## HINDI MAHAVIDYALAYA

(AUTONOMOUS & NAAC RE-ACCREDITED) (Affiliated to Osmania University) Nallakunta, Hyderabad



B.Sc. II YEAR
SEMESTER III &IV
DEPARTMENT OF BIOCHEMISTRY
(2021-2022)

## HINDI MAHAVIDYALAYA, NALLAKUNTA, HYDERABAD (AUTONOMOUS) DEPARTMENT OF BIOCHEMISTRY

## Chairperson

Miss. G.Lahari

Head-Department of Biochemistry

Hindi Mahavidyalaya

Nallakunta, Hyderabad.

## **University Nominee**

Dr. B. Manjula

**Assistant Professor** 

Department of Biochemistry

Osmania University, Hyderbad

## Members of BOS

1.Dr. SaiPadma

Head and Assistant Professor

Department of Biochemistry

Bhavan's Vivekananda college of Science Humanities and Commerce,

Hyderabad

2. Dr. Kavikiran Suripeddi

Head-Department of Biochemistry

Aurora Degree & PG College, Chikkadpally, Hyderabad

Chairperson

**University Nominee** 

Members

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AUTONOMOUS) ts, Commerce & Scie neso, பூரை ortsto-வுள்ளுள்ளுக் Hyperabad Bhavan's Vivekananda College

Samikpuri, Secunderabad-500 094

seriment of BioChemis Hindi-Mahavidyalaya MICHOMOUS & NAAC REACCRED LNACRE Board of Studies in Biochemistry
Osmania University Hyderabad - 500 007.

## COMPOSITION OF THE BOARD OF STUDIES IN AN AUTONOMOUS COLLEGE

- I. Composition: Department of Biochemistry
  - Head of the Department concerned (Chairman)
     G. Lahari, Head-Department of Biochemistry
  - 2. The entire faculty of each specialization 1. G. Lahari
  - 3. One expert to be nominated by the Vice Chancellor from a panel of six recommended by the College Principal
    - 1. Dr. B. Manjula, Chairperson, BOS, Dept. of Biochemistry, Osmania University, Hyderabad.
  - 4. Experts on the subject from outside the college to be nominated by the Academic Council.
    - 1. Dr.Sai Padma, Head and Assistant professor, Department of Biochemistry Bhavan's Vivekananda college, Hyderabad.
    - 2. Dr.Ravi Kiran, Head, Department of Biochemistry, Aurora Degree and PG college, Hyderabad.
    - 3. Mrs K. Sumana Yadagiri, Assistant professor & Government City College ,Nayapul, Hyderabad.
- 5. One postgraduate meritorious alumnus to be nominated by the Principal. The Chairman, Board of Studies, may with the approval of the Principal of the College.
  - 1. MEGHAMSH TEJA MSc BIOCHEMISTRY qualified CSIR JRF
  - 2. L. SAI VAISHNAVI- MSc BIOHEMISTRY.
- (a) Experts from outside the College whenever special courses of studies are to be formulated. -To be nominated.
- (b) Other members of staff of the same faculty. Mrs. G. Ranganayaki

## HINDI MAHAVIDYALAYA, NALLAKUNTA, HYDERABAD (AUTONOMOUS) DEPARTMENT OF BIOCHEMISTRY AGENDA OF THE MEETING

4.1 Welcome address by the cha
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- 4.2 Previous Meeting Details.
- 4.3 Details of choice based credit system.
- 4.4 Discussion and Distribution of Common Core Syllabus for all the Semesters (III and IV)
- 4.5 Marks allotted for internal and end semester exams.
- 4.6 Discussion on Pattern and model paper of Semester Exam and internal exam for all the Semesters (III and IV)
- 4.7 Discussion on Practical exam model paper for all the Semesters (III and IV)
- 4.8 Panel of Examiners
- 4.9 Any other matter
- 4.10 Vote of thanks

## HINDI MAHAVIDYALAYA, NALLAKUNTA, HYDERABAD (AUTONOMOUS) DEPARTMENT OF BIOCHEMISTRY BOARD OF STUDIES

Academic Year - 2021-2022
Minutes of BOS Meeting

BOS meeting of the Department of Biochemistry was held on .....

