI
3. Major Core -PaperI
4. AlliedI- PaperI
5. Environmental studies
6. ValueEducation

II-SEMESTER

7. Language – PaperII
8. English -PaperII

9. Major Core -PaperII
10. AlliedI- PaperII
11. Major- practical–I
12. Allied–IPractical
13. Environmental studies
14. Skill basedElective Course I

III-SEMESTER

15. Language – PaperIII
16. English- PaperIII
17. Major Core -PaperIII
18. AlliedII-PaperI
19. Skill BasedElective courseII
20. Non MajorElectivecourseI

IV-SEMESTER

21. Language – PaperIV
22. English– PaperIV
23. Major Core -PaperIV
24. AlliedII-PaperII
25. Major- PracticalII
26. AlliedII-Practical
27. Skill BasedElective courseII
28. Non MajorElectivecourseII

V-SEMESTER

29. Major Core Paper -V
30. Major Core Paper -VI
31. Major Core paper-VII
32. Elective Paper-I
33. Skill BasedElective courseIII
34. Skill BasedElective courseIV

VI-SEMESTER

35. Major Core Paper- VIII
36. Elective Paper –II
37. Major core paper -IX
38. Elective Paper-III
39. Skill BasedElective courseV
40. Skill BasedElective courseVI
41. Major Practicals–III
42. Major Practicals–IV

5. Examinations

Thereshallbesixexaminations-twointhefirstyear,twointhesecondyearandtwointhethirdyear.Candidatesfailinginanysubject /subjectswillbepermittedtoappearforsuchfailed subject / subjects at subsequent examinations.

TheSyllabushasbeendividedintosixsemesters.ExaminationsforI,IIIandVsemesterswillbeheldinNovember/DecemberandforII,IVandVIsemesterswillbeheld in April / May.

ThepracticalexaminationIwillbeheldattheendofIyear.IIwillbeheldattheend ofII year.III andIVwill be held at the end ofIIIyear.

Requirementtoappearfor the examination

Acandidateshallbepermittedtoappearfortheuniversityexaminationsforanysemester(practical/theory)ifHe/Shesecuresnotlessthan75%ofattendanceinthenumberof workingdaysduringthe semester.

6. Passing Minimum

Acandidatewhosecuresnotlessthan40%intheuniversity(external)Examinationand40%marksintheexternalexaminationandcontinuousinternalassessmentputtogetherinanycourseofPartI,II,III&IVshallbedeclaredtohavepassedtheexaminationinthesubject(theoryorPractical).Forpractical,theminimumforapassincludestherecordnotebookmarksalso.Thereisnopassingminimumfortherecord notebook. However submission of arecordnotebook is a must.

7. ClassificationofSuccessfulCandidates

Candidateswhosecurenotlessthan60%oftheaggregatemarksinthewholeexaminationshall be declared to have passed theexamination in**First Class.**

Allothersuccessfulcandidatesshallbedeclaredtohavepassedinthe**Second Class.**

Candidateswhoobtain75%ofthemarksintheaggregateshallbedeclaredto havepassedtheexaminationin**FirstClasswithDistinction**providedtheypassalltheexaminationspr escribedfor the course at thefirst appearance.

Grading:

Conversion of marks toGrade points andlettergrade (Performance in acourse/paper)

Range ofmarks	**GradePoints**	**LetterGrade**	**Description**
90-100	9.0-10.0	O	Outstanding
80-89	8.0-8.9	D+	Excellent
75-79	7.5-7.9	D	Distinction
70-74	7.0-7.4	A+	VeryGood
60-69	6.0-6.9	A	Good
50-59	5.0-5.9	B	Average
40-49	4.0-4.9	C	Satisfactory
00-39	0.0	U	Re-appear
ABSENT	0.0	AAA	ABSENT

Ci = Creditsearnedforcoursei in any semester

Gi = Grade point obtained forcoursei in anysemester

n = refers to the semesterin which such coursewerecredited

Grade pointaverage(fora Semester):

Calculation ofgrade pointaverage semester-wise and part-wise is asfollows:

GRADEPOINTAVERAGE [GPA]=Σi Ci Gi /Σi Ci

Sumof themultiplication of gardepoints bythecredits of thecoursesofferedundereachpartGPA=---

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Sumof thecreditsofthe coursesundereachpartin asemester

Calculation ofgrade pointaverage (CGPA)(for the entire programme):

Acandidatewhohaspassedalltheexaminationsunderdifferentparts(Part-ItoV)iseligibleforthe followingpartwisecomputed finalgrades based on the range of CGPA.

CUMULATIVE GRADE POINTAVERAGE[CGPA] = ΣnΣi Cni Gni /ΣnΣi Cni

Sumof themultiplicationofgardepoints bythecreditsofthe entireprogramme under eachpartCGPA=---

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Sumof the creditsofthecoursesoftheentireprogramme under eachpart

ClassificationofSuccessfulcandidates

AcandidatewhopassesalltheexaminationsinPartItoPartVsecuringfollowingCGPAandGrades shall be declaredas follows **for Part I or Part II or Part III:**

CGPA	GRADE	ClassificationofFinalResult
9.5-10.0	O+	First Class – Exemplary
9.0 andabove but below9.5	O	
8.5 andabove but below9.0	D++	First Class with Distinction
8.0 andabove but below8.5	D+	
7.5 and above but below8.0	D	
7.0 andabove but below7.5	A++	First Class
6.5 andabove but below7.0	A+	
6.0 andabove but below6.5	A	
5.5 andabove but below6.0	B+	Second Class
5.0 andabove but below5.5	B	
4.5 andabove but below5.0	C+	Third Class
4.0 andabove but below4.5	C	

8. Ranking

Candidateswhopassalltheexaminationsprescribedforthecourseinthefirstinstancean dwithinaperiodofthreeacademicyearsfromtheyearofadmissiontothecourseonlyare eligible for**University Ranking.**

9.Maximum Durationfor the completion ofthe UG Programme:

ThemaximumdurationforcompletionoftheUGProgrammeshallnotexceedtwelvesemest ers.

10. Commencement of this Regulation:

Theseregulationsshalltakeeffectfromtheacademicyear2017-2018,i.e.forstudentswhoaretobeadmittedtothefirstyearofthecourseduringtheacademicyear2017-2018 andthereafter.

11. TransitoryProvision

CandidateswhowereadmittedtotheUGcourseofstudybefore2015-2016shallbepermittedtoappearfortheexaminationsunderthoseregulationsforaperiodofthreeyearsi.e.uptoandinclusiveoftheexamination ofApril/May2022.Thereafter, theywillbe permitted to appear for theexamination onlyunder theregulations then inforce.

12. Pattern ofQuestion Paper(For Both Major & Allied)

Time : 3 Hours Maximum:75 Marks

Part A:10 x 2 =20(Answer all questions)

(Two questions fromeach unit)

Part B :5 x 5 = 25(Answer all questions)

(One question fromeach unitwithinternalchoice)

Part C:3 x 10 = 30

(One question fromeach unit-any three Questions out offive)

B.Sc.Chemistry Major(CBCS)

For students admitted from2017-2018 onwards

Part	Course	No.ofHoursperweek	Exam Hours	Credit	Marks		
					Internal	External	Total
I -SEMESTER							
I	Tamilorotherlanguage	6	3	3	25	75	100
II	English	6	3	3	25	75	100
III	CoreChemistry Major	5	3	5	25	75	100
III	Core ChemMajorPracti	3	-	-	-	-	-
III	Allied IMaths(or)	7	3	5	25	75	100
III	Allied IBotany(or)Zoolog	4	3	3	25	75	100
III	Allied IBotany(or)Zoologyor	3	-	-	-	-	
IV	ValueEducation	2	3	2	25	75	100
IV	Environmental Studies	1	-	-	-	-	-
II -SEMESTER							
I	Tamilorotherlanguage	6	3	3	25	75	100
II	English	6	3	3	25	75	100
III	CoreChemistry Major	5	3	5	25	75	100
III	CoreChemistry MajorPractical	3	3	4	40	60	100
III	Allied IMaths(or	7	3	5	25	75	100
III	Allied IBotany(or)	4	3	3	25	75	100
III	Allied IBotany(or) Zoologyor	3	3	4	40	60	100
IV	Environmental studies	1	3	2	25	75	100
IV	Skillbasedelectivecourse I(SBECI)	2	3	2	25	75	100

TotalCreditforI&IISemester =42 credits

B.Sc.Chemistry Major(CBCS)

For students admitted from2017-2018 onwards

Part	Course	No.ofHoursperweek	Exam Hours	Credit	Marks		
					Internal	External	Total
III-SEMESTER							
I	Tamilorotherlanguage	6	3	3	25	75	100
II	English	6	3	3	25	75	100
III	CoreChemistry Major	5	3	5	25	75	100
III	Core ChemMajorPracti	3	-	-	-	-	-
III	AlliedIIMaths(or)	7	3	5	25	75	100
III	AlliedIIBotany(or) Zoologyor Physics	4	3	3	25	75	100
III	AlliedIIBotany(or) Zoologyor PhysicsPractical	3	-	-	-	-	
IV	SBECII	1	-	-	-	-	-
IV	NonMajorElective Course	2	3	2	25	75	100
IV-SEMESTER							
I	Tamilorotherlanguage	6	3	3	25	75	100
II	English	6	3	3	25	75	100
III	CoreChemistry Major	5	3	5	25	75	100
III	CoreChemistry MajorPractical	3	3	4	40	60	100
III	AlliedIIMaths(or)	7	3	5	25	75	100
III	AlliedIIBotany(or) Zoologyor Physics	4	3	3	25	75	100
III	AlliedIIBot any(or) Zoologyor PhysicsPractical	3	3	4	40	60	100
IV	SBECII	1	3	2	25	75	100
IV	NonMajorElectivecourse	2	3	2	25	75	100

TotalCreditforIII &IVSemester= 42credits

Part	Course	No.ofHoursperweek	Exam Hours	Credit	Marks		
					Internal	External	Total
V-SEMESTER							
III	Core Chemmajor(inorganicchemistry)	4	3	4	25	75	100
III	Core Chemmajor(organi	4	3	4	25	75	100
III	MajorCoreChemistry(PhysicalChemistry)	4	3	4	25	75	100
III	ElectivePaper–IAnalyticalChemistry– I	5	3	5	25	75	100
III	Core ChemMajorPrac(	3	-	-	-	-	-
III	Core ChemMajorPrac(Organic&Gravim	5	-	-	-	-	-
IV	SBEC– III	2	3	2	25	75	100
IV	SBEC– IV	2	3	2	25	75	100
TotalCreditsforVSemester= 21credits							
VI -SEMESTER							
III	Core Chem(inorganicchemi	4	3	4	25	75	100
III	ElectivePaperII(organicchemistry)	5	3	5	25	75	100
III	CoreCourse(PhysicalChem)	4	3	4	25	75	100
III	ElectivePaperIIIAnalyticalChem II	5	3	5	25	75	100
III	Core ChemMajorPractic	3	3	4	40	60	100
III	Core ChemMajorPractical(Organic&Gra	3	6	3	40	60	100
IV	SBECV– Pharmaceutical Chemistry	2	3	2	25	75	100
IV	SBECVI– Industrial Chemistry	2	3	2	25	75	100
Add on course	Naan Muthalvan – Employability readiness (Add on Course)	-	-	-	-	-	-
V	Extensionactivities			1			

TotalCreditfor VISemester =35credits

TotalCreditsfor 3years=140 Credits

B.Sc.CHEMISTRY-FIRSTSEMESTER
Major CorePaper –
IPaperCode:17UCH01

InternalassessmentMarks: 25 **ExternalMarks :75**

GENERALCHEMISTRY– I (75 Hours)

UNIT – I HANDLINGOFCHEMICALS AND VOLUMETRIC ANALYSIS

1.1.Handlingof chemicals– Safetyandhygienein chemicallaboratory-storageandhandlingofchemicals,handlingofacids,ethers,toxicandpoisonouschemicals,antidots.Threshold vapour concentrationandfirstaidprocedure.

1.2. PrinciplesofVolumetricanalysis-Definitionofmolarity,molality,normalityandmolefraction-DefinitionandexamplesforPrimaryandSecondarystandards.Theoriesofacid-base,redox,iodometric,iodimetricandcomplexometrictitrations.Calibrationofpipette,buretteandstandardflask. Weighing principle in chemicalbalanceandsingle pan balance.

UNIT-IIATOMICSTRUCTURE

2.1.Fundamentalparticlesofmatter–theircomposition–ComparisonbetweenRutherford‘smodelofatomandBohr‘smodel-OutlineoftheBohr-Sommerfeldmodel-itslimitations-deBroglietheory-Heisenberg’suncertaintyprinciple-Quantumnumbers.Wavemechanicalconcept ofatom–Schrodinger’swaveequation(derivationnotneeded)-significanceofΨandΨ^2– EigenfunctionsandEigenvalues-shapesofdifferentorbitals–Differencesbetweenanorbitandorbital.

UNIT-IIIELECTRONIC STRUCTURE

γ.1.Pauli’sExclusionprincipleanditsapplication-Hund’srule-itsbasisandapplications-stabilityofhalf-filled and fully– filled orbitals-Aufbauprincipleand its limitations.

3.2. Periodicproperties:Atomicandionicradii,IonizationEnergy,ElectronaffinityandElectronegativity– Definition, Variation ofthe periodicproperties alongperiods andgroups-theoreticalexplanationforthevariations.

3.3. s, p, d and f blockelements-classificationandcharacteristicproperties.

UNIT -IVSTRUCTUREAND BONDING&ALKENEAND ALKYNES

4.1.IUPACNomenclature-aliphaticandaromaticcompoundswithsimplefunctionalgroups.
Hybridization- sp^3 , sp^2 , sp

4.2 Electron displacement effects:
Inductive,inductomericandstericeffects-
theireffectonpropertiesofcompoundsMesomeric,resonance,hyperconjucation-localisedand delocalized chemical bond.

4.3 Alkenes-preparation,electrophilicandfreeradicalmechanismofaddition–Markownikoff'srule-peroxideeffect-mechanism of hydroborationandozonolysis.

4.4. Alkynes-general methods of preparation, properties anduses.

UNIT–V THE GASEOUS STATE

5.1.**Behaviourofidealgases**:Kineticmoleculartheoryofgases-thekineticgasequation-Derivationofthegaslaws-kinetictheoryandtemperature-Boltzmannconstant-Maxwell'sdistributionofmolecularvelocities-typesofmolecular velocities-Expansivityandcompressibility-collisiondiameter-collisionfrequency-meanfree path.

5.2. **BehaviourofRealgases**:Deviationsfromidealbehaviour--Explanationofdeviations-Boyle point. The virial equation ofstate- derivation ofthe principle of correspondingstates.

MODEL QUESTION PAPER

PeriyarUniversity

SalemSEMESTER-I

B.Sc.Chemistry – Majorcore paper –

IGeneralChemistry–I Code :17UCHO1

Time: 3 Hrs Max.Marks:75

Section A (10 x2 =20)

Answerall questions

1 .Howdoyou handle poisonous substances in the laboratory?

2. What are secondarystandard substances?Give one example.
3. What is Heisenberg's Uncertaintyprinciple?
4. DefineOrbit andOrbital
5. What is Hund'sRule?
6. Defineatomicradiiandwhat is its variation alongthe period ?
7. Definehyberconjution.
8. What is Markownikoff'srule?
9. What is Collisiondiameter?
10. State Boyle point.

Section-B (5 x 5=25)Answerall questions

11. a)How doyoucalibratepipette buretteand standard flask in the laboratory?(or)

    b) Write thetheoryofacid- base titration.

12. a)Whatare the similaritiesanddifferencesbetweenRutherford's model and Bohr's model of anatom.

    (or)

    b) Discuss about Eigen functionsandEigen values?

13. a)Whatare the characteristicproperties ofd-block elements?

    (or)

    b) What is Aufbau principle andwhat areits limitations?

14. a) Write themechanism of Ozonolysis.

(or)

b) Discuss theHybridisation andstructureofalkenes?

15. a)Discuss thekineticmoleculartheoryof gases.

(or)

b) Howare realgasesdeviatedfrom ideal behaviour?

Section C

(3x10=30)Answerany three questions

16. Write thetheorybehind redoxandcomplexometrictitrations.
17. Explain quantumnumbers.
18. Discuss the characteristicproperties off-blockelements.
19. Write notes on
    (i) stericeffect.
    (ii) inductive effect
20. DiscussMaxwellsdistribution of molecularvelocities.

B.Sc.CHEMISTRY-SECOND SEMESTER
Major CorePaper –
IIPaperCode:17UCH0
2

InternalassessmentMarks: 25 **ExternalMarks :75**

GENERALCHEMISTRY– II (75

Hours)UNIT– I CHEMICAL BOND

1.1.Ionicbond-modeofformation–propertiesofioniccompounds-inertpaireffect-BornHabercycle-polarisationofions-factorsaffectingpolarisation-importanceofpolarizationofions-Fajan'srules andapplications.
1.2. CovalentBond-modeofformation-propertiesofcovalentcompounds-ValenceBondtheory-PostulatesofPauling-Slater'stheory-Differenttypesofoverlapping.Molecularorbitaltheory-Postulates-Bondingandantibondingmolecularorbitals-TabulationofvariousM.Osformedfromatomicorbitals-EnergyleveldiagramsforM.Os-Bondorder-ElectronicconfigurationofHeteronucleardiatomic molecules -CO, NOandHF. Acomparative studyof V.B and M.O. Methods.

UNIT-IIHYDRIDESANDCARBIDES

2.1. Hydrides-Classification-TypesofHydridesandperiodicTable-IonicHydrides-LiHandNaH-Preparation,properties,usesandstructure.CovalentHydrides–silanes-Generalstudy-Chemistryofmonosilanesanddisilanes-Differencesbetweensilanesandalkanes.MetallicHydrides-Preparation,properties,structureanduses(Abriefstudy.).ComplexHydrides-$NaBH_4$and$LiAlH_4$-preparation,properties,usesandstructure.
2.2. Carbides-Preparation,propertiesandtechnical applications.

UNIT-IIIREACTIONMECHANISM I

3.1. Reactionintermediates : carbocation, carbanion, freeradicals-formationand stabiltity.
3.2. Aliphaticnucleophilicsubstitution-SN_1,SN_2andSN_ireactions–mechanismandstereochemistry.Relativereactivityofethyl,isopropyl,tertiarybutyl,vinylandbenzylhalides-competitionbetween substitution and elimination.
3.3. Eliminationreactions-mechanisms of E_1andE_2reactions- Hofmannand Saytzeffrule.
3.4. Dienes-isolatedandconjucated dienes-1,2 and 1,4-addition.

UNIT-IVCYCLOALKANESAND AROMATIC HYDROCARBONS

4.1. Cycloalkanes-methodsofformation-Wurtzreaction,DieckmannringclosureandBaeyer's strain theoryand its limitations.

4.2. Aromatichydrocarbonsandaromaticity-reasonanceinbenzene-delocalisedcloudinbenzene-aromaticity-Huckel's(4n+2)ruleand itssimple applications.

4.3. Electrophilicsubstitutionreactionsinaromaticcompounds-generalmechanism–Nitration,Halogenation,Sulphonation,Friedel-Craftsacylationandalkylation.Orientationandreactivityin monosubstituted benzene - nuclearand sidechain halogenation.

