SOURASHTRA COLLEGE, MADURAI- 625004

(An Autonomous Institution Re-accredited with 'B' grade by NAAC)

**B.Sc. CHEMISTRY - SYLLABUS** 

(Under CBCS w.e.f. 2017 – 2018 onwards)

Degree	:	B.Sc.	Branch	:	BIOCHEMISTRY	PART III			
Subject Code	:	17UCYA11	Title of the Paper	:	CHEMISTRY FOR BIOCHEM ISTS - I	ALLIED			
Semester	:	Ι	No. of Hours / Week	:	4 HOURS	No. of Credits: 4			
OBJECTIVE	S: 7	To impart the kr	nowledge of						
<ul><li>✤ Basic con</li></ul>	icept	s in organic che	emistry and stereoc	hem	istry.				
<ul> <li>Concept of</li> </ul>	of ac	ids & bases, bio	ological importance	e of c	osmosis & basic concepts in t	hermodynamics.			
UNIT – I	:	<u>FUNDAMEN</u>	TAL CONCEPT S	S OF	ORGANIC CHEMISTRY	(12 Hours)			
		Vital force t	heory – Tetraval	ency	of carbon – Catenation	- Classification and			
			-	-	inds – Functional groups an				
					ion – Organic reactions an				
					ement & polymerization				
			0 1	ounds	s (aliphatic only) – Trivial na				
UNIT – II	:	STEREOISO				(12 Hours)			
		/			e – Conditions – Enantiome				
		-	-		isomerism of lactic acid	and tartaric acid –			
			– Resolution of rad						
				nditio	ns for existence – Cis-trans	isomerism of maleic			
		acid and fuma							
UNIT – III	:		F ACIDS & BASE			(12 Hours)			
			•		is Concept – Relative strengt				
		-	1	-	)H – pH meter – Buffer sol	• 1			
			Henderson equation – Biological applications of buffer solutions – Basic concept of Electrolytes and their ionization – Significance of Electrolytes in human body.						
				- 518	gnificance of Electrolytes in I				
UNIT – IV	:	SOLUTIONS		C.	n	(12 Hours)			
			• 1		ncentration – Solvent – Solu	-			
		-	-	-	s of expressing concentration				
			•		ty (Problems involving directories colutions, and its bic	•			
					otonic solutions and its bio – Reverse Osmosis and its ap	• •			
UNIT – V	:	THERMODY	<i>*</i> <b>.</b>		- Reverse Osmosis and its ap	(12 Hours)			
ONII = V	•			herm	odynamics – Open, Closed	<b>``</b>			
					xtensive and Intensive prope				
					and Mathematical form				
					st Law of Thermodynamics -				
		•			eous process – Entropy – Pl				
			b's free energy and		1 10	lystear significance of			
References:		<u>r</u> j Sit	<u> </u>						
	ok o	f Organic Chen	nistry by B.S.Bahl	& A1	run Bahl., S.Chand & Co. Lto	d., 1996.			
					.M.Chawla, Sultan Chand &				
2012		0	5 5 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6		,				

2012.

3) Essentials of Physical Chemistry by B.S.Bahl, Arun Bahl & G.T.Tuli, S.Chand & Co. Ltd., 2012.

4) Principles of Physical Chemistry by Puri, Sharma & Pathania, Vishal Publishing Co., 2011.

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(Under CBCS w.e.f. 2017 - 2018 onwards)