The following members were present

Dr. B. Manjula

University Nominee

G. Lahari

Chair person

Dr. Sai Padma

Member of BOS

Dr.Ravi Kiran

Member of BOS

1.1 Welcome address by the chair

The chair welcomed the University Nominee, Chairperson BOS, O.U. Department of Biochemistry and Members of B.O.S.

1.2 Previous Meeting details

The CBCS system has been introduced by Osmania University from 2016-17. The theory and practical syllabus of I, II & III years of B.Sc., question paper pattern for theory and practical, internal assessment pattern, practical examination scheme and panel of examiners were discussed and approved by all the BOS Members in previous BOS meeting.

1.3 Details of choice based credit system.

Members were informed that TSCHE has referred that from the academic year 2016-17 autonomous institutions have to follow CBCS i.e. From the Academic Year 2016-17 Osmania University has instructed all the Degree colleges including Autonomous Degree colleges to follow CBCS under which after passing the exam student will get the Grade in the Final Result.

## 1.4 Discussion and Distribution of Common Core Syllabus for semesters III and IV.

- i. Members were informed by the chair that Department of Biochemistry, Hindi Mahavidyalaya is following common core syllabus prescribed by Osmania University with few changes for B.Sc. II YEAR in III and IV semesters.
- ii. The syllabus comprise of 4 units.

- The following are the changes in the syllabus semester III iii.
  - \*1. Unit 3 and 4 are made as 1 and 2 units , and
  - \*Unit 3- Carbohydrate metabolism, Unit 4- lipid metabolism

## Practicals:

- \*4 practicals have been replaced with
- 1. Isolation of cholesterol from egg yolk
- 2. Estimation of total cholesterol
- 3. Isolation of starch from potato
- 4. Glycosylated hemoglobin

The following are the changes in the syllabus in semester IV

\*Unit 3 and 4 are made as 1 and 2 units

\*Unit 3 Bioenergetics ,Unit 4- Biological Oxidation

\*5 practicals have been replaced with

1. Drawing of blood sample from Median cubital veins of upper limb 2. Estimation of blood urea

3. Estimation of hemoglobin in blood

4. Estimation of uric acid

- 5. Determination of blood clotting time
- Syllabus copy for both the semesters is enclosed. iv.
- Syllabus was approved by the Members of BOS. v.

## Marks allotted for Internal and end Semester exams. 1.5

Internal assessment is of 30 marks in which 20 marks are for online test, where students have to answer 20 MCQs in 25 minutes. Each question carries 1 mark. In each Semester two online tests of 20 Marks will be conducted and an average of both the tests will be added in the marks of theory exam.

2. Theory Question paper is of 70 marks.

3. Total allotted marks are 70 for each theory paper (III & IV).

The distribution of marks was approved by the Members of BOS.

## 1.6 Discussion on Pattern and Model Paper of Semester exam and Model Paper of Internal Exam

1. It was informed by the department that in each Semester Two Online tests will be conducted for DSC of 20 marks. The continuous internal assessment will have three sections.

Section – A 20 multiple choice questions each carries 1 mark ( $20 \times 1 = 20M$ ),

Section – B Assignment - 5 Marks

Section - C Seminar - 5 Marks

Average of marks of these two online tests will be taken.

- 2. Semester exam will be conducted as per the Almanac which will be provided by the exam branch. Internal exam duration will be 30 Min and Semester exam duration will be of 21/2 hrs
- 3. Model Question paper for Semester III and Semester IV was discussed. Theory paper for each Semester will have 2 sections.
  - i) Section A contains 8 short Questions. The student has to answer six questions.

Each Question carries 3 Marks (6X3=18 Marks) Each Question carries 3 Marks (6X3=10 Marks)

ii) Section B contains 4 Essay type Questions with internal choice. Each Question carries 13 Marks (4X13=52 Marks)

## Discussion on Practical Exam Model paper.

- It is decided that the practical examinations held for B.Sc second year (Semester IIIg. IV) It is decided that the practical examinations field to the pattern of 25 marks scheme and from the academic year 2021-22 onwards will have the pattern of 25 marks scheme and the credits will remain the same i.e. 1 credit. The duration of the exam will be 3 hours.
- Pattern of Model Practical Question Papers for Paper III and Paper IV are enclosed
- Pattern of Model Practical Question Papers was approved by Members of BOS

### **Panel of Examiners** 1.8

The panc! of examiners was approved by the members.

