

HINDI MAHAVIDYALAYA, NALLABUNTA, HYDRABAD
(AUTONOMOUS)
BOARD OF STUDIES
DEPARTMENT OF MICROBIOLOGY

7

HINDI MAHAVIDYALAYA
(AUTONOMOUS)
DEPARTMENT OF MICROBIOLOGY
2016-2017



**HINDI MAHAVIDYALAYA, NALLAKUNTA, HYDERABAD
(AUTONOMOUS)
BOARD OF STUDIES
DEPARTMENT OF MICROBIOLOGY**

Chairperson

Dr. Vikas Sharma
Head – Department of Microbiology
Hindi Mahavidyalaya
Nallakunta, Hyderabad.

University Nominee

Dr. P. Acharya Nagarjun
Chairperson – BOS
Department of Microbiology
Osmania University, Hyderabad.

Members of BOS

1. Dr. P. Nagapadma
Lecturer, Department of Microbiology
Bharatiya Vidya Bhavans Vivekananda College of Science, Humanities, Commerce
Sainikpuri, Hyderabad.
2. Ms. J. Sridevi
Assistant Professor, Department of Microbiology
Govt. Degree College for Women
Begumpet, Hyderabad



P. Nagapadma
Dept. of Micro Biology BVR



J. SRIDEVI
Asst. Professor
Department of Microbiology
Government Degree College (Women)
BEGUMPET HYDERABAD

HINDI MAHAVIDYALAYA, NALLAKUNTA, HYDERABAD (AUTONOMOUS)

COMPOSITION OF THE BOARD OF STUDIES IN AN AUTONOMOUS COLLEGE

I. Composition: Department of Microbiology

1. Head of the department concerned (Chairperson)

Dr. Vikas Sharma – Department of Microbiology

2. The entire faculty of each specialization.

1. Dr. Vikas Sharma

3 One expert to be nominated by the vice-chancellor from a panel if six recommended by the College Principal.

1. Dr. P. Acharya Nagarjun, Chairman, BOS, Department of Microbiology Osmania University.

4. Two experts in the subject from outside the college to be nominated by the Academic Council.

1. Dr. P. Nagapadma, Lecturer, Department of Microbiology, Bharatiya Vidya Bhavan's Vivekananda College of Science, Humanities, Commerce, Sainikpuri, Hyderabad.

2. Ms. J. Sridevi, Assistant Professor, Department of Microbiology, Govt. Degree College for Women, Begumpet, Hyderabad.

(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.



P. Nagapadma
Dept. of Micro Biology BVR

J. Sridevi
J. SRIDEVI
Asst. Professor
Department of Microbiology
Government Degree College (Women)
BEGUMPET, HYDERABAD.

HINDI MANA VIDYALAYA, HALLI, KURNA, HYDERABAD
AUTONOMOUS

DEPARTMENT OF MICROBIOLOGY
AGENDA OF THE MEETING
20.08.2016, SATURDAY

- 1.1 Welcome address by the chair.
- 1.2 Previous Meeting Details.
- 1.3 Details of ~~credit~~ ^{choice} base ~~choice~~ ^{credit} system.
- 1.4 Discussion and Distribution of Common Core Syllabus.
- 1.5 Discussion on Pattern of Semester Exam
- 1.6 Discussion of Pattern of Model Question Papers
- 1.7 Marks allotted for Internal and end Semester exams.
- 1.8 Panel of Examiners
- 1.9 Any other matter
- 1.10 Vote of Thanks



Rajshilma

Dept. of Micro Biology BVR

J. Sridevi

J. SRIDEVI
Asst. Professor
Department of Microbiology
Government Dental College
Bellampet, Hyderabad

HINDI MAHAVIDYALAYA, NALLAKUNTA, HYDERABAD
(AUTONOMOUS)
DEPARTMENT OF MICROBIOLOGY
BOARD OF STUDIES
Academic Year – 2016-17

Minutes of BOS Meeting

BOS meeting of the Department of Microbiology was held on 20.08.2016, Saturday at 11AM

The following members were present

Dr. P. Acharya Nagarjun	-	University Nominee
Dr. Vikas Sharma	-	Chairperson
Dr. P. Nagapadma	-	Member
Ms. J. Sridevi	-	Member

1.1 Welcome address by the chair

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

1.2 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. 4 Credits are given for theory paper and 1 credit is given for practical in each semester.


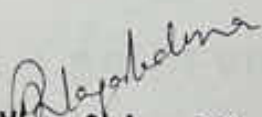
1.3 Discussion and Distribution of Common Core Syllabus.

- i. Members were informed by the chair that Department of Microbiology, Hindi Mahavidyalaya is following common core syllabus prescribed by Osmania University.
- ii. We are following Osmania University same syllabus of each Semester as it is without any changes

Syllabus copy for both the semesters is enclosed.
Syllabus was approved by the Member of BOS.



Dept. of Micro Biology BVR



J. SRIDEVI

Asst. Professor

Department of Microbiology

Government Degree College (Women)
HYDERABAD.