Degree	:	B.Sc.	Branch	:	BIOCHEMISTRY	PART III	
Subject Code	:	17UCYA21	Title of the Paper	:	CHEMISTRY FOR BIOCHEM ISTS - II	ALLIED	
Semester	:	II	No. of Hours / Week	:	4 HOURS	No. of Credits: 4	
OBJECTIV ES	:	alkaloids &	0		c uses of drugs and biols of colloids.	logical importance of	
UNIT – I	:		AND TERPENO		Enteration Enertime	(12 Hours)	
		<ul> <li>a) <u>Alkaloids:</u> Definition – Occurrence – Extraction – Functions – General properties – Classification – Structure and biological importance of the following alkaloids: Cocaine, Nicotine, Morphine, Piperine and Atropine.</li> <li>b) <u>Terpenoids:</u> Definition – Occurrence – Isolation – Isoprene rule – Classification – General properties – Structure and biological importance of the following Terpenoids: Citral, Geraniol, Menthol and Camphor.</li> </ul>					
UNIT – II	:	DRUGS(12 Hours)a) Antibiotics: Definition – Condition – Classification – Structure and Therapeutic uses of Penicillin, Streptomycin, erythromycin & Ofloxacin.b) Antipyretics & Analgesics: Definition – Structure and uses of Aspirin, Paracetamol, Morphine, Pethidine.c) Antimalarials: Study of Chloroquine, Quinine.					
					an-606 & Neosalvarsan.		
UNIT – III	:	PHARMACE	UTICAL AIDS			(12 Hours)	
		Preservation, Agents, Stabil b) <u>Organic Dia</u> Drugs used for used to test	izing Agents, Oin agnostic Aids: or X-ray Contrast organ function (1	Ilsify men Med Fluor	ving agents, Colouring, Flave t bases and solvents (Explan lia (BaSO <sub>4</sub> ), Sodium diatriz rescein Sodium, Sulfobrom Haemopoietic Function.	ation with example) oate Injection – Drugs	
UNIT – IV	:	and chemical solution – App b) <u>Catalysis:</u> catalysts (Po Heterogeneou	: Definition – Med adsorption – Factor plication of adsorp Definition – Ger sitive, negative, s) – Acid-base compound formati	ors in tion eral auto cata	ism of adsorption – Types of nfluencing adsorption – Ads – Ion-exchange adsorption a characteristics of catalytic o) – Types of catalysis lysis – Theories of catal neory) – Catalytic poisons –	orption of solutes from nd its application. reactions – Types of (Homogeneous and lysis (adsorption and	

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## **B.Sc. CHEMISTRY - SYLLABUS**

(Under CBCS w.e.f. 2017 - 2018 onwards)

UNIT – V :	COLLOIDS(12 Hours)a) Colloidal state of matter – Various types – Classification.(12 Hours)b) Sols – Characteristics of lyophilic and lyophobic sols – Dialysis – Electro osmosis –Electrophoresis – Protective action – Hardy-Schulze law – Gold number.c) Emulsion: Definition – Types – Emulsifier with examples.(12 Hours)d) Gels: Classification and preparation.(12 Hours)e) Application of colloids (Smoke precipitation, Sewage disposal, Artificial rain,
References :	<ul> <li>Classification of municipal water, Cleaning action of soap).</li> <li>1) Natural Products Chemistry by Jagdamba Singh, S.M.Ali &amp; Jaya Singh, Pragati Prakashan, 1<sup>st</sup> Edition, 2010.</li> <li>2) Text Book of Organic Chemistry by P.L.Soni &amp; H.M.Chawla, Sultan Chand &amp; Sons – 29<sup>th</sup> Edition 2012.</li> <li>3) A Text Book of Pharmaceutical Chemistry by Jayashree Ghosh, S.Chand &amp; Co. Ltd., 2012.</li> <li>4) Essentials of Physical Chemistry by B.S.Bahl, Arun Bahl &amp; G.T.Tuli, S.Chand &amp; Co. Ltd., 2012.</li> <li>5) Principles of Physical Chemistry by Puri, Sharma &amp; Pathania, Vishal Publishing Co., 2011.</li> </ul>

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**B.Sc. CHEMISTRY - SYLLABUS** 

(Under CBCS w.e.f. 2017 - 2018 onwards)

Degree	:	B.Sc.	Branch	:	BIOCHEMISTRY	PART III		
Subject Code	:	17UCYAP1	Title of the Paper	:	VOLUMETRIC ANALYSIS	ALLIED		
Semester	:	II	No. of Hours / Week	:	2 HOURS	No. of Credits:2		
Objective:			IC ANALYSIS			(2 Hours / Week)		
		A double titration involving making up of the solution to be estimated or single titration involving making up of the solution to be estimated and the preparation of a primary standard.						
Ι		ACIDIMETR	Y & ALKALIME	TRY				
		1) Titration be	etween a strong ac	id and s	trong base.			
		2) Titration between a strong acid and weak base.						
		3) Titration between a weak acid and strong base.						
ΙΙ		<u>PERMANGA</u>	<u>NIMETRY</u>					
		4) Titration between Potassium Permanganate and Oxalic Acid.						
		5) Titration be	etween Potassium	Perman	ganate and Ferrous Sulpha	ate.		
		6) Titration be	etween Potassium	Perman	ganate and Mohr's Salt.			
III		EDTA TITRA	TIONS (Demons	tration of	only)			
		7) Estimation of $Ca^{2+}$ present in water using EDTA.						
		8) Estimation	of Mg <sup>2+</sup> present in	n water	using EDTA.			
(SUM)	MAT	IVE EXAMINA	ATION WILL BE	HELD	AT THE END OF SECO	ND SEMESTER)		
Summative Examination at the end of semester II Max.marks-100								