- List is enclosed
- 1.9 Any other matter.

## 2.0 Vote of Thanks

Meeting concluded with the Vote of Thanks by G. Lahari.

Chairperson

**University Nominee** 

**Members** 

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Osmania University Hyderabad - 500 007.

# HINDI MAHAVIDYALAYA

Affiliated to Osmania University, Nallakunta, Hyderabad-44 CBCS STRUCTURE FOR 2020-2021 BATCH B.Sc- BIOCHEMISTRY, MICROBIOLOGY, CHEMISTRY (AUTONOMOUS)

ACADEMIC YEAR 2020-2021					Semester End Exam	Exam	Continuou				
SECOND YEAR SEMESTER - III	SEMESTER	- X					s Internal Evaluation	Total		Practical 3 hours	
Course Title	Course	(I)	MAH	Credits	Duration in Hours	Marks	Exam Duration	Mar ks			
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SEC- 2	S	SEC-2	2	2	1 1/2	35	20 min	15	20		and the second second
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Second Language-III		07-00	11	444	-	20	30 min	30	100	25	فأناعتهم
Biochemistry –III – Enzymology, Carbohydrate and	i de	J1-780	1-16+14	V 16	- B	1E° 4.	123	مناطق المساول			The state of the s
Lipid Metabolism			+	7 141-5	0110	70	30 min	30	100	25	
Microbiology III		DSC-2C	10114	7 10	6		-	30	100	25	
Chemistry-III		) DSC-350	41+3	- 3°	3 1/2		1.2.				
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Sainikpuri, Secunderabad-500 094 Shavan's Vivekananda College Head, Dept. of Bio-Chendhallal

Principal of Studies in Blochemistry

Osmania University. Hyderebed - 500 007.

BHAIRMAN

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Members

University Nominee

Chairperson

B.Sc. II Year Semester – III
Biochemistry Paper III – ENZYMOLOGY, CARBOHYDRATE AND LIPID

METABOLISM	Dec -
Code BS305	$\mathbf{DSC}$ $-\mathbf{IC}$
Instruction	
Theory Classes	4 Hrs/Week
Practical Classes	2Hrs/Week
Credit for Theory	4
Credit for Practical	1
Duration of Semester Examination	2 ½ hours
Duration of Internal Examination	25 minutes
Semester Examination Marks	70 Marks
Internal Marks	30 Marks

Unit Name	TOPICS	HOURS PER U
1.Introduction to Enzymology  2. Enzyme Kinetics	<ol> <li>Introduction to biocatalysts differences between chemical and biological catalysis.</li> <li>Principles of energy of activation, transition state</li> <li>Nomenclature and classification of enzymes.</li> <li>Definition of holo-enzyme, Apo-enzyme, coenzyme, cofactor, Fundamentals of enzyme assay). Enzyme units.</li> <li>Enzyme specificity. Active site.</li> <li>Interaction between enzyme and substrate- lock and key, induced fit models.</li> <li>Methods of Enzyme purification</li> </ol>	15 hours
and Enzyme action	<ol> <li>1.Rate of a Reaction-Law of Mass action ,Factors affecting the catalysis-substrate concentration, pH, temperature, Time, Enzyme concentration and Product concentration</li> <li>2. Michaelis-Menten equation for single substrate reaction, significance of K" and V</li> <li>3. Enzyme inhibition-irreversible and reversible, types of eversible inhibitions-competitive and non-competitive.</li> <li>4. Outline of mechanism of enzyme action-acid-base catalysis, covalent catalysis, electrostatic catalysis, and metal ion catalysis.</li> <li>5. Regulation of enzyme activity-allosterism and cooperativity ,ATCase and allosteric enzyme</li> <li>6. Zymogen activation-activation of trypsinogen and chymotrypsinogen.</li> <li>7. Isoenzymes (LDH) and Multi enzyme complexes (PDH).</li> </ol>	15 hours
olism	<ul> <li>I.Glycolysis, energy yield .Fate of pyruvate-formation of lactate and ethanol</li> <li>2. Citric acid cycle, regulation, energy yield, amphipathic role.</li> <li>Anaplerotic reactions.</li> </ul>	15 hour