1.4 Marks allotted for Internal and end Semester exams.

1. Internal assessment is of 15 marks. In each Semester two internal assessment of 15 Marks each will be conducted and an average of both the internal assessments will be added in the marks of Theory exam.
2. Assignment is of 5 marks.
3. Theory Question paper is of 80 marks.
4. Total allotted marks are 100.

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

1.5 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 Internal exams will be conducted.
2. Semester exam will be conducted as per the Almanac which will be provided by the exam branch. Internal exam duration will be 30 Mts. and Semester exam duration will be of 3 hrs.
3. Model Question paper for Semester I and Semester II was discussed. Theory paper for each Semester will have 2 sections.
 - i) Section A contains 8 short questions. The student has to answer any 4 of the questions. Each Question carries 5 Marks (4X5=20)
 - ii) Section B contains 4 Essay type Questions with internal choice. Each Question carries 15 Marks (4X15=60)

Pattern of Model Question Papers for Paper I and Paper II are enclosed.
Pattern of Model Question Paper was approved by Member of BOS.

1.6 Discussion on Practical Exam Model paper.

It was decided in BOS meeting that 50 Marks Practical Exam will be held in each Semester and 1 credit will be given for Practical in each Semester.
The Practical model paper was approved by the Member of BOS.

1.7 Panel of Examiners

The panel of examiners was approved by the members.
List is enclosed

1.8 Any other matter.

It is resolved by BOS members including Chairperson BOS Osmania University to establish a full-fledged lab for B.Sc. Microbiology practicals as per Osmania University norms.



J. SRIDEVI

Asst. Professor

Department of Microbiology
Government Degree College (Women)
REGUMPET, HYDRABAD



Dept. of Micro Biology BVC

1.9 Vote of Thanks

Meeting concluded with the Vote of Thanks by Dr. Vikas Sharma

Chairperson

University Nominee

Members

Principal

1. *P. Rajalaxmi*
Dept. of Micro Biology BV

2. *J. Sridevi*
J. SRIDEVI
Asst. Professor
Department of Microbiology
Government Degree College (Women)
BEGUMPET, HYDERABAD.

P. Rajalaxmi

HINDI MAHAVIDYALAYA, NALLAKUNTA, HYDERABAD
(AUTONOMOUS)
CBCS Syllabus
B.Sc – I year

Scheme of instruction & Evaluation

Group (Bio-chem, Micro ,Chem.) I semester

Sub Code	Sub Name	Course Type	Hours / week		Credit		Exam Duration	Marks			
			Th	Pr	Th	Pr		Th/Pr	Sem	Internal 30 min	Total
	Environmental studies	AECC-I	2	-	2	-	2 Hrs	50	-	50	-
	English	CC-1A	5	-	5	-	3 Hrs	80	20	100	-
	Second Language	CC-2A	5	-	5	-	3 Hrs	80	20	100	-
	Bio-Chemistry	DSC-1A	4	2	4	1	3 Hrs	80	20	100	50
	Microbiology	DSC-2A	4	2	4	1	3 Hrs	80	20	100	50
	Chemistry	DSC-3A	4	2	4	1	3 Hrs	80	20	100	50
	Total		24	6	27			450	100	550	150

Group (Biotech, Micro ,Chem.) I semester

Sub Code	Sub Name	Course Type	Hours/ week		Credit		Exam Duration	Marks			
			Th	Pr	Th	Pr		Th/Pr	Sem	Internal 30 min	Total
	Environmental studies	AECC-I	2	-	2	-	2 Hrs	50	-	50	-
	English	CC-1A	5	-	5	-	3 Hrs	80	20	100	-
	Second Language	CC-2A	5	-	5	-	3 Hrs	80	20	100	-
	Biotechnology	DSC-1A	4	2	4	1	3 Hrs	80	20	100	50
	Microbiology	DSC-2A	4	2	4	1	3 Hrs	80	20	100	50
	Chemistry	DSC-3A	4	2	4	1	3 Hrs	80	20	100	50
	Total		24	6	27			450	100	550	150

J. Sri Devi
J. SRIDEVI
 Asst. Professor
 Department of Microbiology
 Government Degree College (Women)

P. G. Reddy
Dept. of Micro Biology BV

HINDI MAHAVIDYALAYA, NALLAKUNTA, HYDERABAD
(AUTONOMOUS)
CBCS Syllabus
B.Sc. 1st Year Microbiology
Semester – 1
Paper I

Code:

Instruction

Theory Classes	4 Hrs/Week
Practical Classes	2 Hrs/Week
Credit for Theory	4
Credit for Practical	1
Duration of Semester Examination	3 Hrs
Duration of Internal Examination	30 Min
Semester Examination Marks	80 Marks
Internal Examination Marks	20 Marks

Title: GENERAL MICROBIOLOGY –I

UNIT-1 (HISTORY OF MICROBIOLOGY)

15h(1 hr/week)

Meaning, definition and history of microbiology, Contribution of Antony Van Leeuwenhoek, Edward Jenner, Louis Pasteur, Robert Koch, Iwanoswky, Beijernik, Winogradsky and Alexander Fleming. Importance and application of Microbiology.