4.4. Polynucleararomatichydrocarbons-naphthalene,anthracene-isolation,synthesis,propertiesanduses.

UNIT-V THE LIQUID STATE AND LIQUIDCRYSTALS

5 .1.Theliquid state:
Structureofliquids-Vapour-pressure-Trouton'srule-surfacetension-surfaceenergy-someeffectsofsurfacetension-viscosity-effectoftemperatureonviscosity(Experimentaldeterminationofsurfacetensionandviscositynotnecessary)-Refractiveindex-specificrefraction-molarrefraction.Physicalpropertiesandchemicalconstitution-Molarvolumeandchemicalconstitution-Parachorandchemicalconstitution.Viscosityandchemical constitution-Molarrefractionandchemical constitution.

5.2.Liquidcrystals–(Themesomorphicstate)-Thermography-classificationofThermotropicliquid crystals- Smectic liquid crystals-Nematic liquid crystals-Cholestericliquid Crystals.

MODEL QUESTION PAPER

PeriyarUniversity

SalemSEMESTER-II

B.Sc.Chemistry – Majorcore paper –

IIGeneralChemistry–II Code :17UCHO2

Time: 3 Hrs Max.Marks:75

Section A (10 x2 = 20)Answerall questions

1. State Fajan'srule.
2. What is inert pair effect?
3. Whyaresilanes areunstable compare toalkanes?
4. Write thestructureof NaH.
5. What are free radicals?Giveone example.
6. State Hofmann,srule. Give an example.
7. What is Hucklesrule?
8. What is Wurtzsreaction?
9. What is parachor ?
10. What is chlolestericliquid crystal?

SectionB (5 x5 =25)

Answerall questions

11. a)Whatare the postulates of Pauling- Slater'stheory?

(or)

b) Discuss about Born- Habercycle.

12. a) Write anote on metallic hydrides.

(or)

b) HowisLi$A_l$$H_4$prepared?Explain its structure.

13. a)Howaresubstitution andelimination reactions compete with eachother?(or)

b) Write themechanism of E_1andE_2reactions with an example.

14. a) Explain mechanism of Dieckmann ring closure .

(or)

b) Discuss the orientation ofmono substitutedbenzene.

15. a) Write ashort noteon vapour pressure.

(or)

b) Write ashort noteon molar volume andchemical constitution.

Section C

(3x10=30)Answerany three questions

16. a) Explain the molecularorbital pictureofNO.

b) What are differenttypes of overlapping?

17.Write anote on preparation,propertiesandapplications of carbides.

18. Explain $SN_1$and SN_2mechanisms andits stereochemistry.

19. a)Writethe chemicalproperties of anthracene.

b) Discuss themechanism of nitration.

20. Write abriefaccounton liquid crystals.

B.Sc.CHEMISTRY-SECOND SEMESTER
SkillBased ElectiveCourse –
IPaperCode:17UCHS01

InternalassessmentMarks: 25 **ExternalMarks :75**

FOOD AND NUTRITION(30

Hours)UNIT-I FOOD SOURCES

1.1. Sourcesof foods, types,constituentsof foods-carbohydrate,protein,fats.Oils, colours,flavoursandnaturaltoxicants.

UNIT-IINUTRITION

2.1.Definitionofnutrition,nutrients,functions.Nutritionalstatus–
Definition,signsofgoodandpoornutritional status .
2.2.Mal nutrition-
Definition,forms,causesandremedy.2.3.Health–
Definition, guidelines forgoodhealth.

UNIT-IIIFOODPOISONINGAND ADULTERATION

3.1. Foodpoisoning- Sources, causes andremedy.
3.2 Causesandremediesforacidity,gastritis,indigestionandconstipation
3.3. Foodadulteration- Typesofadulterants- intentional and incidental,effects and detection.

UNIT-IVFOODPRESERVATIONAND PROCESSING

4.1. Foodspoilage, causes of foodspoilage,typesof Foodspoilage
4.2. Foodpreservation-preservationandprocessing byheating - sterilization,pasteurization.

UNIT-VVITAMINS AND MINERALS

5.1. Sources,requirement and deficiencydiseasesofA,C, K, E_1andB_1,B_2.
5.2. Mineralelementsin food-source,function, deficiency diseasesanddailyrequirements ofNa, K,Mg,Fe, S and P

REFERENCEBOOKS:

1. Seema Yadav : ―Food Chemistry,Anmol publishing(P)Ltd,New Delhi
2. CarH.Synder : ― TheExtraordinaryChemistryfor ordinarything, JohnWiley&sons inc., NewYork,1992.
3. B.Sivasankar -― Food Processing andPreservation– PHILearning(P)Ltd,NewDelhi– 11001.
4. B.Srilakshmi- Nutrition science. Thirdedition,New ageInternational (P)Ltd.NewDelhi, Chennai.

MODEL QUESTION PAPER

PeriyarUniversity

SalemSEMESTER-II

B.Sc.Chemistry – SkillBased ElectiveCourse– I

FOOD andNUTRITION- Code: 17UCHS01

Time: 3 Hrs Max.Marks:75

Section A (10 x2 = 20)Answerall questions

1. Name the constituentspresent in the food?
2. What are carbohydrates?
3. Definenutrients?
4. What is malnutrition?
5. Howis acidity caused?
6. Name anytwofood adulterants.
7. Whydowepreserve food?
8. What is pasteurisation?
9. Mention anytwo sourcesof vitamin A.
10. What are diseasescausedbysodium deficiency?

Section B(5 x 5= 25)Answerallquestions

11. a) Write anote on types of food.

(or)

b) Write anaccount of oils and fats.

12. a)Whatare the signsof good nutritional status?

(or)

b) List functions of nutrients.

13. a)Discussbacterial food poisoning.

(or)

b) Describetypes of food adulteration.

14. a) What are thecauses of foodspoilage.

(or)

b) Write anaccount of typesoffoodspoilage.

15. a)Whatare thedeficiencydiseasescausedbyVitamin C?

(or)

b) What is the source,functionand deficiencyeffect ofS?

Section C (3 x10 =30)

Answerany three questions

16. Write notes on (i)flavours and (ii)natural toxicants.
17. List out guidelines for goodhealth.
18. Write anaccount ofeffects and detection of foodadulterants.
19. Write abriefaccount offood preservation.
20. Write anoteon sources,biological functions anddeficiencydiseases ofVitamin B_2andIron.

B.Sc.CHEMISTRY-THIRDSEMESTER
Major CorePaper –
IIIPaperCode:17UCH
03

InternalassessmentMarks: 25 **ExternalMarks :75**

GENERALCHEMISTRY– III (75 Hours)

UNIT-ITransitionElementsand qualitativeanalysis

1.1TransitionElements–positioninthePeriodicTable-Generalcharacteristicsofd-blockelements–anobjective studyof thepropertiesexpected.

1.2.Occurrence,extraction,propertiesandusesofTitanium,Zirconium,Molybdenum.ChemistryofTitaniumdioxide,Titaniumtetrachloride,Vanadiumpentoxide,AmmoniumVanadate,Zirconiumdioxide, Zirconiumhalides,Ammoniummolybdateand Molybdenum blue.

1.3PrinciplesofQualitativeanalysis-

Basicprinciplesofinorganicsemimicroanalysis.PrinciplesinvolvedinNa$_2$CO$_3$extractpreparation,Commonioneffect,Solubilityproductandtheir applications in Qualitative analysis.Separation of cations into Groups.

UNIT-IIReactionMechanismII

2.1.Mechanismof–Kolbe'sreaction,Reimer-Tiemannreaction,Gattermann,Lederer-ManasseandHouben-Hoeschreactions.

2.2.AdditiontoCarbon–heteromultiplebond-AdditionofHCN,NH_20H,2,4-dinitrophenylhydrazine,semicarbazide&Grignardreagent .

2.3.Mechanisms of Mannich, Stobbe,Darzen,Wittigand Reformatskyreactions.

2.4.MechanismofreductionofcarbonylgroupbyNaBH$_4$,LiAlH$_4$–Wolf-Kishner,Clemmensenand MPV reductions.

UNIT III Carboxylic acids and Esters

3.1. Unsaturatedacids-preparationand propertiesof acrylic,crotonic,oleicandcinnamicacids.

3.2. Hydroxyacids-classification–preparationandreactionsofGlycolicacid,MalicacidandCitricacid-Actionofheatonα,ù,Ûandδacids.

3.3. Dicarboxylicacids-preparationandpropertiesofoxalic,malonic,succinic,glutaricandadipic acids.

3.4. Mechanismof conversion of acids into acid derivatives- esterification including transesterification.Hydrolysisof esters.

3.5. Tautomerism-definition-keto-enol andamido-imidotautomerisms.

UNIT IVSolid State

4.1. TheSolidState-Differencebetweencrystallineandamorphoussolids-isotropyandanisotropy-interfacialangles-symmetryincrystalsystems-elementsofsymmetry-spacelatticeandunitcell-Bravislattices-Lawofrationalindices-Millerindices-Xraydiffraction-Bragg'sequation-Experimental methods structures of Nacl,Cscl and ZnS.

4.2. Band theoryand defects.

UNIT VThermodynamics andThermochemistry

Thefirstlaw ofthermodynamicsand thermochemistry

5.1.TerminologyofThermodynamics-Thermodynamicequilibrium-Natureofworkandheat-Lawofconservationofenergy-first lawofthermodynamics-Internalenergy-Enthalpyofasystem-Heatcapacityofasystem-Expansionofanidealgas-workdoneinreversibleisothermalexpansion-workdoneinreversibleisothermalcompression-workdoneinreversibleadiabaticexpansion–Joule-Thomsoneffect,Joule-Thomsoncoefficient-Inversiontemperature-zerothlawof thermodynamics-Absolute temperature scale -Kirchoff's equation.

MODEL QUESTION PAPER

PeriyarUniversity

SalemSEMESTER-III

B.Sc.Chemistry – Majorcore paper – III

GeneralChemistry– III -Code:17UCH03

Time: 3 Hrs Max.Marks:75

Section A (10 x2 =

20)Answerall questions

1. Whymost of thetransition metalsare coloured?2.What is common ion effect?
3. What is Grignardreagent?Write anyoneof itsapplication.
4. Explain reduction of carbonylgroupby$NaBH_4$
5. Write amethod of preparation ofmalonicacid.
6. What is transesterification?
7. Definespace latticeand interfacialangle.
8. What are isotropyandanisotropy?
9. Givethe statement ofZeroth lawof Thermodynamics.
10. What are isothermalandadiabatic processes?

Section B(5 x 5=

25)Answerall questions

11.a)Write anote on solubilityproduct and its applications.

(or)

b)How is Titaniumextractedfrom its ore?

12.a) Explain the mechanism of Reimer–Tiemannreaction.

(or)

b)Givethe mechanism of Stobbe reaction .

13.a) Write amethod ofpreparation of cinnamicacid and discuss its chemicalproperties.(or)

b)Explain the amido-imidotautomerism.

14.a)Differentitatecrystallineandamorphous solids.

(or)

b) DeriveBragg‘sequation. What are itsapplications?

15.a)Deriveanexpressionforwork doneduring isothermal expansion of anideal gas.(or)

b)Explain absolutescaletemperature.

Section C (3 x 10 =

30)Answerany three

questions

16. Explain the extraction,propertiesand uses ofMolybdenum.

17. Explain the additionreactions of thefollowingin Aldehydes andKetones

a) HCN

b) $NH_2CONHNH_2$

c) NH_2OH

d) Grignardreagent

18. a)Give themechanism of ester hydrolysis.

b)Explain the action of heat on hydroxyacids.

19. Explain band theoryofsolids.

β0. a) DeriveKirchoff’sequation.

b)ExplainJoule-Thomson effect.

B.Sc.CHEMISTRY

THIRD and

FOURTHSEMESTERSSKILL BASED

ELECTIVECOURSE– II

PaperCode:17UCHS02

InternalassessmentMarks: 25 ExternalMarks :75POLYMERCHEMISTRY (30 Hours)

(Note:Thepaperwillbetaughtinthirdandfourthsemesters,buttheexaminationwillbeatthe end offourth semester)

UNIT-I

1.1. Basicconcepts:Monomer,polymerization,degreeofpolymerization,repeatunits.Classification ofPolymers-additionandcondensationpolymers,naturalandsynthetic,basedonstructure,inorganic and organic, thermoplasticandthermosettingresin.

1.2. Generalmethodsofpreparationofpolymers.Polymerizationthroughfunctionalgroups,multiple bonds and ring openingandCoordinationpolymerization.

UNIT-II

2.1. Structureofpolymers-
linear,branchedandcrosslinked.Homo&hetrocopolymers.Blockcopolymers&graftcopolymers. Stereochemistryofpolymers-Isotactic,Syndiotactic andAtactic

2.2. Propertiesofpolymers:Thecrystallinemeltingpoint.Theglassystateandglasstransitiontemperatu re

UNIT-III

3.1. Molecularweight ofpolymers
Numberaveragemolecularweight
andweightaveragemolecularweight.DeterminationofmolecularweightbyViscosityandOsmometry methods.

3.2. Polymerprocessing-calendaring,Die casting,blow moulding,and Wet spinning.

UNIT-IV

4.1. Preparation,properties anduses of Poly olefins-polythene,PTFE, Freons,PVC,polypropylene andpolystyrene.

4.2. Naturalandsyntheticrubbers-Constitutionofnaturalrubber.Butyl,Buna-N,Neoprene,Thiocol,Polyurethane and silicone rubbers.

UNIT-V

5.1.PlasticsandResinsDefinitions.Thermoplasticandthermosettingresins.Constituentsofplastic-fillers,dyes,pigments,plasticizers,Lubricantsandcatalysts.Usesofthermoplasticresinsandthermosetting resins.

REFERENCES:

1. V.R.Gowrikar,N.V.Viswanathan:PolymerScience-WileyEasternLimited,NewDelhi. 1986.

2. R.B.Seymour,Introduction to PolymerChemistry, MC CrawHill, NewYork 1971.

3. S.S.Dara,ATextBookinEngineeringChemistry,S.Chand&CompanyLtd,NewDelhi.ThirdEdition, 1992.

MODEL QUESTION PAPER

PeriyarUniversity

SalemSEMESTER-IV

B.Sc.Chemistry – SkillBasedElectiveCourse – II

Polymer Chemistry-Code:17UCHS02

Time: 3 Hrs Max.Marks:75

Section A (10 x2 =

20)Answerall questions

1. Definepolymerization.
2. Write anytwo differences betweenaddition andcondensation polymerisation.
3. What are homo and hetero polymers?
4. Defineglass transition temperature.
5. Defineweightaverage molecularweight.
6. What is wetspinning?
7. Howare freonsprepared?
8. What areuses ofthiocol?
9. Definelubricants. What are its functions?
10. What are pigments?Mention its uses.

Section B(5x5 =25)

Answerall questions

11. a) Write anote on ringopeningpolymerization.

(or)

b)Explain co- ordinationpolymerization.

12. a) Classifythe polymerson the basis of theirstereochemistry.

(or)

b)Explain how the crystallinityaffects theproperties of apolymer.

13. a)Discuss blow mouldingprocess.

(or)

b)Howis molecularweight ofa polymer determined byosmometrymethod?

14. a) Writethe preparation,properties(anytwo) anduses ofpolypropylene.(or)
    b)Write note on siliconerubbers.
15. a)Differentiate thermosettingandthermoplastic resins.

    (or)

    b)Write ashort noteon plasticizers.

Section– C(3 x 10 = 30)Answerany three questions

16. Write anoteon classification of polymers.
17. Explain the structureof polymers.
18. a)How is Molecularweight ofa polymer is determinedbyviscositymethod?
    b) DescribeDiecastingprocess.
19. a) Write thepreparation, propertiesand uses ofpolyethylene.
    b)Write note on Buna- Nrubber.
20. Write note on the following
    i) Fillers
    ii) catalysts.

B.Sc.CHEMISTRY- FOURTHSEMESTER
Major CorePaper –
IVPaperCode:17UCH04

InternalassessmentMarks: 25 **ExternalMarks**

:75GENERALCHEMISTRY – IV(75 Hours)

UNIT-INuclear Chemistry

1.1.Nuclearstability-n/pratio-nuclearforces-Exchange theoryandnuclear fluid theory.1.2.Naturalradioactivity-modesofdecay-GeigerNuttalrule.Unitsofradioactivity-Kineticsofradioactive disintegration-Half life and average life-Radioactive equilibrium-Numericalproblems.

1.3. Mass defect and bindingenergy-Artificial transmutation and artificialradioactivity.

1.4. Applicationofradioactiveisotopes-C-14dating,rockdating–Numericalproblems-isotopesas tracers-studyof reactionmechanism(e.g.esterhydrolysis),radiodiagnosis and radiotherapy.

1.5. Nuclearreactors-types-commonfeatureslikefuels,moderators,coolantcontrolmaterials,reactorshielding- uses-Nuclearreactors inIndia.

UNIT II - HeterocyclicCompounds

2.1.Molecularorbital pictureandaromaticcharacteristicsofpyrrole,furan,thiophene andpyridine.

2.2. Preparation, properties anduses of furan, pyrrole &thiophene.

2.3. Synthesis and reactions of pyridine.Comparative studyof basicityof pyrrole,pyridine withamines.

2.4.Condensedfiveandsixmemberedheterocyclicscompounds-preparationofindole,quinolnineandisoquinoline-Fischerindolesynthesis,SkraupsynthesisandBischer-Napieralskisynthesis- Electrophilic substitution reactions.

UNIT III – Amines and theirderivatives

3.1. Aliphaticamines-separationofaminesbyHinsberg‘s&Hofmannmethods-preparationandproperties ofdimethyl amine,trimethyl amine, (ethylenediamine andhexamethylene diamine).

3.2. Derivativesofaniline-acetanilide,N-methylaniline&N,N–dimethylaniline–preparationandproperties.

3.3. Diazonium compounds-diazotisationmechanism-diazoniumion asa weakelectrophile-preparationandsyntheticuses ofdiazoaceticester&diazomethane.

UNIT IV- Second lawofthermodynamics-I

4.1. Limitationsofthefirstlaw-needforsecondlaw-spontaneousprocesses-cyclicprocess-Carnotcycle –efficiency-Carnottheorem-Thermodynamic scale of temperature.

4.2. Conceptofentropy-Entropy-astatefunction-Entropychangeinisothermalexpansionofanidealgas-entropychangeinreversibleandirreversibleprocesses-Clausiusinequality-Entropychangeaccompanyingchangeofphase-–Entropyofmixtureofidealgases-entropyofmixing-physicalsignificance ofentropy.

UNIT V Second lawofthermodynamics-II

5.1. Workandfreeenergyfunctions-Maxwell‘srelationshipscriteriaforreversibleandirreversibleprocesses-Gibbs-Helmholtzequation-Partialmolarfreeenergy.Clapeyronequation-Clapeyron- Clausius equation-Applications of Clapeyron-Clausiusequation.

5.2. Third law ofthermodynamics

Nernstheattheorem-statementofIIIlaw-Evaluationofabsoluteentropyfromheatcapacitymeasurements-Test forthevalidityof thelaw.

MODEL QUESTION PAPER

PeriyarUniversity

SalemSEMESTER-IV

B.Sc.Chemistry — Majorcore paper –

IVGeneralChemistry-IV-Code:17UCH04

Time: 3 Hrs Max.Marks:75

Section A (10 x2 =

20)Answerall questions

1.What is Geiger –Nuttal rule?2.What is mass defect?

3.WhyFuran is least aromatic whencompared topyrroleand thiophene?4.What is Chichibabinreaction?.

5.Write anytwo syntheticuses ofdiazoacetic ester.6.Howis hexamethylenediamine prepared?

7.Calculate theefficiencyofa Carnotengine operatingbetween the temperatures100^{o}C and0^{o}C?

8.What is the need forSecondLaw of Thermodynamics ?9.What areworkandfreeenergyfunctions?Give theirrelations?10.What is partial molarfreeenergy?