	<ol> <li>Glycogenolysis and glycogenesis.</li> <li>Pentose phosphate pathway.</li> <li>Gluconeogenesis.</li> <li>Photosytothesis- Light and Dark reactions, Calvin cycle and C Pathway, CAM Pathway</li> <li>Metabolic disorders of carbohydrates-Galactosemia and Pentosuria</li> </ol>	
4. Lipid metabolism	<ol> <li>Catabolism of fatty acids(P-oxidation) with even and odd number of carbon ,Ketogenesis</li> <li>Denovo synthesis of fatty acids</li> <li>Elongation of fatty acids in mitochondria and microsomes</li> <li>Biosynthesis and degradation of triacylglycerol</li> <li>Biosynthesis of lecithin.</li> <li>Biosynthesis of cholesterol</li> <li>Metabolic disorders of lipid metabolism-ilieman-pick disease and Fabry's disease</li> </ol>	15 hours

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A Dip do HINDI MAHAVIDYALAYA
(AUTONOMOUS)
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B.Sc. II Year Semester - III Biochemistry Practical paper- III ENZYMOLOGY, CARBOHYDRATE AND LIPID METABOLISM

- Assay of β-amylase from sweet potatoes -1.
- Assay of urease 2.
- Assay of phosphatase 3.
- Isolation of cholesterol from egg yolk 4.
- Estimation of total cholesterol 5.
- Isolation of starch from potato 6.
- 7. Glycosylated hemoglobin

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B.Sc Blochemistry - Il Year Semesters-III -Paper -III Theory Model Question Paper

rime: 2 1/2hrs

SECTION A

Max. Marks: 70

6x3= 18M

4 X 13 = 52 Marks

I Write short notes on any Six of the following:

Warks

A question from Unit I

- 1. A question from Unit I
- 2. A question from Unit II
- 3. A question from Unit II
- 4. A question from Unit III
- 5. A question from Unit III
- 6. A question from Unit IV
- 7. A question from Unit IV

## SECTION B

II Answer all the Questions.

9 (a) A question from Unit I (OR)

(b) A question from Unit I

10 (a) A question from Unit II (OR)

(b) A question from Unit II

11 (a) A question from Unit III. (OR)

(b) A question from Unit III.

12(a)A question from Unit IV (OR)

(b) A question from Unit IV.

**University Nominee Members** 

Principal

PRINCIPAL

HINDI MAHA VIDYALAYA

mmerce & Science Bhavai. CHAIRMAN

derabad

Hindi Mahavidyalaya SOMOUS & NAACBEAFGO Studies in Blochemis's ta, Hyderabac Osmania University,

Hyderabad - 500 007.

3.

2

Chairperson

artment of BioChemia.

## HINDI MAHAVIDYALAYA, NALLAKUNTA, HYDERABAD (AUTONOMOUS) B.Sc Biochemistry - IInd Year Semester – III -Paper – III Practical Model Question Paper

Time: 3 hrs

Principle writing 1.

Minor experiment II.

Major experiment III.

Viva & Record IV.

Max. Marks: 25

(5 Marks)

(5 Marks)

(10Marks)

(5 Marks)

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Osmania University, Hyderabad - 500 007: Members

Bhavan's Vivekananda Coll (AUTONOMOUS)

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Nallakunta, Hyderabad - 44

## HINDI MAHAVIDYALAYA

(AUTONOMOUS)
Affiliated to Osmania University, Nallakunta, Hyderabad-44
CBCS STRUCTURE FOR 2020-2021 BATCH
B.Sc - BIOCHEMISTRY, MICROBIOLOGY, CHEMISTRY
ACADEMIC YEAR 2020-2021

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(Sand SIII)	Chairperson University Nominee				Chemistry-IV	Microbiology-IV		oxidation	Bioenergetics and Biological	Bio-chemistry-IV Amino acid,	Second Language-IV	English-IV		SEC-4		SEC-3	and the second s	Course Title	SECOND YEAR SEMESTER - IV
7	inee			0000	080-30	DSC-2D				DSC-1D	CC-2D	CC-1D	***************************************	SEC -4		SEC-3		Course Type	EMESTER - IV
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	Members		27	4+1=5		4+1=5				4+1=5	4	4		2		2		Credits	
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Principal		675/		100	100					100	100	100		50	7	50			Total
				25	25					25				ant.			-		Practical 3 hours

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Sainikpuri, Secunderabad-500 094 unavan's Vivekananda Collego io, pept of bio-chadinary