Distribution of Marks: Internal - 40 Marks, External - 60 Marks, Duration of Examination: **3hrs External examination** 

Record Notebook	: 10 marks
Procedure writing	: 10 marks
Experiment	: 40 marks
	Total : 60 marks
nt had	

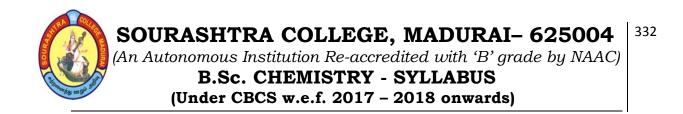
For Analysis, if the student has

- < 2% error 40 marks
- 2-3% error 30 marks
- 3-5% error 20 marks
- > 5% error 10 marks

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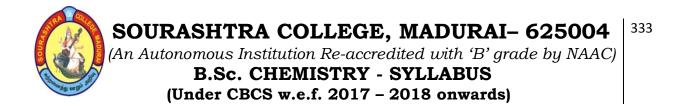
(Under CBCS w.e.f. 2017 - 2018 onwards)

Degree	B.Sc.	Branch	:	MICROBIOLOGY	PART III
Subject Code	17UCYA12	Title of the Paper	:	CHEMISTRY FOR BIOLOGISTS – I	ALLIED
Semester	Ι	No. of Hours / Week	:	4 HOURS	No. of Credits:4
OBJECTIV					
-	e knowledge of				
			topes, b	biological importance of osi	nosis, concept of acids
	es and buffer so				
	· ·	nic chemistry and	-		(1 <b>A T A</b>
UNIT – I:		RUCTURE AND			(12 Hours)
				er – Mass number – Isotoj	
				l's rule – Pauli's exclusion	
				res of modern periodic table	
			ique –	Applications in the field	of Medicine, Biology,
	Agriculture an				
UNIT – II:		F ACIDS AND E			(12 Hours)
				s Concept – Relative streng	
				H – pH meter – Buffer so	
				blications of buffer solutio	-
UNIT – III			n - Sigi	nificance of Electrolytes in	
UNII - III	SOLUTIONS	-	Con	centration – Solvent – Solu	(12 Hours)
		• 1		of expressing concentratio	
				y (Problems involving dire	
				conic solutions and its bio	
				Reverse Osmosis and its a	
UNIT – IV	* *			RGANIC CHEMISTRY	(12 Hours)
				of carbon – Catenation	
				nds – Functional groups a	
				on – Organic reactions and	
				ment & polymerization	• •
			-	(aliphatic only) – Trivial na	· •
UNIT – V:		UTICAL AIDS			(12 Hours)
		armaceutical Aid	s:		· · · · ·
	Preservation,	Antioxidants, En	ulsifyi	ng agents, Colouring, Flavo	ouring and Sweetening
			•	bases and solvents (Explan	
	-	agnostic Aids:		· •	· ·
	-	-	t Media	a (BaSO <sub>4</sub> ), Sodium diatrize	oate Injection – Drugs
	used to test	organ function	(Fluore	scein Sodium, Sulfobrome	ophthalein Sodium) –
	Determination	n of blood volume	e and H	aemopoietic Function.	



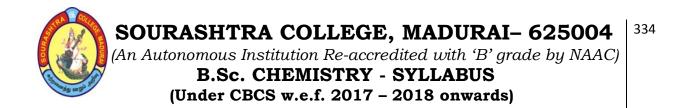
## **REFERENCES:**

- 1) Essentials of Physical Chemistry by B.S.Bahl, Arun Bahl & G.T.Tuli, S.Chand & Co. Ltd., 2012.
- 2) A Text Book of Pharmaceutical Chemistry by Jeyashree Ghosh, S.Chand & Co. Ltd., 2012.
- 3) A Text Book of Organic Chemistry by B.S.Bahl & Arun Bahl., S.Chand & Co. Ltd., 1996.
- 4) Principles of Physical Chemistry by Puri, Sharma & Pathania, Vishal Publishing Co., 2011.