Section B(5 x 5=

25)Answerall questions

11. a) Discuss theNuclear forcesexchange theory?

(or)

b)Write anote on C-14 Dating.

12. a)Discuss the aromatic character ofpyrrole.(or)

b)How is isoquinoline synthesised?Write its elecrophilic substitution reactions.

13. a)Write amethod ofpreparation of N,N-dimethylaniline.Howis it react withHONO andHCHO?

(or)

b)Explain the mechanism of diazotisation.

14. a)Whatare thelimitations of thefirstlaw ofthermodynamics?

(or)

b) Discuss theconcept of entropy

15. a)DeriveGibbs-Helmholtzderivation.

(or)

b) Discuss theNernst Heattheorem.

Section C
(3x10=30)Answerany three questions

16. Write note on Nuclearreactor.

17.Givethe electrophilic substitution reactions of

a) Furan

b) Pyridine

18.Howare aliphatic amines separatedbyHinsbergs andHofmannmethods?19.Discusscarnotcycle and deriveanexpressionfor theefficiencyof acarnot engine?

20. a)DeriveClapeyron-Clasius equation.

b) Test forvalidityofthird law ofthermodynamics.

B.Sc.CHEMISTRY- FIFTHSEMESTER
Major CorePaper –
VPaperCode:17UCH0
5

InternalassessmentMarks: 25 **ExternalMarks**

:75INORGANIC CHEMISTRY (60 Hours)

UNIT-IConcept of acids, bases andNon aqueoussolvents

1.1. AcidsandBases:Arrhenius,Bronsted-Lowry,theLewisconceptsofacidsandbases.Relativestrength of acidsandbases.
1.2. HardandSoftAcidsandBases-classificationofacidsandbasesashardandsoft–examples-Pearson‘sHSABconcept,acid-basestrengthandhardnessandsoftness,Theoreticalbasisofhardness and softness, Applications of HSABprinciple.
1.3. Non-aqueoussolvents-physicalpropertiesofasolvent,typesofsolventsandtheirgeneralcharacteristics.Reactionsinnon-aqueoussolventswithreferencetoliquidNH_3andliquidSO_2-Comparison.

UNIT II Chemistry off-blockelements

2.1. PositioninthePeriodicTable-GeneralcharacteristicsofLanthanidesandActinides-Lanthanidecontraction and its consequences.
2.2. Isolation ofLanthanidesfrom MonaziteincludingtheIonexchange resin method.
2.3. Actinides-occurrence and preparation.
2.4. ChemistryofThoriumandUranium-Importantcompounds-preparation,propertiesandusesof Uranylnitrate,Uraniumhexafluoride,Thorium dioxide.

UNIT III CoordinationChemistry

3.1.Definitionoftheterms-Classificationofligands-Nomenclatureofmononuclearandpolynuclearcomplexes-chelatingligandsandchelates-Examples-chelate effect-explanation.
γ.β.Werner‘stheory-conductivityandprecipitationstudies-Sidgwick‘stheory-EffectiveAtomic Numberconcept.
3.3.Isomerismincomplexes-StructuralIsomerism—types.Stereoisomerism-Geometricalisomerismin4and6coordinatedcomplexes.Opticalisomerismin4-and6-coordinatedcomplexes

UNIT-IV

4.1. Theoriesofbondingincomplexes-ValenceBondTheory-Postulates–
Hybridisationandgeometries of complexes-Outerorbitaland innerorbital octahedral complexes. Squareplanarandtetrahedralcomplexes-V.B.Theoryandmagneticpropertiesofcomplexes-limitationsofV.B.Theory.

4.2. CrystalFieldTheory-postulates-d-orbitalsplittinginoctahedral,tetrahedralandsquareplanarcomplexes-strongandweakligands-Spectrochemicalseries-Highspinandlowspincomplexes-C.F.Theoryandmagneticpropertiesofcomplexes-CrystalFieldStabilisationEnergy(CFSE)anditsuses-CalculationofCFSEvaluesof d^1 to d^{10} OctahedralandTetrahedralcomplexes-C.Ftheoryandcolourofcomplexes-limitationsofC.F.theory-comparisonbetweenVBTand CFT.

UNIT-VReaction Mechanismand ApplicationofComplexes

5.1. Substitutionreactionsinsquareplanarcomplexes-TransEffect-Transeffectseries-usesofTranseffect-Theories ofTrans effect-polarisationtheoryand π-bondingtheory.

5.2. ApplicationofcoordinationcompoundsinQualitativeandQuantitativeanalysis-separationof Copperand Cadmiumions, CobaltandNickel ions-Identification ofCu,Fe,andNi.

5.3 EDTAand its applications- estimation of metals,hardness of waterandsequesterisation.

MODEL QUESTION PAPER

PeriyarUniversity

SalemSEMESTER-V

B.Sc.Chemistry — Majorcore paper – V

InorganicChemistry-Code:17UCH05

Time: 3 Hrs Max.Marks:75

Section A (10 x2 =20)

Answerall questions

1.What is levelingeffect?.

2. What is protic andaprotic solvents?

3. Write electronic configuration of trivalentLuandGd.

4. Mention importantores of thorium.

5. CalculateEAN for $[Pt(NH_3)_6]Cl_4$and$Ni(CO)_4$.

6. Draw thepossible isomers of the following complexes i) $M(AB)_3$ii) $M(AA)_2a_2$

7. What is the hybridizationinvolvedand geometryofthefollowingComplexes?(i) $[Co(NH_3)_6]^{3+}$

(ii) $[Cr(H_2O)_6]^{2+}$

8. What is High Spin complex?

9. What are the uses of trans effect?10.What is meantbysequesterisation?.

Section B(5 x5 =25)

AnswerAll Questions

11. a)DiscussArrheniusconcept ofacids and bases.

(or)

b)Write chemical reactions in liquid ammonia.

12. a) Write anote onLanthanide contractionandits consequences.

(or)

b)Explain isolation oflanthanidesbyIon-exchange method.

13. a) Write postulatesofWerner's Theoryandgive the structureof$[Co(NH_3)_5Cl]Cl_2$.(or)

b)Explain Chelate effect.

14. a) Explain whysplittingof d-orbitals in tetrahedral is reversed that of octahedral.(or)

    b) Compare VBTandCFT.

15. a)Whatare theoriesof Transeffect?

    (or)

    b)HowdoyouestimateHardness of water?

Section C (3 x 10 = 30)Answerany three questions

16. a) Explain BronstedLowrytheory.

    b) Discuss HSAB concept.

17. Discussextraction,propertiesandusesofUranium.
18. DiscussGeometricalisomerism in4 and 6 co-ordinated complex.
19. Give applications ofVBT.
20. Explain quantitativeapplications of co-ordination complex.

B.Sc.CHEMISTRY- FIFTHSEMESTER
Major CorePaper–
VIPaperCode:17UCH
06

InternalassessmentMarks: 25 **ExternalMarks**

:75ORGANICCHEMISTRY(60 Hours)

UNIT I Opticalisomerism

1.1.OpticalisomerismDefinition,opticalactivity,OpticalandSpecificrotations-conditionsforopticalactivity-asymmetriccentre-Chirality-achiralmolecules-meaningof(+)and(-)andDandLnotations-Elements of symmetry.

1.2. Projectionformulae-Fischer,andNewmannprojectionformulae-Notationofopticalisomers-Cahn-Ingold–Prelogrules-R-S.notationsforopticalisomerswithoneandtwoasymmetric Carbon atoms-erythroand threo representations.

1.3. Racemisation-methodsofracemisation(bysubstitutionandtautomerism)-Resolution-methodsofresolution(mechanical,seeding,biochemicalandconversiontodiastereoisomers)-Asymmetricsynthesis (partial andabsolute synthesis) Waldeninversion.

1.4. Optical activityofallenes , spiranesandbiphenyls.

UNIT II Geometricalisomerism

2.1. Geometricalisomerism-Definition,cis-trans,syn-antiandE-Znotations-geometricalisomerisminmaleicandfumaricacidsandunsymmetricalketoximes,Methodsofdistinguishinggeometricalisomersusingmeltingpoint,dipolemoment,dehydration,cyclisationandheatofhydrogenation.

2.2. ConformationalAnalysis-introductionofterms-conformers-dihedralangle,torsionalstrain,conformationalanalysisofethane,ethyleneglycol,chlorohydrinandn-butaneincludingenergydiagrams-conformersofcyclohexane(chair,boatandskewboatforms)-axialandequatorialbonds-ringflippingshowingaxialequatorialinterconversions-conformersofmonoanddisubstitutedcyclohexanes-1:2and1:3interactions-ConformationandstereochemistryofCisandTransdecalins.

UNIT III Amino acids and proteins

3.1. Aminoacids-classification-essentialandnonessentialaminoacids-preparationofalphaaminoacids-glycine,alanineandtryptophan-Generalpropertiesofaminoacids-Zwitterions,isoelectricpoint.

3.2. Peptidesandproteins-synthesisofpeptide-Bergmannmethod.Proteins-classificationbasedonphysicalandchemicalpropertiesandonphysiologicalfunctions-primaryandsecondarystructureofproteins-helicalandsheetstructures(elementarytreatmentonly)–Denaturationofproteins.

UNIT- IV Ureides andnucleic acids

4.1.Ureides-Definition,classification-pyrimidines-thymine,uracil(FischerandRoedersynthesis)andcytosine(Wheeler-Johnsonmethod)-purines-adenineandguanine–Fischer'ssynthesis(structural elucidation not necessary)

4.2. Nucleicacids-structuresofriboseand2-deoxyribose-DNAandRNA–theircomponents–Biologicalfunctions of nucleicacids-Elementaryideas on replicationand protein synthesis.

UNIT V Chemistry ofnaturalproducts

5.1. Alkaloids-classification-isolation–generalmethodsofdeterminationofstructureofalkaloids-synthesisandstructural elucidation of piperine, atropine and nicotine.

5.2. Terpenes-classification-isolation-isoprenerule-synthesisandstructuralelucidationofcitral,geraniol,alpha pinene.

MODEL QUESTION PAPER

PeriyarUniversity

SalemSEMESTER-V

B.Sc.Chemistry — Majorcore paper – VI

ORGANICCHEMISTRY -Code:17UCH06

Time: 3 Hrs Max.Marks:75

Section A (10 x2 =

20)Answerall questions

1.What are optical isomers?

2.Assign R,Snotation to the followingcompoundsi) $CH_3CHOHCOOH$ ii) $CH_3CHBrC_2H_5$3.What is meantby1,3 diaxial interaction?

4.Differentiatebetweenconfigurationand conformation.5.Howwillyou prepare tryptophan?

6.What is a Zwitter ion?

7.Outlinethe preparationof adenine.

8.Writethe structureof i)Cytosine ii) Guanine.9.Defineisoprene rule.

10.Howwillyou identify–$OCH_3$and–OCH_2O groups in analkaloid.

Section B(5 x5 =

25)Answerall questions

11. a) Explain the necessaryconditions foramolecule to beopticallyactive.(or)

b) Describethe methods of resolution.

12. a)Discuss thecis-trans isomerism in maleic acid and fumaric acid.

(or)

b)Write thevariousconformers of ethyleneglycolandchlorohydrins and explain theirstability.

13. a) Howglycine will react with i)CH_3Iii)$LiAlH_4$.

(or)

b) Discuss thesecondarystructureof proteins.

14. a)Whatare nucleic acids?Write thenamesand the structureof their components.(or)

    b) Discuss thestructureof RNA.

15. a) Explain the structureof piperine.

    (or)

    b) Elucidate the structureof citral.

Section C (3 x 10 = 30)Answerany three questions

16. a)Differentiate betweenenantiomers and distereoisomers

    b) What is waldeninversion?Give anexample

    c) Illustrateasymmetrysynthesis with suitableexample.

17. a) Explain the stabilityofconformers ofcyclohexane

    b)Mention themethods of distinguishing geometricalisomerism.

18. a)Discuss ageneral properties of aminoacids

    b)Explain denaturation of proteins.

19. a) Explain the structureof DNA.

    b)Write anote on replication.

β0.Writethesynthesis of α-pinene.

B.Sc.CHEMISTRY- FIFTHSEMESTER
Major CorePaper –
VIIPaperCode:17UCH0
7

PHYSICALCHEMISTRY(60 Hours)

InternalassessmentMarks: 25 **ExternalMarks**

:75UNIT-IChemicalEquilibrium

1.1.Thermodynamicderivationofequilibriumconstants-Kp,KcandKx-RelationsbetweenKp,KcandKx-Standardfreeenergychange-Derivationofvan'tHoffreactionisothermDe-Donder'streatmentofchemicalequilibria-conceptofchemicalaffinity(noderivation)-Temperaturedependanceofequilibriumconstant-van'tHoffisochore-Pressuredependanceofequilibriumconstant.

1.2.Adsorption-Physicalandchemicaladsorption-Typesofadsorptionisotherms-Freundlichadsorptionisotherm-DerivationofLangmuiradsorptionisotherm(BETisotherm(postulatesonly)BETequation(statement).

UNIT-IIChemicalKinetics-I

2.1.Derivationofrateconstantofasecondorderreaction-whenthereactantsaretakenatdifferentinitialconcentrations-whenthereactantsaretakenatthesameinitialconcentrations-DeterminationoftherateconstantofaIIorderreaction-Derivationofrateconstantofathirdorderreaction-whenthereactantsaretakenatthesameinitialconcentrations.Derivationofhalf-lifeperiodsfor second and third orderreactions havingequal initial concentration of reactants.

2.2.Methodsofdeterminingtheorderofareaction-Experimentalmethodsinthestudyofkinetics-volumetry,manometry, polarimetryandcolorimetry.

2.3.EffectoftemperatureonreactionrateS-DerivationofArrheniusequation-conceptofactivationenergy-determination of Arrhenius frequencyfactorandenergyof activation.

UNIT-IIIChemicalKinetics-II

3.1.Collisiontheoryofreactionrates-Derivationofrateconstantofabimolecularreactionfromcollisiontheory-Failures of CT.

3.2. Lindemann theoryofUnimolecularreactions.

3.3.TheoryofAbsoluteReactionRates-Thermodynamicderivationofrateconstantforabimolecularreactionbasedon ARRT-comparisonbetweenARRTandCT.Significanceoffreeenergyofactivationandentropyofactivation.

UNIT-IVElectrochemistry– I

4.1.Metallicandelectrolyticconductance–Definitionsofspecific,equivalentandmolarconductances–Relationsbetween them– measurement of conductance andcellconstant.

4.2.Variationofconductancewithdilution–Qualitativeexplanation–Strongandweakelectrolytes.

4.3.Migrationsofions–transportnumber–determinationbyHittorfandmovingboundarymethods–Kohlrausch'slaw–applications–calculationofequivalentconductanceforweakelectrolytesand determination of transport number.

4.4.IonicmobilitiesandIonicconductances.Diffusionandionicmobility-molarionicconductance andviscosity-Waldenrule.

4.5. Applicationsofconductancemeasurements–Degreeofdissociationofweakelectrolytes–DeterminationofIonicproductofwater–Determinationofsolubilityofsparinglysolublesalts–conductometric titrations.

UNIT– V Theory ofstrongelectrolytes

5.1.Debye–Huckel–Onsagertheory–verificationofOnsagerequation–WeinandDebye–Falkenhageneffect.

5.2. Activityandactivityco-efficients of strongelectrolytes– ionicstrength.

5.3.Ostwaldsdilutionlaw–determinationofdissociationconstants–Ionicproductofwater–pH value.

5.4.Buffersolution–Henderson'sequations–usesofBuffersincludinglivingsystems–commonion effect– solubilityproduct principle– relation to solubility–Applications inqualitativeandquantitativeanalysis.

5.5.Hydrolysis ofsalts–expressionforhydrolysisconstant– Degree of hydrolysisandpH of saltsolutionsfordifferenttypesofsalts–DeterminationofDegreeofhydrolysis–conductanceanddistribution methods.

MODEL QUESTION PAPER

PeriyarUniversity

SalemSEMESTER-V

B.Sc.Chemistry — Majorcore paper – VII

PHYSICALCHEMISTRY -Code:17UCH07

Time: 3 Hrs Max.Marks:75

Section A (10x 2 =

20)Answerall questions

1.When Kp becomesequal to

Kx?2.Explain the termadsorption.

3.What is order ofareaction.

4.Defineactivationenergy.What

happenedwhenEabecomeszero?5.What is entropyof activation?

6. Givethe failure of collisiontheory.

7.What are strongelectrolytes?Give examples.

8.What is Walden's rule for mobilityof ions?

9.Calculateionic strengthof solution containing0.1

MolalNaCland0.01Molal$CaCl_2$assumingcomplete ionization.

10.State principle of solubilityproduct.

Section B(5 x5 =

25)Answer all questions

11. a) Explain De-Donder'streatment ofchemicalequilibria.

(or)

b)Explain Freundlichadsorptionisotherm.

12. a)Derivethe equationforhalf–lifeperiod ofasecond order reaction.

(or)

b)Howwillyouexperimentallydeterminetherateconstants for acidhydrolysis of sucrose.

13. a)Discuss theLindeman theoryof unimolecularreactions.

(or)

b) Compare ARRT and Collision theory.

14. a)Define

    i) Specificconductance

    ii) Equivalentconductance

    iii) Molarconductance

    (or)

    b)Howwillyou measureequivalentconductance of asolution.

15. a) Explain

    i) Weineffect

    ii) Debye-Falkenhageneffect.

    (or)

    b)State and explain Oswald's dilution law.

Section C (3 x 10 = 30)Answerany three questions

16. a)DeriveanequationforLangmuir adsorption isotherm.

    b) Derivethe relationbetweenK_P,KcandKx.

17. Deriverate constantofa second orderreaction of reactantsatdifferentinitialconcentration.

18. Derivetherateconstant of abimolecularreactionfrom collision theory.

19. Describethe determination of transport number ofHittof'smethod.

20. a) DeriveHenderson'sequation.

    b) Calculate thepH of buffer solution containing0.2 Moles $NH_4OH$and 0.5 MolesNH_4Cl perlitre.Dissociationconstant of $NH_4OH$is 1.81×10^{-5}.

B.Sc.CHEMISTRY- FIFTHSEMESTER

ElectivePaper –

IPaperCode:17UCHE01

InternalassessmentMarks: 25 **ExternalMarks :75**

ANALYTICALCHEMISTRY – I (75 Hours)

UNIT – I

1.1. Dataanalysis-Ideaofsignificantfigures-itsimportance-Accuracy-Methodsofexpressingaccuracy-Erroranalysis-TypesofErrors-MinimizingErrors,Precision-Methodsofexpressingprecision- Mean, Median, Meandeviation, Standard deviation and Confidencelimits

1.2. Separationtechniques-Precipitation,Solventextraction,Extractionbychemicallyactivesolvents, Continous extraction- Soxhlet extraction.

1.3. Purificationtechniques-Purificationofsolids-Crystallisation,FractionalcrystallizationandSublimation.Purificationofliquids-Distillation,FractionalDistillation,VacuumdistillationandSteamdistiilation.

UNIT– II GravimetricAnalysis

2.1 Principle-Theoriesofprecipitation-Solubilityproductandprecipitation-Factorsaffectingsolubility.Conditionsofprecipitation–Co-precipitation&Postprecipitation,Reductionoferrors.precipitationfromhomogeneous solution-Washingand Dryingofprecipitate.

2.2 Choiceoftheprecipitant-SpecificandSelectiveprecipitants-Anthranilicacid,Cupferon,Dimethylglyoxime,Ethylenediamine,8-hydroxyquinoline,Salicylaldoxime-UseofMaskingagent.