PRINCIPAL

HINDI MAHA VIDYALAYA

(AUTONOMOUS)

Nallakunta, Hyderabad - 44

HINDI MAHAVIDYALAYA, NALLAKUNTA, HYDERABAD B.Sc. II Year Semester - IV Biochemistry Paper IV - AMINO ACID, NUCLEIC ACID METABOLISM, Beid BIOENERGETICS AND BIOLOGICAL OXIDATION DSC-ID Code: BS405 4 Hrs/Week INSTRUCTION 2 Hrs/Week Theory Classes Practical Classes Credit for Theory 2 1/2 hours Credit for Practical 25 minutes **Duration of Semester Examination** 70 Marks Duration of Internal Examination Semester Examination Marks 30 Marks Internal Marks HOURS PER **Unit Name** TOPICS UNIT 1.AMINOACID 1. General reactions of amino acid metabolism-transamination, **METABOLISM** decarboxylation and deamination 2. Urea cycle and regulation 3. Catabolism of carbon skeleton of amino acids-glycogenic and ketogenic amino acids. 4. Metabolism of glycine, serine, aspartic acid, methionine, phenylalanine and leucine. 5. Biosynthesis of creatine. 6.Inborn errors of aromatic amino acids 7. Inborn errors of branched chain amino acid metabolism. 1. Biosynthesis of purine and pyrimidine nucleotides, de novo 15 hours and salvage pathways. 2. Regulation of purine and pyrimidine nucleotides 3. Catabolism of purines and py: imidines.

## 2. Nucleic acid Metabolism

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- 4. Biosynthesis of deoxyribonucleotides- ribonucleotide reductase and thymidylate synthase and their significance. 5. Disorders of nucleotide metabolism- Gout, Lesch - Nyhan
- syndrome. 6.Biosynthesis of heme
- 7. Degradation of heme

## 3.Bioenergetics

- 1. Laws of thermodynamics
- 2. Energy transformations in the living system
- 3. Free energy, Enthalpy and Entropy concepts. 4. Exergonic and endergonic reactions.
- 5. High energy compounds, Substrate level phosphorylation 6. Phosphate group transfer potential.

15 HOURS

7. Cytochromes-structure, types and their functions

	1. Biological oxidations: Definition, enzymes involved-	
l.Biological	oxidases, dehydrogenases and oxygenases.	
Oxidations	2 .Redox reactions. Redox couplers. Reduction potential	
	(£,£0,£'.). Standard reduction potential (c'o) of some	
	biochemically important half reactions.	
	3. Ultra structure of mitochondria, Electron transport	
	chain(ETC) and carriers involved.	
	4. Oxidative phosphorylation, theories of oxidative	
	phosphorylation-Mitchell's chemiosmotic theory.F0F,-	the Warrist Stafffal
	ATPase, Inhibitors of ETC and oxidative phosphorylation,	
	uncouplers.	
	5. Formation of reactive oxygen species and their disposal	- Janesia de
	through enzymatic reactions.	The State of the S
	6. Ultra structure and functions of chloroplast	
	7. Cyclic and non-cyclic photo phosphorylation.	

Chairperson

University Nominee

Board of Studies in Biochemistry

Osmania University. Hyderabad - 500 007. **Members** 

HINDI MAHA VIDYALAYA

1. (AUTONOMOUS)
Head, Dept. of Bio-Cherains/Commerce & Science
Bhavan's Vivekananda Najjakunta, Hyderabad - 44
Sainikpuri. Secunderabad-Sub-kunta,

B.Sc. II Year Semester - IV **Biochemistry Practical Paper IV** AMINO ACID, NUCLEIC ACID METABOLISM

## PRACTICALS

- 1. Isolation of casein from milk
- 2. Drawing of blood sample from Median Cubital veins of upper limb
- 3. Estimation of blood urea
- 4. Estimation of hemoglobin in blood
- 5. Estimation of uric acid
- 6. Determination of blood clotting time
- 7. Absorption maxima of colored substances- p-Nitro phenol, Methyl orange, 3SA and DNA

Chairperson

**Jpiversity Nominee** 

HOLIS & NAAC REACC

**CHAIRMAN** 

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"rlerabad - 500 007.