Degree	:	B.Sc.	Branch	:	MICROBIOLOGY	PART III
Subject Code	:	17UCYA22	Title of the Paper	:	CHEMISTRY FOR BIOLOGISTS – II	ALLIED
Semester	:	II	No. of Hrs/ Week	:	4 HOURS	No. of Credits:4
OBJECTIV	ES:					
To impart th	e kno	wledge of				
✤ Biomole	cules	like alkaloids,	terpenoids, carbo	hydrates	, amino acids, proteins and	l nucleic acids.
✤ Basic pr	incipl	es & instrumen	tation of biochen	nical tech	nniques, colorimetry & chu	omatography.
UNIT – I:	BION	IOLECULES-I				(12 Hours)
Carbohydrat	es: D	efinition – Cla	ssification – Mor	no-saccha	arides – Characteristic pro	perties of glucose and
fructose – U	ses –	Disaccharides	- Sucrose and m	altose –	Manufacture and properti-	es – Polysaccharides –
•				oplication	ns – Colour reactions.	
	-	MOLECULES-				(12 Hours)
			sential and non-	-essential	l amino acids – Classifi	cation - Properties -
		pelectric point.				
	efiniti	on – Various cl	lassification – De	etailed st	udy of structure – Biologi	cal functions – Colour
reactions.						
		• 1	& DNA – Difi	ferences	between them – Elemen	tary idea about their
biological fu						
		MOLECULES				(12 Hours)
,					nctions – General proper	
	a bio	logical importa	nce of the follow	ing alkal	oids: Cocaine, Nicotine, N	forphine, Piperine and
Atropine.	J., D	- <b>C</b>				Community and the
· · · · ·				-	rene rule – Classification	1 1
		ORIMETRY		ing reipe	enoids: Citral, Geraniol, M	(12 Hours)
			oth region Dr	inciple c	of colorimetry – Beer La	( /
					our measurement – Color	
			r – Applications.		our measurement color	inicici i notociccure
		OMATOGRAF				(12 Hours)
				detailed	study of column, thin	· · · ·
		- Gel electroph	1	actunea	study of column, and	rujer, puper und gus
Bit	<b>T )</b>	pm				
REFEREN	CES:					
			nistry by B.S.Bał	nl & Aru	n Bahl., S.Chand & Co. Lt	d., 1996.
					hawla, Sultan Chand & So	
					li & Jaya Singh, Pragati P	
4) Elements	of A	nalytical Chem	nistry by R.Gopa		Subramanian & K.Rengar	
		<sup>3<sup>rd</sup></sup> Edition, 20				
				Timalaya	Publishing House 1 <sup>st</sup> Edi	tion 2008

5) Analytical Chemistry by Gurdeep.R.Chatwal, Himalaya Publishing House, 1<sup>st</sup> Edition, 2008.



Degree	:	B.Sc.	Branch	:	MICROBIOLOGY		PART III
Subject Code	:	17UCYAP1	Title of the Paper	:	VOLUMETRIC ANALYSIS		ALLIED
Semester	:	II	No. of Hrs/Week	:	2 HOURS	N	o. of Credits: 2
	ration	involving mak	(2 Hours / Week) ing up of the solution and the preparation of		be estimated or single ti a primary standard.	tration	involving making
Ι		ACIDIMETR	Y & ALKALIMETR	<u>Y</u>			
		1) Titration be	etween a strong acid a	nd	strong base.		
		2) Titration be	etween a strong acid a	nd	weak base.		
		3) Titration be	etween a weak acid an	d s	strong base.		
II		PERMANGA	NIMETRY				
		4) Titration between Potassium Permanganate and Oxalic Acid.					
		5) Titration between Potassium Permanganate and Ferrous Sulphate.					
		6) Titration be	etween Potassium Per	ma	inganate and Mohr's Salt		
III		EDTA TITRATIONS (Demonstration only)					
			of Ca <sup>2+</sup> present in wa		•		
			of Mg <sup>2+</sup> present in wa		-		
Sum	ımati		on at the end of seme			Max.	marks-100
Duration	n of I	of Marks: Examination: Amination	Internal - 40 Marks <b>3hrs</b>		External - 60 Marks		
			Record Notebook Procedure writing Experiment		: 10 marks : 10 marks : 40 marks		
			1		al : 60 marks For Analys < 2% er 2-3% er 3-5% er > 5%	rror rror rror	ne student has - 40 marks - 30 marks - 20 marks 10 marks