2.3 Crucibles-Types,Careanduses.Calculationingravimetricanalysis-UseofGravimetricfactor.

UNIT– III U.V-VisibleSpectroscopy

3.1.Definitionofspectrum–Types-absorptionandemissionspectra.Electromagneticradiation,quantizationofdifferenttypesofenergiesin molecules(translational,rotationalandelectronic)BornOppenheimerapproximation.

3.2. U.V-VISIBLESpectroscopy-Typesofelectronictransitions.Beer‘s-Lambert‘slaw-O.D.,chromophore,auxochrome,bathochromicandhypsochromicshifts-Instrumentation,Applications.

UNIT-IV I.R.Spectroscopy

4.1.I.R.Spectroscopy-Principles-modesofvibrationofdiatomic,triatomiclinear(CO_2)andnon-lineartriatomicmolecules(H_2O)-stretchingandbendingvibrations-selectionrules.Expressionforvibrationalfrequency(derivationnotneeded)-instrumentation-samplingtechniques-Applications.

UNIT-VRaman spectroscopy

5.1. Ramanspectroscopy-condition-RayleighandRamanscattering,stokesandantistokeslines–Instrumentation.DifferencesbetweenRamanandI.R.Spectroscopy.Mutualexclusionprinciple($CO_2$and N_2O)

5.2. SEM, TEM Studies-Elementaryidea andapplications.

MODEL QUESTION PAPER

PeriyarUniversity

SalemSEMESTER-V

B.Sc.Chemistry — Electivepaper – I

ANALYTICALCHEMISTRYI -Code:17UCHE01

Time: 3 Hrs Max.Marks:75

Section A (10 x2 =

20)Answerall questions

1.Defineaccuracyandprecision.2.What is sublimation?Giveexample.

3.Definegravimetricfactor. Give example.4.DefineSolubilityproduct.

5.Defineblueandred shift.6.What is Beer-Lambertslaw.

7.Draw thevibration modes ofH_2O molecule.8.Write theselectionruleforIRspectroscopy.9.What is RayleighScattering?

10.Definethe term SEM. Giveanyoneof its use.

Section B(5 x5 =

25)AnswerAllQuestio

ns

11. a) What is determinate andindertiminateerrors?Explain with examples.

(or)

b)Write anote on mean,median, mean deviation, standarddeviation and confidence limit.

12. a) Write theapplications of solubilityproductprinciple in gravimetricanalysis.

(or)

b)Explain with examplespecificandselectiveprecipitants.

13. a) Explain anytwoapplication ofUVvisible spectroscopy.(or)

b)Write anote on Born-oppenheimerapproximation.

14. a) Explain varioustypes of vibrations.

(or)

b)Explain how hydrogen bond is detectedbyIRspectroscopy.

15. a)Whatare differencesbetweenIRand Raman spectra.

(or)

b)Explain the principle ofTEM and its applications.

Section C (3 x 10 = 30)Answerany three questions

16. a) Explain the methods used for minimizationof errors.

b)Howis Soxhlet extraction method used for theseparation ofsolids.

17. a) Write anote on precipitationfromHomogeneous solution.

b)Explain co-precipitation and post precipitation with examples.

18. a)Explain varioustypes of electronic transitions.

b)Explain the termchromophores andauxochromes.

19. Explain the instrumentation ofIR spectrometer.

20. Write anote on

i) Mutual exclusion principle

ii) Stokes and antistokeslines.

B.Sc.CHEMISTRY- FIFTHSEMESTER

SkillBased ElectiveCourse –

IIIPaperCode:17UCHS03

InternalassessmentMarks: 25 **ExternalMarks**

:75AGRICULTURALCHEMISTRY(30 Hours)

UNIT – I FERTILIZERS

EffectofNitrogen,potassiumandphosphorousonplantgrowth–commercialmethodofpreparationofurea,triplesuperphosphate.Complexfertilizersandmixedfertilizers– theirmanufacture andcomposition.Secondarynutrients – micronutrients– their function in plants.

UNIT– IIMANURES

Bulkyorganicmanures–Farmyardmanure–handlingandstorage-oilcakes-bloodmeal–fishmanures.

UNIT– III PESTICIDESAND INSECTIDES

Pesticides–classificationofInsecticides,fungicides,herbicidesasorganicandinorganic–generalmethods ofapplicationandtoxicity. Safetymeasures when usingpesticides.

Insecticides:Plantproducts–Nicotine,pyrethrin–Inorganicpesticides–borates.Organicpesticides – D.D.T.andBHC.

UNIT– IVFUNGICIDESAND HERBICIDES

Fungicide : Sulphur compounds,Copper compounds,Bordeauxmixture.

Herbicides: Acaricides– Rodenticides.Attractants– Repellants.Preservation of seeds.

UNIT– VSOILS

Classificationandpropertiesofsoils–soilwater,soiltemperature,soilminerals,soilacidityandsoil testing.

MODEL QUESTION PAPER

PeriyarUniversity

SalemSEMESTER-V

B.Sc.Chemistry — Skill Based ElectiveCourse– III

AGRICULTURALCHEMISTRY -Code:17UCHS03

Time: 3 Hrs Max.Marks:75

Section A (10 x2 =20)

Answerall questions

1.Definefertilizer.Giveone example.2.What are complexfertilizers.

3.What are manures?

4.What is the useof oilcakes?

5.Howare borates used as an insecticide?6.Definetoxicity.

7.What are attractants?8.Name two rodenticides.

9.Giveanytwo properties of soil.

10.What are the mineralspresent in the soil?

Section B(5 x5 = 25)Answerall questions

11. a)Discuss theroleofphosphorus in plantgrowth.

(or)

b)Howis urea prepared?

12. a)Whatare differencesbetweenfertilizersandmanures.

(or)

b)Write anote on farmyardmanure.

13. a)Whatare the safetymeasures whileusingpesticides?

(or)

b)Howis DDT prepared?Howis it useful?

14. a) Discuss sulphurcompounds used as a fungicide.

(or)

b)Howis Bordeauxmixtureprepared?Whatareits uses?

15. a) Write anote on soil water.

(or)

b)Howis soil aciditytested?

Section C (3 x 10 = 30)Answerany three questions

16.Discuss the role ofmicronutrients in plant growth.17.Write notes on handlingandstorage ofmanures.18.Discuss the classification of pesticides.

19.a)Discuss themethods to preserveseeds.

b)What are repellants?What are its uses?20.Discussclassificationandproperties of soils.

B.Sc.CHEMISTRY- FIFTHSEMESTER

SkillBased ElectiveCourse –

IVPaperCode:17UCHS04

InternalassessmentMarks:25 **ExternalMarks**

:75DYESTUFFSAND TREATMENT OFEFFLUENTS(30 Hours)

UNIT-I

1.1Introduction,Definition-Dye,colour,chromophore,auxochrome,bathochromiceffectandhypso chromiceffect

1.2.Classification- acid,base, azo, vat and reactive dyes.

UNIT-II

2.1.Various methods of dyeing-Direct, vat, mordant and disperse.2.2.Anthroquinone andMordantDyes- synthesisandapplications of Alizarin.

UNIT III

3.1. Diphenylmethane Dyes- synthesis and application of Auramine-

3.2. TriphenylmethaneDyes-MalachiteGreen,CrystalViolet,Pararosaniline-Preparationandapplications.

3.3.IndigoDyes-PreparationandapplicationofIndigo.DerivativesofIndigo-SynthesisandusesofIndigosolandtetrabromoindigo-(Cibablue)

UNIT-IV

4.1.PhthaleinDyes-Phenolphthalein-Preparationandapplications4.2.XantheinDyes-Rhodamine B,Fluorescein-Preparation andapplications.4.3.Acridine dyes- synthesisandapplication ofAcridineorangeNO

4.4 .Reactive dyes– synthesis andapplications ofProcionBlueHB.

UNIT-V

5.1.TextileEffluent-
Characteristics,effectofuntreatedeffluent,degradabilityofwastes.Effluenttreatmentplants-Aeratedlagoon,photo oxidation process.

References:

1.B.K.Sharma,IndustrialChemistry,Goel
Publishingco,19972.R.Chatwal,SyntheticDyes-Himalayan
PublishingHouse,19953.R.S.Prayag, Dyeingof wool,Silk and man
made fibres.
4.V.A.Shenai, Chemistryof Dyes and PrinciplesofDyeing.

MODEL QUESTION PAPER

PeriyarUniversity

SalemSEMESTER-V

B.Sc.Chemistry — Skill Based ElectiveCourse–

IVCode:17UCHS04

Dyestuffs andtreatment of Effluents

Time: 3 Hrs Max.Marks:75

Section A (10 x2 =

20)Answerall questions

1.What are dyes?

2.Defineauxochrome.Give example.3.What are anthroquinone dyes?

4.What is disperse dyeing?5.Howis crystal violet prepared?6.What areIndigodyes?

7.Definephthanlein Dye?8.What are Reactive dyes?9.What are degradablewastes?

10.What is photo oxidationprocess?

SectionB(5 x5 =

25)Answerall questions

11. a)Discuss bathochromic andhypsochromic effects?

(or)

b)What are special characters of agooddye?

12. a)Give thepreparation andapplication ofAlizarin.

(or)

b) Discuss vatdyeing?

13. a)Give thepreparation anduses ofIndigo.

(or)

b)Howis Auramineprepared?Mention its uses?

14. a)How is acridineorangeNO prepared?Mention its uses?

(or)

b)Write thepreparation anduses of phenolphthalein.

15. a)Givethecharacteristics of textile effluent.(or)

b)What are theeffectof untreatedeffluent?

Section C (3 x 10 = 30)Answerany three questions

16.Discussclassificationof dyes?

17.Write anote on variousmethods of dyeing?

18.Givethe preparationand uses of Pararoseaniline and tetrabromoIndigo?19.Givethe preparation and uses of Fluorescein&ProcionBlueHB.

20.Explain the variousprocess of treatment of textile effluents.

B.Sc.CHEMISTRY- SIXTHSEMESTER

Core Chemistry Major Paper –

VIIIPaperCode:17UCH08

InternalassessmentMarks: 25 **ExternalMarks**

:75INORGANIC CHEMISTRY (60 Hours)

UNIT-IBioinorganicChemistry

1.1.EssentialandtraceelementsinBiologicalprocesses-BiologicalroleofHaemoglobinandChlorophyll (elementaryideaof structure andfunction)

1.2. Metalcarbonyls-Bondingincarbonyls-MonoandbinuclearCarbonylsofNi,Fe,Cr,CoandMn-Hybridisationandstructure.Preparation, properties anduses.

1.3. Silicates-classificationandstructure–examples.Composition, propertiesanduses ofasbestos,talc,mica,andzeolite.

UNIT II Organometalliccompounds

2.1. Definition-classification-ionic,σ - bonded andΠ-bondedorganometalliccompounds-examples- natureofcarbon-metal bond.

2.2. Generalmethodsofpreparation.Generalpropertiesoforganometalliccompounds-physicalandchemicalcharacteristics.

2.3. Organometallic compounds ofLithium& Boron- preparation, properties, structureanduses.

2.4. Olefincomplexes–Zeise's salt –synthesis andstructure

2.5.Cyclopentadienylcomplexes-Ferrocene- preparation, properties, structureanduses.

2.6. Uses of organometallic compounds.

UNIT-III Nano Science

3.1.Introduction-Definition-types-quantumdots,Nanorods,FullerenesandCarbonnanotubes-nanowiresandcrystals,nanocompositesandcliusters-propertiesofnanomaterials–Plasmonresonance.

3.2.Preperationof Nanostructuredmaterials-BottomupandTopdownApproaches-Methodsofpreparationofnanomaterial-Plasmaarching,Chemicalvapourdeposition,Electrodeposition,Sol-gel synthesis, Ball-milling,Chemicalreduction.

3.3. Applicationofnanomaterials-Useofnaturalnanoparticles(elementarytreatmentonly)-Catalysis,EnvironmentalandBiomedical (Drugdelivery)applications.

UNIT IV-SomeSpecial compounds

4.1.Classificationandstructureofcarboranes.

4.2. BoronNitride-Borazole-metalBorides (elementaryidea)

4.3.InterhalogenCompounds-Namingofthecompounds-Types.Preparation,properties,structureanduses ofICl,$BrF_3$$IF_5$,$IF_7$.Basic properties ofIodine.

4.4.Pseudohalogens-Definition,similaritiesanddissimilaritiesbetweenhalogenandpseudohalogen,cyanogens,thiocyanogen- Preparation,propertiesand uses.

UNIT V

5.1. SymmetryElementsandSymmetryoperations–pointgroups-pointgroupsofsimplemolecules likeH_2, HCl, CO_2, H_2O &NH_3.

5.2. Magneticpropertiesofmolecules:Magneticsusceptibility.Typesofmagneticbehaviour-diamagnetismandparamagnetism,Temperatureandmagneticbehaviour,Ferromagnetismandantiferromagnetism-Temperatureindependentparamagnetism-determinationof magneticmoment usingGuoyBalance-Applications of magnetic measurements.

MODEL QUESTION PAPER

PeriyarUniversity

SalemSEMESTER-VI

B.Sc.Chemistry — Majorcore paper –

VIIIINORGANIC CHEMISTRY -

Code:17UCH08

Time: 3 Hrs Max.Marks:75

Section A (10 x2 =20)

Answerall questions

1.Write thestructureandfunctions of Haemoglobin.2.Givethe composition and uses of Mica..

3.Howdoyou preparet-butylLithium.

4.Listanytwo usesoforganometallic compounds.5.Definenanocomposites.

6.What are quantum dots?

7.Definepseudohalogens?Givetwo examples.8.What are carboranes?

9.Write pointgroup of$NH_3$and CO_2.10.Definemagnetic susceptibility.

Section B(5 x 5 = 25)Answerall questions

11. a) Write thepreparation, structureand properties (anytwo)of $Fe_2(CO)_9$.(or)

b)Explain the bondingin Metallic carbonyls.

12. a) Describesynthesisandstructureof Zeise'ssalt.

(or)

b)What are organometalliccompounds?Howareclassified?

13. a)Giveanaccount offullerenesand carbonnano tubes.

(or)

b) Discussanyfourapplications of nano materials.

14. a) Write anote on boron nitrides.

(or)

b)Write thebasic propertyof Iodine.

15. a) Distinguish between ferromagnetism and antiferromagnetism.

(or)

b)What are symmetry elements andsymmetryoperations.

Section C (3 x 10 = 30Marks)Answerany three questions

16. Howare silicatesclassified?Give structurefor eachtype.
17. Write thepreparation,properties andstructure of ferrocene.
18. Write various methods of preparation of nanomaterials.
19. Whar areinterhalogencompounds?Write preparation, properties and structureofIF_7andBrF_3.
20. a)How is magneticmoment of amaterial isdetermined with GuoyBalance?

b)Write thesymmetryelements present in$H_2$and H_2O molecule.

B.Sc.CHEMISTRY- SIXTHSEMESTER

ElectivePaper –

IIPaperCode:17UCHE0

2

InternalassessmentMarks: 25 **ExternalMarks**

:75ORGANICCHEMISTRY(75 Hours)

UNIT I Carbohydrates

1.1.Classification,ReactionsofGlucoseandFructose-Constitutionofglucoseandfructose-openchainstructure-Configurationandringstructure-mutarotation,epimerisationConformationsofglucoseandfructose.

1.2.Interconversionofmonosaccharides-conversionofpentosetohexoseandvice-versa,aldosetoketose andvice-versa

1.3.Disaccharides-structuralelucidation of sucrose andmaltose, Polysaccharides-structure ofstarchandcellulose -derivatives of cellulose.

UNIT II Vitamins andantibiotics

2.1. Vitamins-occurrenceandbiologicalimportanceof Vitamin A,Thiamine,Riboflavin,Pyridoxin and Ascorbicacid.– Synthesis and structuralelucidation of ascorbic acid.

2.2. Antibiotics-structuralelucidation of penicillin G andchloromycetin.

UNIT III Molecularrearrangements

3.1. Classificationasanionotropic,cationotropic ,intermolecularand intramolecular.3.2.Mechanismsof pinacol-pinacolone,Beckmann,benzidine,Hofmann,Curtius,Lossen,Schmidt, benzilic acid,Fries andCope rearrangements.

UNIT IV Importantreagents andtheir applications inorganicchemistry

$AlCl_3$, BF_3,$LiAlH_4$,$NaBH_4$,PCl_5 ,P_20_5,Na/ethanol,alcoholicKOH, H_2/Ni, H_2/Pd-$BaS0_4$,Zn/Hg-HCl,H_2N-NH_2/C_2H_5ONa,Ag_2O,HIO_4,Leadtetra acetate and Osmium tetroxide.

UNIT V GreenChemistry

5.1.GreenChemistry-Principle&GreenerReactions-Definition,needofgreenchemistry,Twelvebasicprinciplesofgreenchemistry-Planningagreensynthesisinachemicallaboratory-Solvent-lessreactions,Selection of appropriate solvent .

5.2. Useofmicrowaves-Fundamentalsofclosed-vesselheatingandsonication-Waterasgreensolvent-reactionsinionic-liquid,Solidsupportorganicsynthesis,Phasetransfercatalyst(PTC)(Simple treatmentonly).

MODEL QUESTION PAPER

PeriyarUniversity

SalemSEMESTER-VI

B.Sc.Chemistry — Major Electivepaper –

IIOrganicChemistry- Code:17UCHE02

Time: 3 Hrs Max.Marks:75

Section A (10 x2 =

20)Answerall the

questions

1. Definemutarotation.
2. What is epimerization?
3. Write thestructureanduses ofVitamin A.
4. Name the sources anddeficiencydiseases ofVitamin

C.5.What is Cope rearrangement?

6.Illustrateintramolecularrearrangement with anexample.7.Mention two applications of alcoholicKOH.

8.Write thereducingproperties of $LiAlH_4$.9.What is greenchemistry?

10.Mention thetools formaterializinggreen reaction.

Section B(5 x 5 =

25)Answerall questions

11. a)What is the actionof fructosewith i) HNO_3ii) HCN iii) AC_2O

(or)

b)Write theconformationof glucoseand fructose.

12. a)Elucidate thestructureof

chloromycetin.(or)

b) Discuss the biologicalimportance ofpyridoxine.

13. a)Write themechanism of pinacol-pinocolonerearrangement.

(or)

b)Explain Beckmannrearrangement.

14. a)Write theoxidative properties of Osmium tetroxide

(or)

b) Mention the applications of anhydrous aluminium chlorideand phosphorous pentoxide.

15. a)Howwillyou usemicrowaveas agreenchemical tool in the laboratory.(or)
    b)What is the need for greenchemistry.

Section C (3 x 10 =
30)Answerany three
questions

16.Discuss the constitution of maltose.

17. a) Write thesources and biological importanceof Riboflavin
    b)Write thestructuralelucidation of ascorbicacid.

18. Bringout the relationshipbetweenHofmann,Curtius,Lossenand Schmidt rearrangements.

19. Givethe functions ofthe followingreagents and theiruse in organicchemistry.
    1) PCl_5 2) Zn/Hg-HCl 3) HIO_4 4)H_2/Pd – $BaSO_4$

20. Enumerate thebasicprinciple ofgreenchemistry.

B.Sc.CHEMISTRY- SIXTHSEMESTER

Major CorePaper –

IXPaperCode:17UCH09

InternalassessmentMarks: 25 **ExternalMarks :75**

PHYSICALCHEMISTRY(60 Hours)

UNIT-I Solutions

1.1.Solutionsofgasesinliquids–Henry‘slaw-solutionsofliquidsinliquids-Raoult‘slaw-Binaryliquidmixture-idealsolution-deviationfromidealbehaviour-Thermodynamicsofidealsolutions- curves,(V-P-temperaturecurves)Azeotropic distillation.