Members

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## HINDI MAHAVIDYALAYA, NALLAKUNTA, HYDERABAD

(AUTONOMOUS) B.Sc Blochemistry - II Year Semesters- IV - Paper - IV Theory Model Question Paper

Time: 2 1/2hrs

SECTION A

Max. Marks: 70

6 X 3 = 18M

4 X 13 = 52 Marks

HINDI MAHAVIDYALAYA (AUTONOMOUS) Arts, Commerce & Science Nallakunta, Hyderabad - 44

Write short notes on any Six of the following:

- 1. A question from Unit I
- 2. A question from Unit I
- 3. A question from Unit II
- 4. A question from Unit II
- 5. A question from Unit III
- 6. A question from Unit III
- 7. A question from Unit IV
- 8. A question from Unit IV

SECTION B

Il Answer all the Questions.

9 (a) A question from Unit I (OR)

(b) A question from Unit I

- 10 (a) A question from Unit II (OR)
  - (b) A question from Unit II
- 11 (a) A question from Unit III. (OR)
  - (b) A question from Unit III.
- 12 (a)A question from Unit IV (OR)

(b) A question from Unit IV.

Chairperson

University Nominee

Members

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Hvderahad - 500 007.

## HINDI MAHAVIDYALAYA, NALLAKUNTA, HYDERABAD (AUTONOMOUS) B.Sc Biochemistry - Il Year Semester - IV - Paper - IV **Practical Model Question Paper**

Time: 3 hrs

Max. Marks: 25

Time: 3 hrs

Principle writing 1.

Minor experiment II.

Major experiment III.

Viva & Record IV.

Max. Marks: 25

(5 Marks)

(5 Marks)

(10Marks)

(5 Marks)

Chairperson

**University Nominee** 

Members

PRINTIPAL HINDI MAHA VIDYALAYA (AUTONOMOUS)

Arts, Commerce & Science Nallakunta, Hyderabad - 44

CHAIRMAN

CHAIRMAN

Board of Studies in Biochemistry

Osmania Univer

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## HINDI MAHAVIDYALAYA, NALLAKUNTA, HYDERABAD B.Sc Biochemistry - IInd Year

Panel of Examiners

	Naminers	
	Name and Davi	
No.	Mrs. D.Rajini Department - S.	and the state of t
	Daniel	Mobile No.
	Bhavan's Vivekananda College of Science, Humanities & Commerce, Sainth	9703536015
	Humanities & Commerce, Sainikpuri,	
4	Source, Sainikouri	
	Secunderabad Secunderabad	
2	Dr.S.Ravi Kiran	
	Department of Biochemistry  Aurora Degree and P. G.	9100000562
	Aurora Degree and Pg College,  Chikkadpally Hydrox	20000302
3	Ms.G.Bindu	
	Denartment ch	9100000504
	Aurora Degree and Pg College,  Chikkadpally Under the College,	7100000504
	Chikkadnally II.	
4	Ms.C. Vanisree	0700700
	Department of Biochemistry St. Pious Y Des	9703599392
	ovalego Natingram II. 1	
5	Sumana Vadacini	
	A ADDIDIANI Drotoss	
	Department of D: - 1 .	9441201640
	Govt. City College, Nayapool, Hyderabad	
	a pool, Hyderabad	
6	Dr.Ch.Vidya	
	Assistant professor	95333926170
	Department of Biochemistry	
	Govt City College News 122	
7	Govt.City College,Nayapool,Hyderabad	
	Smt.R.Shyamala Chandra	8121877262
	Assistant professor	
	Department of Biochemistry	
	Kakatiya Govt. Degree College,	
	Hanmakonda, Warangal	
	Sri A.Chandrasekhar	9963871117
8	Assistant professor	77030/111/
	Department of Biochemistry	
	Govt. Degree College for women	Λ
	Karimnagar,	$1 \sim 10^{-1}$
hairperson	I Iniversity Newince	1

Chairperson

**University Nominee** 

Members

2.

Principal

HINDI MARINE NO REACCES

CHAIRMAN

Head Mar Larin Chemistry PRINCIPAL Bhavan's Vivekananda HINDIMAHA VIDYALAYA navan s vivenderabad-50 (AUTONOMOUS) Arts, Commerce & Science Nallakunta, Hyderabad - 44

Board of Studies in Blochemistry Osmania University,

Hyderabad - 500 007.