1.β. Nernst‘s Distribution law-Thermodynamic derivations- applications. Solvent extraction.

1.3.Thermodynamicderivationofelevationofboilingpointanddepressionoffreezingpoint-van‘tHofffactor-Abnormalmolecularmass-Degreeof dissociation andassociation.

UNIT– II PhaseRule

Definitionofterms-Derivationofphaserule-Onecomponentsystems-H2Osystem,Sulphursystem–explanationusingClausius-Clapeyronequation-supercoolingandsublimation.Twocomponentsystems-solidliquidequilibria-reducedphaserule–simpleeutecticsystems-Ag-Pbonly-Compoundformationwithcongruentmeltingpoint-Mg-Znsystemonly.KI-H2Osystem-efflorescence-deliquescence. C.S.T-phenol watersystem only. Effect of impurities on CST.

UNIT– III Electrochemistry– II

3.1.Galvaniccells–ReversibleandIrreversiblecells–EMFanditsmeasurement–WestonStandardcell–typesofreversiblesingleelectrodes–standardHydrogenelectrode–calomelelectrode–DerivationofNernstequationbothforemfofcellsandsingleelectrodepotentials–Nernsttheoryforsingleelectrodepotential–standardreductionpotentials–electrochemicalseries–significance.

3.2. Applicationofemfmeasurements–ApplicationofGibbs–Helmholtzequationtogalvaniccells–calculationofthermodyamicquantities–pHusinghydrogen,quinhydroneandglasselectrodes–potentiometric titrations.

UNIT– IV

4.1. Concentrationcellswithandwithouttransference–LJPexpression–applicationsofconcentrationscells–valencyofions–transportnumber–solubilityproduct–activitycoefficient.

4.2. Storagecells–Leadstoragebattery–mechanismofcharginganddischargingfuelcells–hydrogen– oxygencell– polarization– overvoltage- decomposition voltage.

UNIT– V Photochemistry

5.1. Consequencesoflightabsorption-TheJablonskidiagram-nonradiativetransitions-radiativetransitions-Grotthus-Draperlaw-TheStarkEinsteinlawofphotochemicalequivalence-Quantumefficiency(quantumyield).

5.2. Energytransferinphotochemicalreactions-photosensitisaiton-Photosynthesisinplants-Chemiluminescence -fluorescenceandphosphorescence-lasers-uses oflasers.

5.3. Photochemicalreactions-Kinetics of hydrogen-bromine reaction-decomposition ofHI.

MODEL QUESTION PAPER

PeriyarUniversity

SalemSEMESTER-VI

B.Sc.Chemistry — Major CorePaper –

IXPhysicalChemistry -Code:17UCH09

Time: 3 Hrs Max.Marks:75

Section A (10 x2 =

20)Answerallthe

questions

1.Underwhat condition Roult's law is obeyedbysolution of liquid in liquid.

2.Find the molal elevation constant of water,evaporatates at 100ºC with absorption of 40669.2 Joule per mole. (R=8.314

J/K).3.What is congruent meltingpoint?

4.Give an example each for a)efflorescence b)

deliquescence.5.Write theNernst equation forEMFofcells.

6.Write thecellreactionfor thefollowingcells.Zn/$ZnSO_4$(aq) /$AgNO_3$(aq)/ Ag7.Givethe example eachforconcentration cell with and without transference.

8.Defineovervoltage.

9.What is Grotthus-

Draperlaw?10.What is

Chemiluminescence?

Section B(5 x 5=

25)Answerall

questions

11.a)Derivethermodynamicallynernst distribution law.

(or)

b) Discuss Azeotropic distillation.

12. a)Explain phase diagram ofZinc -Magnesium system.

(or)

b)Explain Phenol-Watersystemand theeffectof impurityon CST.

13. a) Explain the function ofWeston standard cell.

(or)

b)Give anaccount ofPotentiometrictitrations.

14. a) Derive LJPexpressionat thejunction of two electrolytic solutions.

(or)

b)Explain constructionand workingofLeadstorage battery.

15. a) Explain Japlonskidiagram forradiative andnonradiativetransitions.

(or)

b)What areLasers? Give its uses.

Section C (3 x 10 = 30)Answerany three questions

16.Deriveanexpressionconnectingmolalityof dilutesolution with its freezingpointdepression.

17. Explain Sulphursystem usingClausius-Clapeyronequation.

18. a)Howwillyou determinethe p^Hofasolution usingquinhydroneelectrode?

b) Discuss workingofCalomelelectrode.

19. What are fuelcells?Explain workingof Hydrogen-OxygenFuelcell.

20. a)Discuss thekinetics of reactionbetweenH_2andBr_2.

b)Write notes on Photosensitisation.

B.Sc.CHEMISTRY- SIXTHSEMESTER

ElectivePaper –

IIIPaperCode:17UCHE

03

InternalassessmentMarks: 25 ExternalMarks :75ANALYTICALCHEMISTRY – II (75 Hours)

UNIT – I CHROMATOGRAPHIC TECHNIQUES

1.1 ColumnChromatography-principle,typesofadsorbents,preparationofthecolumn,elution,recoveryof substances and applications.

1.2 TLC-principle,choiceofadsorbentandsolvent,preparationofchromatoplates,Rf-values,factorsaffectingtheRf-values. Significance of Rf-values.

1.3 PaperChromatography-principle,solventsused,developmentofchromatogram,ascending,descendingandradial paper chromatography.

1.4 Ion-exchangechromatography-principle-typesofresins-requirementsofagoodresin-actionofresins-experimentaltechniques-separationofNa-K,Ca-Mg,Co-Ni,andChloride-bromide.

1.5 GasChromatography(GC)-principle-experimentaltechniques-instrumentationandapplications.

UNIT II - THERMOANALYTICAL METHODS

2.1.Principle-thermogravimetricanalysisanddifferentialthermalanalysis-discussionofvariouscomponentswithblockdiagram-TGA&DTAcurvesof$CuSO_4.5H_20$,$MgC_20_4.H_20$and$Ca(OOCCH_3)_2H_20$-SimultaneousDTA-TGAcurvesof$SrCO_3$inairand$CaC_2O_4.H_2O$inairandin CO_2- factorsaffecting TGA& DTAcurves.

2.2 Thermometrictitrations-principle- apparatus-applications.

UNIT-III -ELECTROANALYTICAL METHOD

3.1 Polarography-principle,concentrationpolarization,droppingmercuryelectrode(DME)-advantagesanddisadvantages-migration,residual,limitinganddiffusioncurrents-Useofsupportingelectrolytes-Ilkovicequation(derivationnotrequired)andsignificance-experimentalassembly-currentvoltagecurve-oxygenwave-influenceoftemperatureandagitationondiffusionlayer.Halfwavepotential($E_{½}$)-Polarographyasananalyticaltoolinquantitativeandqualitativeanalysis.

3.2 AmperometrictitrationsBasicprinciple – titrations-advantages,disadvantages– applications.

UNIT IV NMRSPECTROSCOPY

4.1. NMRSpectroscopy-principleofnuclearmagneticresonance,instrumentation-numberofsignals-chemicalshift-shieldinganddeshielding-spin-spincouplingandcouplingconstants-TMS as NMR standard.

4.2. InterpretationofNMRspectraofsimpleorganiccompoundssuchasAcetone,Anisole,Benzaldehyde,Ethylacetate,Ethylamine,EthylBromide,Toluene andIsopropylphenyl ketone.

UNIT V MASSSPCTROSCOPY

5.1Massspectroscopy-Basicprinciples-instrumentation-molecularionpeak,basepeak,metastable peak, isotopicpeak- theiruses. Nitrogen rule-ringrule-fragmentation.

5.2.Interpretationofmassspectraofsimpleorganiccompoundssuchas Acetone,Anisole,Benzaldehyde, Ethylacetate,Ethylamine,EthylBromide,Toluene andIsopropylphenyl ketone.

MODEL QUESTION PAPER

PeriyarUniversity

SalemSEMESTER-VI

B.Sc.Chemistry — Elective Paper –

IIIAnalyticalChemistry –II - Code:17UCHE03

Time: 3 Hrs Max.Marks:75

Section A (10 x2 = 20)Answerall the questions

1.What is chromatography?

2.What is elution in chromatography?3.What are the Principlesof TGA?

4.What are the factors that influence thermogram?5.Write three types of current in polarography?

6.WriteIlkovic equation?

7.Write theResonatingconditions of NMR?8.Definechemical shift?

9.What is basepeak?10.What is Ringrule

Section B(5 x 5= 25)Answerall questions

11. a) Explain the typesofadsorbentsused inadsorptionchromatography?

(or)

b) DefineRf value? Write thefactorsaffectingit?

12. a) Write applicationofTGA?.

(or)

b) Drawand explain TG curve ofcalcium oxalate monohydrate

13. a) Write theadvantages of DME?

(or)

b)Explain concentrationpolarization?

14. a) Explain the couplingconstant in NMR.

(or)

b)What are advantages of TMSasinternal standard?

15. a) Write anote on metastable peak.

(or)

b)Explain Mclaffertyrearrangement.

Section C (3 x 10 = 30)Answerany three questions

16.Explain the principletechniquesand separation ofTLC17.Explain ThermometricTitrationsand its applications

18. a)Discuss the application ofPolarographyinQualitativeandquantitativeanalysis

b) what areadvantages of Amperometric titrations?

19. a)writeinterpretationof NMRspectraof i) ethylacetate ii)ethylamineb)Explain factorsaffectingchemical shift

20. Write in detail

i) Molecularion peak

ii) Isotopicpeak

iii) Nitrogen rule

B.Sc.CHEMISTRY- SIXTHSEMESTER

SkillBased ElectiveCourse -

VPaperCode:17UCHS05

InternalassessmentMarks: 25 ExternalMarks :75PHARMACEUTICALCHEMISTRY (30 Hours)

UNIT-I

1.1.Definitionoftheterms-
drug,pharmacophore,pharmacodynamics,pharmacopoea,pharmacology,bacteria,virus,fungus,actinomycetes,metabolites,antimetabolites,LD50,ED50.Therapeutic index.

UNIT-II

2.1. Sulphonamides-mechanismandaction of sulpha drugs- preparationanduses ofsulphadiazine,sulphapyridine.

2.2. Antibiotics-Definition-classificationasbroadandnarrowspectrum,Antibiotics-penicillin,ampicillin,structureandmode ofactiononly(nostructuralelucidation,preparation,assay)

UNIT-III

3.1. Analgesics-definitionandactions-narcotic and non narcotic-morphine,Heroin.

3.2. Antipyretic analgesics-salicylic acid derivatives-methylsalicylate, aspirin

UNIT–IV

4.1. Anaesthetics-definition-classification-localandgeneral-
volatile,nitrousoxide,ether,chloroform, usesanddisadvantages– nonvolatile – intravenous -thiopentalsodium, -localanaesthetics–cocaineand benzocaine.

4.2. Antianaemic drugs-iron, vitaminB12and folic acid-mode of action.

UNIT-V

5.1. Diabetics-Hypoglycemic agents-sulphonylurea,biguanides.

5.2. AIDS-causes, prevention andcontrol.

5.3. Indianmedicinalplants anduses-tulasi,kilanelli,mango,semparuthi,adadodaiandthoothuvalai.

MODEL QUESTION PAPER

PeriyarUniversity

SalemSEMESTER-VI

B.Sc.Chemistry — Skill Based ElectiveCourse-

VPharmaceuticalChemistry- Code: 17UCHS05

Time: 3 Hrs Max.Marks:75

Section A (10 x2 =

20)Answerall the

questions

1.Definethe term Pharmacophoreandgive one example.2.What are the differencesbetween virusandfungus? 3.Howis sulphapyridineprepared?4.Write thestructureof ampicillin.5.Defineanalgesicsandgive one example.6.Howis methyl salicylate prepared? 7.What are the disadvantages of ether?8.Mention anytwoadvantageof nitrous oxide. 9.DefineHypoglycemicagents&give one example.10.Write theusesof adadodai.

Section B(5 x 5 =

25)Answerall questions

11. a) Write anote on 1) Fungus 2) Actinomyces(or)

b) Discuss metabolites and antimetabolites

12. a)Defineantibiotics.How is it classified?

(or)

b)Explain the modeof action of pencilin.

13. a)How is aspirinprepared?What are its disadvantages?

(or)

b)Howareanalgesics classified?Give examples.

14. a)Whatare the advantages and disadvantagesof chloroform.

(or)

b) Discuss themodeof action of folicacid.

15. a)Write anote on hypoglycemic drugs.

(or)

b) Discuss themedicinal uses of Kilanelli andthoothuvalai.

Section C (3 x 10 = 30)Answerany three questions

16. a) Write anote on therapeutic index

b) Pharmacodynamicandpharmacopoea

17. a)How is sulphadiazine prepared?What are its uses?

b) Discuss themodeof action ofsulpha drugs.

18. Write anote on

i) Morphine

ii) Heroin

19. Describeintravenousandlocal anaesthetics.

20. Write thecauses,preventionandcontrol methods of AIDS.

B.Sc.CHEMISTRY- SIXTHSEMESTER

SkillBased ElectiveCourse -

VIPaperCode:17UCHS06

InternalassessmentMarks: 25 **ExternalMarks**

:75INDUSTRIALCHEMISTRY(30 Hours)

UNIT I ChemicalExplosives

Preparationandchemistryofleadazide,nitroglycerine,nitrocellulose,TNT,RDX,Dynamite,cordite,picricacid,gunpowder,introduction to rocketpropellants.

UNIT II Leather Industry

Curing,preservationandtanningofhidesandskins,processofdehairinganddyeing.Treatmentoftannery effluents.

UNIT III ElectrochemicalIndustries

Productionofmaterialslikechlorine,causticsoda,sodiumchlorate,Batteries–primaryandsecondarycells,solar cells, fuelcells.

UNIT IV Paints, Varnishes & Cleansing Agents

Paints&Varnishes:Primaryconstituentsofpaints,Dispersionmedium(solvent),binder,Pigments,formulation ofpaints and varnishes.Requirements of a good paint, manufacture.

Cleansing Agents:Preparationof toilet andwashingsoaps, synthetic detergents-alkylarylsulphonateandcleansingaction of soaps.

UNIT V Cement&Glass

Cement:Manufacture–WetProcessandDryprocess,types,analysisofmajorconstituents,settingof cement,reinforcedconcrete. Cement industries inIndia.

Glass:Compositionandmanufactureofglass.Typesofglasses-opticalglass,colouredglassesandleadglass.

Note:Industrial visit for 2-5 days is recommendedunder the guidance of teachers.

Reference:

1.B.N.Chakrabarty,IndustrialChemistry,Oxford&IBH PublishingCo, New Delhi,1981.
2.B.K.Sharma,IndustrialChemistry,Goel PublishingHouse, Meerut.
3.P.P.Singh,T.M.Joesph,R.G.Dhavale,College
IndustrialChemistry,HimalayaPublishingHouse,Bombay, 4th Ed.,1983.

MODEL QUESTION PAPER

PeriyarUniversity

SalemSEMESTER-VI

B.Sc.Chemistry — Skill Based ElectiveCourse- VI

INDUSTRIALCHEMISTRY -Code:17UCHS06

Time: 3 Hrs Max.Marks:75

Section A (10 x2 = 20)Answerall the questions

1.What is TNT?

2.Givethe preparation ofpicricacid?3.What is curingin leatherindustry?

4.Mention thetoxic metalspresent in tanneryeffluents?5.What are primarycells?

6.Write theuses ofcausticsoda and sodium chlorate.7.Mention some solventsusedformakingpaints.

8.Defineapaint.

9.Write thecompositionofLeadglass.10.What are the main constituents of cement?

Section B(5 x 5 = 25)Answerall questions

11. a) Explain rocketpropellants.

(or)

b)Write notes on i) cordite ii) RDX

12. a) Howarehidesandskins of animalspreserved in TanningIndustry?

(or)

b)Explain process ofdehairingin tanneryindustry.

13. a)How is chlorine produced in large scale?(or)

b)Howis caustic soda prepared in largescale?

14. a) Distinguish varnish andpaint.

(or)

b)What are the requirements of a good paint?

15. a)How is cement preparedbywet process?(or)

b)Howis opticalglassprepared?

Section C (3 x 10 = 30)Answerany three questions

16.Givethe preparationof thefollowing explosives.

i) Gunpowder

ii) Dynamite

iii) Nitroglycerine

17. a)Howarethe treated tanneryhides dyed?

b) Discuss theeffluent treatment of tanneryindustry.

18. a) Write note on solarcells.

b)Write noteon fuelcells.

19. a) Write thepreparation ofwashingsoaps.

b)Explain cleansingaction of soap.

20. Explain the settingof cement with equation.

B.Sc.DEGREE

BRANCHIV-CHEMISTRY COREPRACTICAL-I

PaperCode:17UCHP01

InternalAssessmentMarks:40 **Externalmarks**

:60PRACTICAL– I VOLUMETRIC ESTIMATIONS and

INORGANICPREPARATIONS

I. 1. ACIDIMETRY –ALKALIMETRY :

a)Estimation of sodium hydroxide– standard sodium carbonate.b)Estimation of Oxalic acid–Std Oxalic acid.

2. Permanganometry

Estimation of ferrous iron .StandardOxalic acid.

3. Dichrometry

Estimation of ferrous iron usingdiphenylamineinternalindicatorstd $FeS0_4$.

4. Iodometryand iodimetry

Estimation of potassiumdichromate std $K_2Cr_20_7$b)Estimation of Arsenious oxide std As_20_3

5. ComplexometricTitrations

a) Estimation of ZnandMgusingEDTA.

b) Estimation of hardness of water

II. INORGANICPREPARATIONS.

a)Ferrousammoniumsulphate.b)Tetraammminecopper(II)Sulphate.c)Microcosmic salt

d)Bis(acetylacetonato)Nickel(II)orCopper(II)e)Tris(Thiourea)copper(II)sulphatedihydrate

f)Potassium tri (oxalato) ferrate-III

PERIYAR

UNIVERSITYB.Sc.DEGREEEX

AMINATIONS

PRACTICALMODEL QUESTION PAPER

Name ofthe Course: B.Sc.Chemistry Major CorePractical I-17UCHP01

Nameofthe Title :VOLUMETRIC ESTIMATIONSandINORGANICPREPARATION

Time : 3 hours Maximum Marks : 60

VolumetricEstimates :40

InorganicPreparation :10

Record :10

1.EstimateVolumetricallytheamountof----------
presentinthewholeofthegivensolution.Youareprovidedwith----------
andasuitablelinksolution.Getthetitrevaluesattestedbythe examiners.

2.Preparemaximumqualityof
_fromthegivensimplesalts.Submitthedriedsample for evaluation.

B.Sc.DEGREE

BRANCHIV-CHEMISTRY CORE PRACTICAL-II

PaperCode:17UCHP02

InternalAssessmentMarks:40 Externalmarks :60PRACTICAL– II INORGANICQUALITATIVEANALYSIS

1.Inorganicqualitativeanalysis:Analysisofamixturecontainingtwocationsandtwoanionsofwhichone willbeaninterferingion.Semimicromethodsusingtheconventionalschemewithhydrogen sulphide maybe adopted.

2.Anionstobestudied:

Carbonate,sulphide,sulphate,nitrate,fluoride,chloride,bromide,borate,oxalate,phosphate,Cationsto bestudied:lead,bismuth,copper,cadmium,iron,manganese,aluminium,cobalt,nickel, zinc, barium, strontium,calcium,magnesiumandammonium.

PERIYAR

UNIVERSITYB.Sc.DEGREEEX

AMINATIONS

PRACTICALMODEL QUESTION PAPER

Name ofthe Course: B.Sc.Chemistry-

MajorCorePractical II– 17UCHP02

Name ofthe Title :Inorganic QualitativeAnalysis

Time :3 hours **Maximum Marks : 60**

1.AnalysesystematicallythegivenInorganicmixturecontainingtwoacidradicalsandtwobasicradicals, oneacidradicalbeinginterferringone.

Recordyourobservationsandinferencesthenandthere.Exhibitconfirmativetestsforeachradical for evaluation.

B.Sc.DEGREEBRAN

CHIV-CHEMISTRY

CORE CHEMISTRY MAJORPRACTICAL-IIIPAPERCODE:17UCHP03

InternalAssessmentMarks:40 **Externalmarks**

:60PHYSICALCHEMISTRYPRACTICALS

1.Kinetics

a) Determinationofrateconstant–Acidcatalysedhydrolysisofanester(methylacetateorethylacetate)

b) Iodination of acetonezero orderkinetics.

c) Rateconstantforthe reactionbetween persulphate-KI

2. Molecular weight determination–Rastmethod.

3. HeterogenousEquilibrium

a) EffectofimpurityonCSTofphenol–watersystemanddeterminationofconcentrationofsodium chloride.

b) Determinationoftransitiontemperatureofhydratedsalts:sodiumthiosulfate,sodiumacetate,strontium chloride.

4. Phaserule: Simple Eutectic system–Naphthalene-Biphenyl

5.Electrochemistry :

Conductivityi)Determinationofcellconstantii)Equivalentconductanceofstrongelectrolyte.

iii) Conductometrictitration- acid basetitration

6. Potentiometry– Potentiometric titration– acid-base titration.

PERIYAR

UNIVERSITYB.Sc.DEGREEEX

AMINATIONS

PRACTICALMODEL QUESTION PAPER

Name ofthe

Course:B.Sc.ChemistryMajor

CorePractical III-17UCHP03

Name ofthe Title -PhysicalChemistry practicals

Time :3 hours **Maximum Marks : 60**

Chooseanyoneof thequestions givenbelowbylot

1. Determinetherateconstantoftheacidcatalyzedhydrolysisofthegivenesteratroomtemperature
2. Determinethemolecularweightofthegivensolute.Youareprovidedwithasuitablesolvent, whoseKfvalueis----------
3. Determine the transition temperature of thehydrated salt bythermometricmethod.
4. Findouttheconcentrationofthegivensodiumchloridesolution.Youareprovidedwithpurephen ol and 1%solution ofSodium Chloride.
5. Determine therateconstantfor Iodination ofacetone.
6. DeterminethemolardepressionconstantKfofthegivensolvent.Youareprovidedwithasolute ofknown molecularweight.
7. DeterminethestrengthofthegivenHydrochloricacidsolutionconductometricallyusinga standard Sodium Hydroxide solution.
8. Find out thecellconstantof thegivenconductivitycell,using 0.1N and0.01 N potassiumchloridesolutions,whosespecificconductivitiesaregiven.Determinetheequivalentc onductance of thetwo solutions of known concentration.

B.Sc. DEGREE BRANCHIV-CHEMISTRY CORE CHEMISTRY

MAJORPRACTICAL-IVPAPER CODE: -17UCHP04

InternalAssessmentMarks:40 Externalmarks

:60GRAVIMETRIC ESTIMATIONS and ORGANICPRACTICALS

I.GRAVIMETRIC ESTIMATIONS

1.Estimation of Barium as
Bariumsulphate2.Estimation of Barium as
Bariumchromate3.Estimation
ofLeadasLeadchromate
4.Estimation of CalciumasCalcium oxalate monohydrate
5.Estimation of SulphateasBariumsulphate 6)Estimation of Nickel as Nickel DMG

II. A. ORGANIC QUALITATIVE ANALYSIS

Analysisoforganiccompounds.Characterisationoforganiccompoundsbytheirfunctionalgroupsandconfirmationbypreparationofderivative.Thefollowingfunctionalgroupsmaybestudied. Aldehydes,Ketones,carboxylicacids,aromaticprimaryamines,phenol,aromaticester,amide,diamide, anilide, nitro compounds andmonosaccharides.

b.ORGANICPREPARATIONS

1.Preparations involvingthe
following:a)Oxidation of benazldehyde.
b)Hydrolysis of Methylsalicylate orethyl
benzoate.c)Nitration– p-nitroacetanilideandm-
dinitrobenzened)Bromination– p- bromoacetanilide and
tribromophenol
e) Benzoylation—ù-
naphthylbenzoate2.Determination
ofboilingpoint of liquids.

B.Sc.DEGREEEXAMINATIONSPRACTIC

ALMODEL QUESTION PAPER

Name ofthe Course:

B.Sc.ChemistryMajor CorePractical

IV-17UCHP04

Name ofthe Title : Gravimetricestimations and Organic Practicals

Time : 6hours **Maximum Marks : 60**

1.Estimate Gravimetricallythe amountof_____presentin the whole of the given _____solution,byconvertingitinto _____gettheweighingsattestedbytheExaminers.

2.Preparemaximumquantityof_____from_____.Recrystalliseaportionofitand submit the crudeandrecrystallised samplefor evaluation.

3.Analyse thegiven organic compound and reporton the following.

a) Whetheraliphatic oraromatic

b) saturated or unsaturated

c) Special elements present (or)absent

d) Functionalgroup present

Submit a colourreactionor derivative in support of functionalgroup present.

TEXT BOOKSANDREFERENCEBOOKS

1. InorganicChemistry

1.Philips and Williams,InorganicChemistry,Oxford Universitypress, VolIandII.2.Cotton andWilkinson,AdvancedInorganic ChemistryWileyEastern PrivateLtd.3.Lee Von Nastrand J.D. Concise inorganicChemistry.

4.Manku.G.S.,InorganicChemistryTataMcgrawHill.

5.Soni.P.L, Text Book ofInorganicChemistry,Sultan Chand &Sons.6.Puri and Sharma, Text book ofInorganic Chemistry-Vishal publishingco.7.Madan.R.D.,InorganicChemistry, S. Chand & Co.,

8.Dutta,InorganicChemistry,ScienceBook Association.

9.Dara.S.S, A text book of Environmental Chemistryand Pollution control-S.Chand&Co.,10.Dr. C.Murthy, AText book of EnvironmentalSciences,Sultan Chand&Sons

11.Anil KumarDe, TextBook ofEnvironmental Chemistry, New AgeInternationalLtd.,12.Starley E.Manahan,EnvironmentalChemistry Brooks/Colepublishingcompany,Monterey,California.

13.A.G.Sharpe,InorganicChemistry ,PearsonEducationLtd,Indianbranch,482 F.I.E.Patparganj, Delhi-110092.

14.GurdeepChatwaal,Inorganic Chemistry, GoelPublishingHouse,NewDelhi.

II. OrganicChemistry

1.Finar1.L.OrganicChemistry, VolIandII– ELBS.2.Morrison and Boyd,Organic Chemistry, Allyn and BaconInc.3.Solomons,

T.W.G, OrganicChemistry, John Wiley.

4.Organic ChemistryMehta O Mehta PHIEastern EconomyEdition.5.Bhal.B.S,andArunBhal, A Text book of OrganicChemistry.

6.Soni.P.L., Text Book of OrganicChemistry,Sultan Chand and Sons.

7.Tiwari,MalhotraandVishoni, Organicchemistry, VolI andII,Vikas PublishingHouse.8.Raj K. Bansal, A Text Book of OrganicChemistry, WileyEastern.

9.Singh,Mukarjiand Kapoor, OrganicChemistry,MacMillan.10.Jain.M.K, PrinciplesofOrganic Chemistry-Vishal publishingCo.11.Agarwal and Manivasagam-ReactionsandReagents- PragatiPrakashan

12.Kalsi.P.S,Stereo Chemistryconformationandmechanism,
WileyEasternLtd.,13.Nasipuri.D,Stereo ChemistryofOrganic Compounds, WileyEasternLtd.,
14. Organic ChemistrySeventh Edition– Francis A Carey. McGrawHill.

III. PhysicalChemistry

1.Glasstone.S, Text Book of PhysicalChemistry,MacMillian.2.Glasstone
andLewis,Elements of PhysicalChemistry, MacMillan.
3.MaronandLando,Fundamentals of PhysicalChemistry,Collier,Mac Millan.4.Castellan.
G.W, PhysicalChemistry, NaropaPublishingHouse.
5.Walter J.
Moore,PhysicalChemistry,OrientLongamann.6.Rakshit.P.C,
PhysicalChemistry,Science BookAgency.7.Bajapai. D.N,
Advanced PhysicalChemistry,S.Chand&Co.,8.Gurudeep R.
Chatwal, PhysicalChemistry.
9.Jain. S, andS.P.Jauhar, Physical Chemistry– principles andproblems, Tata
McGrawHill.10.Glasstone,Thermodynamics forChemists, Van Nostrandand Co.,
11.Rakshit,
Thermodynamics,ScienceBookAgency.12.Laidler.K.J,Chemical
Kinetics, Harpet and Row New York.
13.Banwell, Fundamentals of MolecularspectroscopyTata McGrawHill.
14.KunduandJain,PhysicalChemistry,S.Chand.Text–
bookofphysicalchemistry,VishalPublishingCo
15.Nagi and Anand,Physical Chemistry–
WileyEstern.16.Kapoor. K.L.,PhysicalChemistry, Mac,
Millan.
17.Kuriacoseand Rajaram, ChemicalThermodynmics, S. Nagin
.18.Latham.J.L,andBurgess.A.E,Chemical Kinectics, Butlerworth.
19.Text book of Physical ChemistryH.K.Moudgil(PHI)(Eastern EconomyEditions)20.Physical
ChemistryG.K.Vemulapalli,.(PHI)(Eastern EconomyEditions)
21.TheoryanditsapplicationPHI(EasternEconomyEditions)ChemistryA.SelahuddinkuajuGG.
22.Aruldhas– MolecularStructureandSpectroscopy IIndeditionPHI EasternEconomyEditions.
23.Quantum ChemistryIRAN.Levine PHI(Eastern EconomyEditions).

24.QuantumChemistry – K.V.Raman,M.S.Selvakumar– VijayNicole ImprintsPvt., Ltd.,Chennai.
25. PhysicalChemistry,B.R.Puri,L.R.Sharma and Pathania,Vishal PublishingCo.

IV. AnalyticalChemistry

1.Bassett.J,Denney.R.C,Jaffery.G.HandMendhan.J, Vogel'sHand BookofQuantitative Inorganic Analysis ELBS–Longman.
2.Furniss.B.S,Hannaform.A.J,Rogers.V,Smith.P.W.G,andTatchell.A.R,Vogel'sTextBooks of PracticalOrganicChemistry.
3.DouglasA,SkoogandDonalM.WestHort,FundamentalsofanalysticalChemistryRinechanand WinstonInc., New York.
4.Janarthanam.P.B,Physico–ChemicalTechniquesofAnalysisVolI&II– AsianPublishingHouseBombay.
5.William Kemp,Organic Spectroscopy– ELBS.
6.Venkateswaran.V,Veerasamy.R,and Kulandaivelu.R, Basic Principles ofPracticalChemistry.7.Sharma.Y.R, ElementaryOrganicSpectroscopy,Principles andapplications-S. Chand &Co.,8.Gopalan.R,Subramaniam.P.S,andRengarajan.K,ElemantsofAnalyticalChemistry– SultanChand&Sons.
9.RamachandraSastry.A,AnalyticalChemistry– K.C.S.Desikan&Co.10.WalterEHarris10.BrgronKratochvil-Anintroduction to ChemicalAnalysis.

V. PharmaceuticalChemistry

1.Singh.Hand Kapoor.V.K, Vallabh Prakashan Organic Pharmaceutical Chemistry– New Delhi.2.BentleyandDrivers,PharmaceuticalChemistry.
3.Allion Chidambaram,PharmaceuticalChemistry.4.Chatwal,OrganicP harmaceuticalChemistry.
5.Jayashree Ghosh, S, Pharmaceutical Chemistry – Chand&Co.,6.Chatwal,InorganicPharmaceuticalChemistry.
7.Wealth ofIndia Rawmaterials (allvolumes)- CSIRPublications

VI. AgriculturalChemistry

1.Brady.N.C, TheNature andproperties of soils– Eruasia PublishingHouse (P)Ltd.,2.Jones.V.S, Fertilizersandsoil fertility– PrenticeHall ofIndia, New Delhi.
3.Fracer.D.E.H, ChemistryofPesticides– D.VanNostrand Co.,

VII. Polymer Chemistry

1.Polymer Chemisry– M.G.Arora-AnmolPublications.NewDelhi.2.Text-Book of PolymerScience-F.N.Billmeyer-NewAgeInternational3.PolymerChemistry-anintroduction-M.P.Stevens-Oxford.
4.TextBook of PolymerScience,F.W.BillmeyerJr.Wiley.
5.PolymerScience, V.R.Gowarker, N.V.ViswanathanandJ.Sreedhar,Wiley–Eastern.6.PolymerScience and Technology– PremamoyGhosh.IIIrdEdition McGrawHill.

VIII. Nano science

1. Nano – the essentials.T.Pradeep.
2. Nanoscience and technology– K.K. Chowdhry
3. NanoTechnology,Nano material and nano devices– G.Mohankumar

ALLIED CHEMISTRY
PaperCode :17UCHA01FIRST/
THIRD SEMESTERPAPER-I

InternalAssessmentMarks :25 **ExternalMarks-75**

INORGANIC, ORGANIC ANDPHYSICAL CHEMISTRY-I (60 HOURS)

UNIT-IChemical Bonding

1.1TypesofBonding-IonicBond,covalentBondandcoordinatebondMolecularOrbitalTheory-bonding,antibondingandnonbondingorbitals.M.O.diagramsofHydrogen,Helium,Nitrogen,discussion ofbond orderandmagnetic properties.

1.2.Hydrides-classificationandcharacteristics-preparation,propertiesandusesofBorazole,$NaBH_4$and$LiAlH_4$.

UNIT-IINuclear Chemistry

2.1. Naturalradioactivity-radioactiveseriesincluding Neptuniumseries-Groupdisplacementlaw.
2.2. NuclearBindingenergy, mass defect-Calculations.
2.3. NuclearFission andNuclearFusion-differences– Stellarenergy.
2.4. Nuclearreactors,Applications of radioistopes-C-14dating,rock dating.

UNIT-III

3.1. CovalentBond-OrbitalOverlap-Hybridisation–GeometryofOrganicmolecules-Methane,EthyleneandAcetylene

3.2. ElectrondisplacementEffects:Inductive,Resonance,Hyperconjugative&stericeffects.Theireffect on theproperties ofcompounds.

3.3. Stereoisomerism:Symmetry-elementsofsymmetry-causeofopticalactivity,Tartaricacid.Racemisation.Resolution.Geometrical isomerism of Maleic andFumaricacids.

UNIT-IV Aromaticcompounds

4.1. Aromaticcompounds-Aromaticity-Huckel‘s rule

4.2. ElectrophilicsubstitutioninBenzene-MechanismofNitration,Halogenation-Alkylation,Acylation.

4.γ.Isolation,preparation,propertiesandstructureofNaphthalene Haworth‘ssynthesis.

4.4. Heterocyclic compounds:- Preparation, properties anduses ofFuran,Thiophene,Pyrrole.

UNIT-V Solutions& Chromatography

5.1. Solutions:Liquidinliquidtype-
Raoult‘slawforidealsolutions.positiveandnegativedeviationfromRaoult‘slaw-
Reasonsandexamples,FractionaldistillationandAzeotropicdistillation.

5.2. Chromatography: principle andapplication ofcolumn,paperand thin layerchromatography.

PeriyarUniversity

SalemB.Sc.Degree

ExaminationFirst/ Third

Semester

AlliedChemistryPaper– I Code :17UCHA01

Time :Three hours. **Maximum : 75 Marks**

Section – A (10 x 2 =

20)Answerall the

questions

1. DefineIonic bond ?
2. How is NaBH4prepared?
3. What is Bindingenergy?
4. What are radioisotopes?
5. What is meantbyHybridisation?
6. What is opticalactivity?
7. State Huckel‘srule.

8 Give Diels–Alderreaction shown byFuran.

9. State Raoult‘slaw.
10. State principle of TLC?

Section B(5 x 5 = 25

Marks)Answerall questions

11. a) Explain the diamagnetism of nitrogen molecule on the basis of M.O.theory.(or)

b)What are hydrides?How aretheyclassified?Giveone example.

12. a)Defineandexplain NuclearfissionandNuclearfusion.

(or)

b)Explain mass defect?.

13. a) Explain Resonanceandstericeffect?

(or)

b)Explain Elements of symmetry?

14. a)What is aromaticity?explain with examples.(or)

b)Explain Haworthsynthesis of Napthalein?

15. a) Describeseparation of liquids byfractionaldistillation.

(or)

b)Explain columnchromatography?

Section C (3 x 10 = 30)Answerany three questions

16. a)What doyou understand bythe terms bondingandnon-bondingmolecularorbitals?Whyare theyso called?Illustratewith one example.

b) Discuss in detail anytwo methods of preparation of Borazoleand indicate threeof itschemical properties.

17. a)What is naturalradioactivity?Explain withexamples?

b) Discuss application of radioisotope?

18. a)Discuss thegeomentricalisomerism in Maleic acidandfumaricacid.

b)Explain resolutionmethods.

19. a) Write mechanismof acylation in benzene

b)Howis pyrroleprepared?Explain five ofitschemical properties

20. Givethe principle, method and applications ofpaperchromatography.

ALLIED CHEMISTRY

PaperCode

:17UCHA02SECOND/FOURTH

SEMESTERPAPER-II

InternalAssessmentMarks :25 **ExternalMarks-**

75INORGANIC, ORGANIC ANDPHYSICAL CHEMISTRY-II (60 HOURS)

UNIT-ICo-ordinationchemistry

1.1.Co-ordinationchemistry-definitionofterms-classificationofligands-Nomenclature-Chelation-Examples.Chelate effect- explanation.

1.β.Werner‘stheory-conductivityandprecipitationstudies.Sidgwick‘stheory-EffectiveAtomicNumberconcept.

1.γ.Pauling‘stheory-postulates-Applicationtooctahedral,squareplanarandtetrahedralcomplexes.Pauling‘stheoryandmagneticpropertiesofcomplexes.MeritsanddemeritsofPauling‘stheory.

1.4.BiologicalroleofHaemoglobinandChlorophyll(Elementaryideaofstructureandfunctions).

UNIT-IICarbohydrates&Aminoacids

2.1 Carbohydrates: Classification,preparationandproperties of Glucoseand Fructose-PropertiesofStarch,CelluloseandderivativesofCellulose.InterconversionofGlucosetoFructoseandviceversa.

2.2. Amino Acids-classification,preparationand properties ofGlycine andAlanine.

UNIT-IIIPharmaceuticalchemistry

3.1.Chemotherapy:Preparation,usesandmodeofactionofsulphadrugs-prontosil,sulphadiazineandsulphafurazole.Usesofpenicillin,chloramphenicolandstreptomycin,Definitionandoneexampleeachfor-analgesics,antipyretics,tranquilizers,sedatives,hypnotics,localanaesthetics andgeneralanaesthetics . Cause andtreatment of diabetes,cancerandAIDS.

UNIT-IV

4.1. **Photochemistry**:Grotthus-DraperlawandStark-Einstien‘slawofphotochemicalequivalence.Quantumyield.Exampleforphotochemicalreactions-Hydrogen-Chlorinereaction(elementaryideaonly)
Photosynthesis.PhosphorescenceandFluorescence.

4.2. PhaseRule:Phaseruleandthedefinitionoftermsinit.Applicationofphaseruletowatersystem.Reducedphaseruleanditsapplicationtoasimpleeuteticsystem(Pb-Ag)Freezingmixtures.

UNIT-V

5.1. **ElectroChemistry**:Kohlrauschlaw -measurementof conductance,pH determination.Conductometic titrations.
Galvanic cells-EMF-standardelectrodepotentials,reference electrodes.5.2.Corrosion:Methods of prevention.

Reference books :

1.Soni.P.L, Text Book ofInorganicChemistry,Sultan Chand &Sons.2.Puri and Sharma, Text book ofInorganic Chemistry-Vishal publishing3.Soni.P.L. Text Book of OrganicChemistry,Sultan Chand and Sons.
4.Jain.M.K, Principles of Organic Chemistry-Vishal publishingCo.5.Kundu and Jain, PhysicalChemistry, S. Chand.
6.Puri,Sharmaand Pathania, Text-book of PhysicalChemistry,Vishal Publishingco.

PERIYAR UNIVERSITY SALEM

B.Sc.Degree

ExaminationSecond/Fourth

SemesterAlliedChemistryP

aper– IICode :17UCHA02

Time :Three hours. **Maximum : 75 Marks**

Section – A (10 x 2 = 20)Answerall the questions

1.Write theformula of HexachloroPlatinum(IV)Chloride and Potassium hexacyanoferrate(III)2.What are ligands?Giveexample.

3.Howare carbohydratesclassified?

4.Howdoyou prepare glycine byGabriel's phthalimidesynthesis.5.What are antibiotics?Giveexamples.

6.What are tranquilizers? Giveone example.7.State Grotthus- Draperlaw.

8.Definethe terms a) phaseb) component.

9.Drawconductometrictitrationcurve between NaOH and CH_3COOH.10.Definestandard electrodepotential.

Section B(5 x 5= 25)Answerall questions

11.a) Explain EANconcept.

(or)

b)Explain the biologicalimportance of Haemoglobin.

12. a)How is fructoseconverted toglucose?

(or)

b) Discuss the preparationandproperties of alanine

13.a) What are differenttypesofanalgesics?Giveexamples.

(or)

b)Write anaccount of causeandtreatment of AIDS.

14. a) Write anote on Quantumyield.

(or)

b) Discuss the salientfeatures of phase diagram ofwater.

15. a) Explain the Galvaniccell.

(or)

b) Definecorrosion.Indicate anythreemethods toprevent it.

Section C (3 x 10 = 30)Answerany three questions

16. a)Whatare the postulates of Pauling'stheory?

b)What are the biologicalfunctions of chlorophyll?

17. Write thephysicaland chemical properties of glucoseandfructose

18. Whataresulphadrugs?Writenamesandformulaeofanytwosulphadrugs.Givethepreparation ofoneof these. Discuss themode of action ofsulpha drugs.

19. i) Explain

a) Fluorescence

b) phosphorescence

ii) DefinePhaserule and applyit to Pb-Agsystem.

20. i) What is pH?Howwouldyou determineit?

ii) StateKohlrausch law and explain its applications.

ALLIED

CHEMISTRYSECOND/FOURT

H SEMESTER

ALLIED

CHEMISTRYPRACTICALPAPERCODE:1

7UCHAP01VOLUMETRIC and

ORGANICANALYSIS

InternalAssessmentMarks :40 **Externalmarks :60**

I. TITRIMETRY

a)Estimation of Sodium hydroxide- Standard sodium carbonate.b)Estimation of Hydrochloric acid-StandardOxalic acid.c)Estimation of Ferrous sulphate – Standard Mohr's Salt.d)Estimation of Oxalic Acid– StandardFerrous Sulphate.

e)Estimation of Ferrous iron usingdiphenylamineasinternalindicator.

II. OrganicAnalysis :

a)Detection ofelements-nitrogen, sulphurandhalogens.b)Detection ofaliphaticor aromatic.

c)Detection of whethersaturated orunsaturedcompounds.

d)Preliminary testsanddetectionoffunctionalgroups,phenols,aromaticamines,aromaticacids,Urea , benzamide&carbohydrate.

PERIYAR

UNIVERSITYB.Sc.DEGREEEXA

MINATIONS

PRACTICALMODEL QUESTION PAPER

B.Sc.AlliedChemistryPractical(

PAPERCODE:17UCHAP01)

Name ofthe Title :VOLUMERIC ANDORGANIC ANALYSIS

Time :3 hours **Maximum Marks : 60**

1.Estimatetheamountof----------

presentinthewholeofthegivensolution.Youareprovidedwith----------Nsolutionof----------andasuitablelinksolution.

2.Analysesystematicallythegivenorganiccompoundandreportonthefollowing:Whetherthecompound is

a. Aliphatic orAromatic

b. Saturated orUnsaturated

c. SpecialElements present in the compound

d. FunctionalGroup present in the

compound.Recordyour observations then

andthere.

DEPARTMENT OFCHEMISTRYNON MAJOR ELECTIVE COURSES(THIRDand FOURTHSEMESTERS)

1. DairyChemistry -17UCHN01
2. Textile Chemistry -17UCHN02
3. Industrial Chemistry -17UCHN03
4. Biological Chemistry -17UCHN04
5. Medicinal Chemistry -17UCHN05
6. Food Chemistry -17UCHN06
7. Agro Chemistry -17UCHN07
8. Polymer&Plastics -17UCHN08

NOTE:

Anytwopapersfromtheaboveeightpapersmaybechoosenforall B.A/B.Sc.studentsexceptB.Sc .ChemistrymajorstudentsforNMECinsemesterIIIandIVandthesamemustbecommunicated to the Universityfor Examinationpurpose.

DEPARTMENT
OFCHEMISTRYNON MAJOR
ELECTIVE COURSE
IPAPERCODE: 17UCHN 01

Internalassessmentmarks :25 **ExternalMarks :75**

DAIRY CHEMISTRY(30 Hours)

UNIT I

Milk:Generalcompositionofmilk.Factorsaffectingthegrosscompositionofmilk,physico-Chemicalchangetakingplaceinmilkduetoprocessingparameters-boiling,pasteurization-sterlilzationandhomogenization.

UNIT II

1. Milk lipids-terminologyand definitions
2. Milk proteins:Physicalproperties ofmilk proteins-Electricalproperties andhydration,solubility.Reaction ofmilk proteins with formaldehydeandninhydrin.
3. Milk carbohydrate-Lactose-Estimation of lactosein milk.
4. Milk vitamins-waterand fat soluble vitamins, effect of heat and light onvitamins.
5. Ash andmineral matters in milk.

UNIT III

1. Creams:Definition-composition-chemistryofcreamingprocess-gravitationalandcentrifugalmethodsofseparationofcream-Factorsinfluencingcreamseparation(Mentionthefactorsonly)-Creamneutralization. Estimation of fat in cream.
2. Butter:Definition-%composition-manufacture-Estimationoffat,acidity,saltandmoisturecontent-Desibutter.

UNIT IV

1. Milkpowder:Definition-needformakingpowder-dryingprocess-spraying,drumdrying,jetdrying andfoam drying-principles involved in each.Manufactureof wholemilk powderbyspraydryingprocess-keepingqualityof milk powder.

2. Icecream:Definition-percentagecomposition-types-ingredientsneeded-manufactureof ice-creamstabilizers-emulsifiers andtheirrole.

UNIT V

DairyDetergents:Definition-characteristics-classification-washingprocedure(modernmethod)sterilization-chloramin-Tandhypochlorite solution.

REFERENCEBOOKS

1.Outlines of DiaryTechnology-SukumarDe

2.Principles of DairyChemistry-Robert Jenness &S.Patorn.3.IndianDiaryproducts-K.S. Rangappa andK.T.Achaya.

MODEL QUESTION PAPER

PeriyarUniversity Salem

B.Sc.Chemistry Non–Major ElectiveCourse I

DiaryChemistry- Code :17UCHNO1

Time :Three hours **Maximum : 75 Marks**

Section – A (10 x 2 =

20)Answerall the

questions

1.What arethe composition of milk?

2.Write anytwo factorsaffecting grosscomposition of

milk.3.Definemilk lipids.

4.What are the vitamins present in

milk?5.Definecreams.

6.DefineButter.

7.What is the need formakingmilk as

powder?8.What are compositionofIce Cream?

9.DefineDairydetergents.

10.Write twoexamples fordairydetergents.

Section B(5 x 5 =

25)Answerall questions

11. a)What is meantbypasteurization of

milk?(or)

b)What are physico-chemicalchanges takingplaceon boilingmilk?

12. a)Whatare physicalproperties ofmilk protein?

(or)

b)Write anote on milk carbohydrate.

13. a) Explain composition of creams .

(or)

b)Write methods of separation of creams.

14. a) What are principleinvolved in milk powderpreparation?

(or)

b)Write anote on qualityofmilk powder.

15. a)Whatarecharacteristics of

Dairydetergent?(or)

b)Write anote on classification ofDairydetergent?

Section C (3 x 10 =

30)Answerany three questions

16. a) Write anote on

i) Sterlisation

ii) Homogenization.

17. a) Write reaction ofmilk protein withformaldehyde andninhydrin.

b)Howis milk lactoseestimated?

18. What are the composition of butter?How aretheyestimated?

19. Write in detail about Ice Cream.

20. Write aboutwashingprocedure involvingdairydetergent.

DEPARTMENT
OFCHEMISTRYNON MAJOR
ELECTIVE COURSE
IIPAPERCODE-17UCHN02

Internalassessmentmarks :25 **ExternalMarks**

:75TEXTILE CHEMISTRY(30 Hours)

UNIT -I

Generalclassificationoffibres-
chemicalstructure,production,propertiesandusesofthefollowingnaturalfibres(a)naturalcellulosefibres(cottonandjute)(b)naturalproteinfibre(wool and silk).

UNIT -II

Chemicalstructure,production,propertiesandusesofthefollowingsyntheticfibres.(i)Manmadecellulosicfibres(Rayon,modifiedcellulosefibres)(ii)Polyamidefibres(differenttypesofnylons)(iii) Polyester fibres.

UNIT -III

Impuritiesinrawcottonandgreycloth,woolandsilk-generalprinciplesoftheremoval–
Scouring– bleaching– Desizing– Kierboiling- Chemicking.

UNIT-IV

Dyeing-Dyeingofwoolandsilk–Fastnesspropertiesofdyedmaterials–dyeingofnylon,terylene and other synthetic fibres.

UNIT -V

Finishing-Finishesgiventofabrics-Mechanicalfinishesoncotton,woolandsilk,methodusedin process of mercerizing–Anti-crease andAnti-shrink finishes –Waterproofing.

Reference

1.ChemicalTechnologyof fibrousMaterials– F.sadov,M.HorchaginandA.Matetshy,MirPublishers.
2.The Identification ofTextile Fibres– Bruno
Nuntak.3.Introduction to TextileScience -3rd edition,
MaryoryL.Joseph.4.Textile Chemistry–Vol.IIR.H.Peters,
Elserier,Avesterdam.
5.DyeingandchemicalTechnologyofTextilefibres-5thEdition,E.R.Trotman,CharlesGriffin&CoLtd
6.Chemistryof dyes&Principles of Dyeing -V.A.Shenai,
SevakPublications.7.Scouring andBleachingE.R.Trotman, CharlesGriffin&
CoLtd.
8.Text Book ofApplied Chemistry- K.Kapur.
9.A Students Text Book ofTextile Science- A.J.Hall.

MODEL QUESTION PAPER

PeriyarUniversity Salem

B.Sc.Chemistry Non–Major ElectiveCourse IITextile Chemistry

Code :17UCHN02

Time :Three hours **Maximum : 75 Marks**

Section – A (10 x 2 = 20)Answerall the questions

1.Write anytwo naturalfibres.2.Give examples forprotein fibres.3.What are syntheticfibres?

4.Giveexample for polyester andpolyamide fibre.5.What aregeneral impurities in rawcotton?

6.What is meantbyscouringprocess?7.What are the dyes usedfor dyeingcotton?

8.What are the dyes usedfor dyeingsyntheticfibres?9.Definefinishingof fabrics.

10.What is mechanical finishingon cotton?

Section- B (5 x 5 = 25)Answerall questions

11. a) Explain the chemicalstructureofcottonfibres.

(or)

b)Howis natural fibres produced?

12. a)How is synthetic fibresproduced?

(or)

b)What are the properties ofsynthetic fibres?

13. a)Whatare impuritiesof rawwooland silk?(or)

b)Howarethe impurities removedfromwoolandsilk?

14. a) Write anote on dyeingofwool and silk

(or)

b)Write about theproperties ofdyed synthetic material .

15. a) Write themechanical finishes on wool andsilk.

(or)

b)What is meantbyanticrease andanti shrink finishes?

Section C (3 x 10 = 30)Answerany three questions

16. a) Write anote on Naturalcottonfibres.

b)Explain the Natural protein fibres.

17. a) Write anote on modified cellulosefibres.

b) Discusspolyester fibres.

18. a) Write anote on bleaching.

b)Write anote on Desizing.

19. a) Write anote on Dyeingof nylon.

b)Write anote on DyeingofTerylene.

20. a) Discuss themethods of Mercerizing.

b)Write anote on waterproofing.

DEPARTMENT OFCHEMISTRYNON
MAJOR ELECTIVE COURSE
IIIPAPERCODE-17UCHN03

Internalassessmentmarks:25 **External Marks**

:75INDUSTRIALCHEMISTRY (30 Hours)

UNIT I

Fertilizers: Fertilizerindustriesin India,Manufactureof ammonia,ammoniumsalts,urea,superphosphate, triple superphosphateand nitratesalts.

UNIT II

Sugar: Canesugar manufacture,recovery of sugarfrommolasses,sugarestimation-sugarindustries inIndia.

UNIT III

ChemicalExplosives:Preparationandchemistryofleadazide,nitroglycerine,nitrocellulose,TNT, RDX,Dynamite,cordite,picricacid,gunpowder,introduction to rocketpropellants.

UNIT IV

LeatherIndustry:Curing,preservationandtanningofhidesandskins,processofdehairinganddyeing.Treatment of tanneryeffluents.

UNIT V

WaterIndustry:Pollutionofwaterbyfertilizers,detergents,pesticidesandindustrialwastes,BOD,COD, thermalpollution.Water Treatment– Ionexchange,electrodialysis,reverseosmosis,softeningofhardwater.

MODEL QUESTION PAPER

PeriyarUniversity Salem

B.Sc.Chemistry Non-Major Elective

CourseIIIIndustrialChemistryCode:17UCHN0

3

Time :Three hours. **Maximum: 75marks**

Section – A (10 x 2 = 20)Answerall thequestions

1.What are advantages ofurea?

2.Mention the names ofanytwo fertilizers containingphosphorous.3.Name anytwo sugar industries inIndia.

4.What is cane sugarchemically?5.What is RDX?

6.Givethe preparation ofpicricacid?

7.Which chemical is used in dehairingfromhidesandskins?8.Mention thetoxic metalspresent in tanneryeffluents?

9.DefineCOD.

10.What is reverseosmosis?

Section B(5 x 5 = 25)Answerall questions

11. a) Write notes on triple superphosphate.

(or)

b)Write fertilizersindustries in india.

12. a)How is sugarrecovered from molasses?

(or)

b)Howis sugar estimated?

13. a) Explain rocketpropellants.

(or)

b) Write notes on

i) cordite

ii) gun powder

14. a)Howarehidesandskins of animalspreserved in TanningIndustry?

(or)

b)Explain curingofhides and skins of animals in tanneryindustry.

15. a) Explain thermal pollution of water.

(or)

b) Mentionanytwomethods of softeningof hardwater.

Section C (3 x 10 =

30)Answerany three questions

16. Discuss themain feature of

i) Nitratesalts

ii) Superphosphate

17. Howis sugarmanufacturedfrom sugar cane?

18. Givethe preparationofthe following explosives.

i) TNT

ii) Dynamite

iii) Nitroglycerine

19. a)Howarethetreated tanneryhides dyed?

b)Discuss theeffluent treatment of tanneryindustry.

20. Discusswatertreatment by

a) Ion-exchange

b) Reverseosmosis

c) Electrodialysis

DEPARTMENT OFCHEMISTRYNON

MAJOR ELECTIVE COURSE

IVPAPERCODE-17UCHN04

Internalassessmentmarks :25 **ExternalMarks**

:75BIOLOGICALCHEMISTRY (30 HOURS)

UNIT I Amino acids andNucleicacids

Amino acids- classification,essentialandnonessentialaminoacids and functions.Nucleic acids-DNA,RNA-constituents,structureandfunctions.

UNIT II Carbohydrates and lipids

Carbohydrates-classificationandfunctions.

Lipids-classification,biologicalfunctionsanddifference between fats andoils.

UNIT III Vitamins

Classification,sources,biologicalfunctionanddeficiencydiseasesofVitaminsA,C,K,E1andB6.

UNIT IV Minerals

Sources,biologicalfunctions anddeficiencydiseaseofmacrominerals-Sodium, Potassium,Calcium,PhosphorousandMagnesium.Microminerals:Selenium,copper,Iron,ZincandManganese.

UNIT V Enzymes and Hormones

Enzymes : Classificationandfunctions.

Hormones:ClassificationandbiochemicalfunctionsofAdrenalin,Thyroxine,Oxytocin,InsulinandSex hormones.

Reference:

1.S.JayashreeGhosh, Fundamentalconcepts ofappliedchemistry.S.Chand&company1stEdition 2006.

2.U.SatyanarayanaandU.ChakrapaniBiochemistryElsevierIndiaPvt.Ltd.4th Edition.

3.P.Palanivelu,Laboratorymanualforanalyticalbiochemistryandseparationtechniques,Schoolof Biotechnology, Madurai Kamaraj UniversityPress, Madurai.

4.GurdeepChatwaal,Naturalproducts, Goel PublishingHouse,New Delhi.

ModelQuestionPaperPeri

yar University Salem

B.Sc.,Chemistry Non–Major ElectiveCourse

IVBIOLOGICALCHEMISTRY Code

:17UCHN04

Time :Three hours **Maximum: 75marks**

Section – A(10 x2 =

20)Answerall the

questions

1. What are aminoacids?

2.Name the nitrogeneousbasespresent in

DNA.3.Mention anytwofunctions of lipids.

4. Name anytwo monosaccharides.

5.Mention anytwo diseases caused bythedeficiencyofVitamin K.

6. What are the sourcesofVitaminB6?

7.Giveanytwo diseasescaused bythe deficiencyof

Selenium.8.What are the sources ofCopper?

9.Defineenzymes.10.What

are Hormones?

Section B(5 x 5 =

25)Answerall questions

11. a)Whatare thefunctions of RNA?

(or)

b)Whatare essential and non essentialaminoacids?Give examples.

12. a) Write notes on classification oflipids.

(or)

b)Write notes on difference between oils andfats.

13. a)Describethefunctions, sources anddeficiencydisorder of Vitamin

A(or)

b) Describethe functions,sources anddeficiencydisorder of Vitamin C.

14. a)Whatare the biologicalfunctions of calcium.

(or)

b)Mention thedeficiencydisease causedbyPhosphorous andMagnesium.

15. a) Write notes on classification of

enzymes(or)

b)What are the biochemicalfunctions of oxytocin?

Section C (3 x 10 = 30)Answerany three questions

16. Write note on the structureof DNA.

17. Defineand classifycarbohydrates.

18.Classifyvitaminsandbrieflydiscuss functions,sources anddeficiencydisorders ofVitamin K and E.

19.Discuss the sources,biochemicalfunctionsanddeficiencydiseases ofNa, K andCa.20.Write note on the biochemicalfunctions Adrenaline and Thyroxine.

DEPARTMENT
OFCHEMISTRYNON MAJOR
ELECTIVE COURSE
VPAPERCODE-17UCHN 05

Internalassessmentmarks :25 **External Marks**

:75MEDICINAL CHEMISTRY(30 Hours)

UNIT I- Introduction

Commondiseases–infectivediseases–insect–borne,air–borneandwater-borne–hereditarydiseases–Terminology–drug,pharmacology,antimetabolites,absorptionofdrugs–factorsaffecting absorption–therapeutic index(Basicconceptsonly)

UNITII-Drugs

Varioussourcesofdrugs, pharmacologicallyactiveconstituents in plants,Indianmedicinalplants–tulsi,neem,keezhanelli–theirimportance–Classificationofdrugs–biologicalchemical(Structurenotrequired)Drugreceptorsandbiologicalresponses–factorsaffectingmetabolism of drugs. (Basic concepts only)

UNITIII-Chemotherapy

Drugsbasedonphysiologicalaction,definitionandtwoexampleseachofanesthetics-Generalandlocal–analgesics–narcoticandsynthetic–Antipyreticsandantiinflammatoryagents–antibiotics–Penicillin,Streptomycin,Antivirals,AIDS–symptoms,prevention,treatment–Cancer(Structurenot required)

UNITIV-Common body ailments

Diabetes–Causes,hyperandhypoglycemicdrugs–Bloodpressure–Sistolic&DiastolicHypertensivedrugs–Cardiovasculardrugs–depressantsandstimulants–Lipidrofile–HDL,LDL cholesterol lipid loweringdrugs.(Structurenot required)

UNITV-Health promoting drugs

VitaminsA,B,C,D,EandKmicronutrients–
Na,K,Ca,Cu,ZnandI,MedicinallyimportantinorganiccompoundsofA1,P,As,HgandFe,Examplesand applications,Agentsforkidneyfunction(Aminohippuricacid).Agentsforliverfunction(Sulfobromoph thalein),antioxidants,treatment of ulcer and skin diseases. (Structurenot required)

RECOMMENDED TEXT BOOKS:

1.S.LakshmiPharmaceuticalChemistry,S.Chand&Sons, New Delhi, 2004
2.V.K.Ahluwalia and Madhu Chopra,—MedicinalChemistry, Ane Books, NewDelhi,
20083.P.Parimoo, — A TextBook ofMedicinal Chemistry,CBSpublishers, New Delhi, 2006

RECOMMENDEDREFERENCEBOOKS

1.AshutoshKar,—MedicinalChemistry, WileyEasternLtd., New Delhi, 1993.
2.David William and ThomasLemke,FoyesPrinciples of
MedicinalChemistry,BIPublishers.3.Romas Nogrady, Medicinal Chemistry,OxfordUniv. Press

MODEL QUESTION PAPER

PeriyarUniversity

SalemDEPARTMENT

OFCHEMISTRYNON MAJOR

ELECTIVE COURSE V

MEDICINAL CHEMISTRY PAPER CODE-17UCHN05

Time :Three hours **Maximum: 75marks**

Section– A(10 x2 = 20)Answerall the questions

1.DefinePharmacology.2.What is therapeutic index?

3.Write themedicinaluses of Thulasi.

4.Mention anytwofactorsaffectingmetabolism of drugs5.What is an antipyretics?Give example.

6.What are antivirals?Give example.7.Defineblood pressure.

8.What are Hypoglycemic drugs?Give example.9.What are the uses ofamino hippuric acid?

10.What are the biological functions ofZinc?

Section B(5 x 5 = 25)Answerall questions

11. a) Explain some hereditarydiseases.

(or)

b)Write anote on airborne diseases.

12. a) Write brieflyon the classificstion of drugs.(or)

b)Write anote on drugreceptors andbiologicalresponses.

13. a)Discuss causes of cancer.

(or)

b) Discussanalgesicsdrugs.

14. a)WhatareLDLandHDL?Discusstheir functions.

(or)

b) Describehyper tensive drugs.

15. a) Defineantioxidants. How

aretheyuseful?(or)

b)Write themedicinallyimportant compounds ofIron.

Section C (3 x 10 = 30)Answerany three questions

16.Write adetailed account on adsorption ofdrugs.

17.Write adetailed account on sources of drugsand metabolism of drugs.18.Write notes on symptoms,preventionandtreatment of Cancer.

19.Write anaccount onCardiovasculardrugs.

20.What are the deficiencydiseases ofVitamins A,C and K.

DEPARTMENT OFCHEMISTRYNON
MAJOR ELECTIVE COURSE
VIPAPERCODE-17UCHN06

Internalassessmentmarks :25 **ExternalMarks :75FOODCHEMISTRY (30 Hours)**

UNIT-IFoodSources

Sourcesoffoods,types,advantagesanddisadvantages,constituentsoffoods,carbohydrate,protein,fats and, oils, colours, flavours, natural toxicants.

UNIT-IIFoodPoisoning& Adulteration

Foodpoisoning,Sources,causesandremedy.
Adulteration-intentional, unintentional– commomadulterants in food.Causesandremediesforacidity,gastritis,indigestionandconstipation.

UNIT-IIIFoodPreservationandProcessing

Foodspoilage,coursesoffoodspoilage,typesofFoodspoilage,foodpreservation,preservationandprocessingbyheating- sterilisation, pasteurization.

UNIT-IVVitamins

Sources , requirement deficiencydiseases of A, C,K, E1andB6

UNIT-VMinerals

Mineralelementsin food-Principalmineralelements-source.Function-Deficiency anddailyrequirements-Na, K, Mg,Fe, S and P

REFERENCEBOOKS:

1.SeemaYadav : ―FoodChemistry,Anmol publishing(P)Ltd,NewDelhi
β.CarH.Synder:―TheExtraordinaryChemistryfororordinarythings,JohnWiley&sonsinc.,New York,1992.
3.Sivasankar – FoodProcessing andPreservationPHI.(Eastern EconomyEditions)4.Srilakshmi: Foodscience

MODEL QUESTION PAPER

PeriyarUniversity Salem

B.Sc.Chemistry Non–Major

ElectiveCourseVIFOODCHEMISTRYCode

:17UCHN06

Time :Three hours. **Maximum:75Marks**

Section – A (10 x 2 =

20)Answerall questions

1.What are proteins?

2.Mention anytwo sources of food.

3.Name some metalswhich causefood

poisoning.4.What are the remediesof

constipation?

5.Whydowepreserve

food?6.What is canning?

7.What are the deficiencydiseasecausedbyVitamin

E_1?8.Mention the sources ofVitamin A.

9.Name thedeficiencydiseases

causedbySodium.10.Write anytwo functions of Sulphur.

Section B(5 x 5 =

25)Answerall questions

11. a) Write anaccountofcoloursused in food.

(or)

b)Write anaccount of natural toxicant.

12. a)Mention the causes andremedyforindigestion.

(or)

b)How is food contaminated bymicroorganism?

13. a)Discusspreservatives used forfood preservation.

(or)

b)Howdoyou preserve foodbyfreezingmethods?

14. a)Mention the source and deficiencydiseaseofVitamin K.

(or)

b)Write anaccount on VitaminB6.

15. a) Write anaccountofbiologicalfunctions ofIron.

(or)

b)What is the source,functionand deficiencyeffect of potassium?

Section C– (3 x 10 = 30)Answerany three questions

16.Write note on biologicalfunctions of proteins and carbohydrates17.Write anaccount onfood poisoning.

18.Write abriefaccountof foodpreservation .

19.Write thesources anddeficiencydiseases ofVitamin C.

20.Write brieflyon biologicalfunctions of Phosphorous anddiseasescausedbyits deficiency..

DEPARTMENT OFCHEMISTRYNON

MAJOR ELECTIVE COURSE VII

PAPERCODE-17UCHN07

Internalassessmentmarks :25 **External Marks :75**

AGROCHEMISTRY (30 Hours)

UNIT – I

Fertilizers:EffectofNitrogen,potassiumandphosphorousonplantgrowth–commercialmethodofpreparationofurea,triplesuperphosphate.Complexfertilizersandmixedfertilizers–theirmanufactureandcomposition.Secondarynutrients–micronutrients–theirfunctioninplants.

UNIT– II

Manures:Bulkyorganicmanures–Farmyardmanure–handling andstorage.Oilcakes.Bloodmeal–fish manures.

UNIT– III

PesticidesandInsectides:Pesticides–classificationofInsecticides,fungicides,herbicidesasorganicandinorganic–generalmethodsofapplicationandtoxicity.Safetymeasureswhenusingpesticides.Insecticides:Plantproducts–Nicotine,pyrethrin–Inorganicpesticides–borates.Organicpesticides– D.D.T. andBHC.

UNIT– IV

FungicidesandHerbicides:Fungicide:Sulphurcompounds,Coppercompounds,Bordeauxmixture.
Herbicides: Acaricides– Rodenticides.Attractants– Repellants.Preservation of seeds.

UNIT– V

Soils-Classificationandpropertiesofsoils–soilwater,soiltemperature,soilminerals,soilacidityand soil testing.

MODEL QUESTION PAPER

PeriyarUniversity Salem

B.Sc.Chemistry -NonMajor

ElectiveCourseVIIAGROCHEMISTRY

Code:17UCHNO7

Time :Three hours **Maximum : 75 Marks**

Section – A (10 x 2 = 20)Answerall the questions

1.Definefertilizer.Give one example.2.What are complexfertilizers.

3.What are manures?

4.What is the use of oil cakes?

5.Howare borates used as an insecticide?6.Definetoxicity.

7.What are attractants?8.Name two rodenticides.

9.Giveanytwo properties of soil.

10.What are the mineralspresent in the soil?

Section B(5 x 5 = 25)Answerall questions

11. a) Discuss theroleofphosphorus in plantgrowth.

(or)

b)Howis urea prepared?

12. a)Whatare differencesbetweenfertilizersandmanures.

(or)

b)Write anote on farmyardmanure.

13. a)Whatare the safetymeasures whileusingpesticides?

(or)

b)Howis DDT prepared?Howis it useful?

14. a)Discussabout sulphur compounds used as afungicide.

(or)

b)How is Bordeauxmixtureprepared?Whatareits uses?

15. a) Write anote on soil water.

(or)

b)Howis soil aciditytested?

Section C (3 x 10 = 30)Answerany three questions

16. Discuss the role ofmicronutrients in plant growth.
17. Write notes on handlingandstorage ofmanures.
18. Discuss the classification of pesticides.
19. a)Discuss themethods to preserveseeds.

    b)What are repellants?What are its uses?
20. Discussclassificationandproperties of soils.

DEPARTMENT OFCHEMISTRYNON
MAJOR ELECTIVE COURSE VIII
PAPERCODE-17UCHN 08

Internalassessmentmarks :25 **ExternalMarks :75**

POLYMER&PLASTICS (30 Hours)

UNIT-I

1.1. Basicconcepts:Monomer,polymerization,degreeofpolymerization,repeatunits.Classificationo fPolymers-additionandcondensationpolymers,naturalandsynthetic,basedonstructure,inorganic and organic, thermoplasticandthermosettingresin.

1.2. Generalmethodsofpreparationofpolymers.Polymerizationthroughfunctionalgroups,multiple bonds and ring openingandCoordinationpolymerization.

UNIT-II

2.1. Structureofpolymers-
linear,branchedandcrosslinked.Homo&hetrocopolymers.Blockcopolymers&graftcopolymers.
Stereochemistryofpolymers-Isotactic ,Syndiotactic andAtactic

2.2. Propertiesofpolymers:Thecrystallinemeltingpoint.Theglassystateandglasstransitiontemperatu re

UNIT-III

3.1.Molecularweight ofpolymers
Numberaveragemolecularweightandweightaveragemolecularweight.Determinationofmolecularwe ightbyViscosityandOsmometrymethods.3.2.Polymerprocessing-calendaring,Die casting, blow moulding,and Wet spinning.

UNIT-IV

4.1. Polyolefins-polythene, PTFE , Freons ,PVC,polypropylene andpolystyrene.

4.2. Naturalandsyntheticrubbers.-Constitutionofnaturalrubber.Butyl,Buna-
N,Neoprene,Thiocol,Polyurethane and silicone rubbers.

UNIT-V

5.1.PlasticsandResinsDefinitions.Thermoplasticandthermosettingresins.Constituentsofplastic-fillers,dyes,pigments,plasticizers,Lubricantsandcatalysts.Usesofthermoplasticresinsandthermo setting resins.

REFERENCES:

1.V.R.Gowrikar,N.V.Viswanathan:PolymerScience-WileyEasternLimited,NewDelhi.1986

2.R.B.Seymour,Introduction to PolymerChemistry,MC CrawHill, New York 1971.

3.S.S.Dara,ATextBookinEngineeringChemistry,S.Chand&CompanyLtd,NewDelhi.Third Edition ,1992.

MODEL QUESTION PAPER

Periyar University

SalemSEMESTER-IV

B.Sc.Chemistry

NON MAJOR ELECTIVE COURSE– VIII

Polymer and Plastics Code 17UCHN08

Time: 3 Hrs **Max.Marks:75**

Section – A (10 x 2 =

20)Answerall questions

1.Definepolymerization.

2.Write anytwo differences between addition andcondensationpolymerisation.3.What are homo and heteropolymers?

4.Define glassytransition temperature.5.Defineweight averagemolecularweight.6.What is wetspinning?

7.Howare freonsprepared?8.What are uses ofthiocol?

9.Definelubricants. What are its functions ?10.What are pigments?Mention its uses.

Section B(5 X 5 =

25)Answerall questions

11. a) Write anote on ringopeningpolymerization.

(or)

b)Explain co- ordination polymerization.

12. a) Classifythe polymers on the basis of theirstereochemistry.

(or)

b)Explain how the crystallinityaffects theproperties ofapolymer.

13. a)Discuss blow mouldingprocess.

(or)

b)Howis molecularweight ofa polymer determined byosmometrymethod?

14. a) Write thepreparation, properties (anytwo)anduses of polypropylene.(or)

b)Write note on siliconerubbers.

15. a)Differentiate thermosettingand thermoplastic resins.

(or)

b)Write ashort noteon plastisicizers.

Section– C (10 x 3 = 30)Answerany three questions

16.Write anoteon classification of polymers.17.Explain the structureof polymers.

18. a)How is Molecularweight ofa polymer is determinedbyviscositymethod?

b) DescribeDiecastingprocess.

19. a) Write thepreparation, propertiesand uses ofpolyethylene.

b) Write note on Buna-Nrubber.20.Write note on the following

i) Fillers

ii) catalysts.

PERIYARUNIVRSITY

B.SC.,CHEMISTRY(CBCS)–PAPERCODES

MAJOR:(Core,ElectiveandSBEC)

SEMESTER	PAPER	CODE
I	CoreChemistry-MajorPaperIGeneralChemistry	17UCHO1
II	CoreChemistry-MajorPaperIIGeneralChemistry	17UCHO2
II	SBEC-IFood and Nutrition	17UCHSO1
III	CoreChemistry-MajorPaperIII GeneralChemistry	17UCHO3
IV	SBEC-IIPolymerChemistry	17UCHSO2
IV	CoreChemistry-MajorPaperIVGeneralChemistry	17UCHO4
V	CoreChemistry-MajorPaperVInorganicChemistry	17UCHO5
V	CoreChemistry-MajorPaperVIOrganicChemistry	17UCHO6
V	CoreChemistry –MajorPaperVIIPhysicalChemistry	17UCH07
V	ElectivePaper–I-AnalyticalChemistry-I	17UCHE01
V	SBEC-IIIAgriculturalChemistry	17UCHSO3
V	SBEC-IVDye Stuffs &Treatmentofeffluents	17UCHSO4
VI	CoreChemistry –MajorVIIIInorganicChemistry	17UCH08
VI	ElectivePaper–II-OrganicChemistry	17UCHE02
VI	CoreChemistry- MajorPaperIXPhysicalChemistry	17UCH09
VI	ElectivePaper–III- AnalyticalChemistry-II	17UCHEO3
VI	SBEC-VPharmaceuticalchemistry	17UCHSO5
VI	SBEC-VIIndustrialChemistry	17UCHSO6
	MAJORPRACTICALS	
II	CorePractical-I-VolumetricestimationsandInorganicPreparation	17UCHP01
IV	CorePractical-II-InorganicqualitativeAnalysis	17UCHP02
VI	CorePractical-III-PhysicalChemistrypracticals	17UCHP03
VI	CorePractical-IV-Gravimetricestimations& OrganicPracticals	17UCHP04

ALLIEDPAPERS

	ALLIED(Theory&Practical)	
I/III	AlliedChemistryPaperI(Inorganic,Organic,Phy-I)	17UCHAO1
II/IV	AlliedChemistryPaperII(Inorganic,Organic,Phy-II)	17UCHAO2
II/IV	AlliedChemistry **Practical-**Volumetric& OrganicAnalysis	17UCHAP0I

DEPARTMENT OFCHEMISTRY

NON-MAJORELECTIVE COURSES

SEMESTER	PAPER	CODE
III/IV	DairyChemistry	17UCHNO1
III/IV	TextileChemistry	17UCHNO2
III/IV	IndustrialChemistry	17UCHNO3
III/IV	BiologicalChemistry	17UCHNO4
III/IV	MedicinalChemistry	17UCHNO5
III/IV	Food Chemistry	17UCHNO6
III/IV	Agrochemistry	17UCHNO7
III/IV	Polymer&Plastics	17UCHNO8

CONTENTS

NON-MAJORELECTIVE COURSES

PERIYAR UNIVERSITYPERIYAR PALKALAINAGARSALEM–636011

COMMONPAPERFORALLUNDERGRADUATEPROGRAMME

CHOICEBASEDCREDITSYSTEMSYLLABUSFORENVIRONMENTALSTUDIES

FORTHESTUDENTSADMITTEDFROMTHEACADEMICYEAR2017–2018ONWARDS

ENVIRONMENTALSTUDIES

UNIT – I:

Environment–Definition–Scope–Structureandfunctionofecosystems–Producers,consumersanddecomposers–Energyflowintheecosystems–Ecologicalsuccession–Foodchain,foodwebsandecologicalpyramids–Conceptof sustainabledevelopment.

UNIT – II

Naturalresources:Renewable–Air,water,soil,landandwildliferesources.Non-renewable–Mineralcoal,Oilandgas.Environmentalproblemsrelatedtotheextractionanduseof naturalresources.

UNIT – III

Biodiversity–Definition–Values–Consumptionuse,productivesocial,ethical,aestheticandoptionvaluesthreatstobiodiversity–Hotspotsofbiodiversity–ConservationofBio-diversity:In-situ,Ex-situ,Bio-wealth–Nationalandgloballevel.

UNIT – IV

EnvironmentalPollutionDefinition–Causes,effectsandmitigationmeasures–Airpollution,Waterpollution,Soilpollution,Noisepollution,Thermalpollution–NuclearHazards–Solidwastesacidrain–ClimatechangeandglobalwarmingenvironmentallawsandregulationsinIndia-Earthsummit.

UNIT – V

Populationandenvironment–Populationexplosion–Environmentandhumanhealth–HIV/AIDS–Womenandchildwelfare–Resettlementandrehabilitationofpeople,roleofinformationtechnologyinenvironmentalhealth–Environmentalawareness.