UNIT-2 (MICROSCOPY)

15h(1 hr/week)

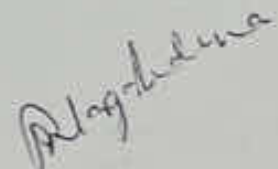
Principles of Microscopy-Bright field, Dark field, Phase-contrast, Fluorescent and Electron microscopy (SEM and TEM). Ocular and stage micrometry. Size determination of microorganisms. Principles and types of stains-simple stain, differential stain, negative stain. Structural stains-spore, capsule, flagella. Hanging drop method.



J. SRIDEVI

Asst. Professor

Department of Microbiology
Government Degree College (Women)
BEGUMPET, HYDERABAD



Dept. of Micro Biology

UNIT-3 (MICROBIOLOGICAL TECHNIQUES)

15h(1 hr/week)

Sterilization and disinfection techniques. Principles and methods of sterilization. Physical methods- Autoclave, Hot air oven, pressure cooker, Laminar air flow, Filter sterilization. Radiation methods- U.V rays, Gamma rays, Ultrasonic methods. Chemical methods- use of Alcohols, Aldehydes, Fumigants, Phenol, Halogens and Hypochlorides, Phenol coefficient.

UNIT-4 (PURE CULTURES TECHNIQUES)

15h(1 hr/week)

Isolation of Pure cultural techniques- Enrichment culturing, Dilution plating, streak plate, spread plate, Micromanipulator. Preservation of Microbial cultures - Sub culturing, overlaying cultures with minerals oils, lyophilization, sand cultures, storage at low temperature.

References:

1. Michael J. Pelczar, Jr. E.C.S.Chan, Noel R. Krieg Microbiology Tata McGraw- Hill Publisher.
2. Prescott, M.J., Harley, J.P. and Klein Microbiology 5th Edition, WCB Mc GrawHill, New York.
3. Madigan, M.T., Martinkl, J.M and Parker, J. Broch Biology of Microorganism, 9th Edition, MacMillan Press, England.
4. Dube, R.C. and Maheshwari, D.K. General Microbiology S Chand, New Delhi.



2

Phayaladina
Dept. of Micro Biology BVC

J. Sindani
Department of Microbiology
Government Degree College (Women)
BECOMPET, HYDERABAD.

HINDI MAHAVIDYALAYA, NALLAKUNTA, HYDERABAD
(AUTONOMOUS)
CBCS Syllabus
B.Sc. 1st Year Microbiology
Semester – I
Practical Paper - I

Code:

Instruction	2 Hrs / Week
Duration of Exam	3 Hrs
Marks for Exam	50 Marks
Laboratory Course	30 Hrs

GENERAL MICROBIOLOGY -I

1. Light compound microscope and its handling.
2. Calibration of microscopic measurements(ocular, stage micrometer)
3. Measuring dimensions of microorganisms (Bacteria and fungal spores)
4. Simple and differential staining (Gram staining), Spore staining, capsule staining and negative staining.
5. Preparation of culture media: Solid/Liquid.
6. Sterilization techniques: Autoclave, Hot air oven and filtration.
7. Enumeration of bacterial numbers by serial dilution and plating.
8. Microscopic observation of bacteria (Gram positive bacilli and cocci: Gram negative bacilli), cyanobacteria (nostoc, spirulina)

References:

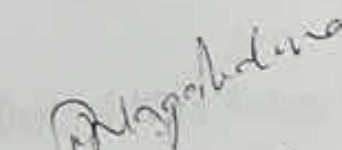
1. Experiments in Microbiology by K.R. Aheja.
2. Gopal Reddy.M., Reddy. M.N., Sai Gopal, DVR and Mallaiah K.V. Laboratory Experiments in Microbiology.
3. Dubey, R.C. and Maheshwari, D.K. Practical Microbiology, S. Chand and Co New Delhi.
4. Alcamo, I.E. Laboratory Fundamentals of Microbiology. Jones and Bartlett Publishers, USA.



J. SRIDEVI

Asst. Professor

Department of Microbiology
Government Degree College (Women)
BEGUMPET, HYDERABAD


Dept. of Micro Biology BY:

HINDI MAHAVIDYALAYA, NALLAKUNTA, HYDERABAD
(AUTONOMOUS)
CBCS Syllabus
B.Sc – I year
Scheme of instruction & Evaluation

Group (Bio-chem, Micro ,Chem.) II semester

Sub Code	Sub Name	Course Type	Hours / week		Credit		Exam Duration	Marks			
			Th	Pr	Th	Pr	Th/Pr	Sem	Internal 30 min	Total	Practical
	Gender Sensitization	AECC-2	2	-	2	-	2 Hrs	50	-	50	-
	English	CC-1B	5	-	5	-	3 Hrs	80	20	100	-
	Second Language	CC-2B	5	-	5	-	3 Hrs	80	20	100	-
	Bio-Chemistry	DSC-1B	4	2	4	1	3 Hrs	80	20	100	50
	Microbiology	DSC-2B	4	2	4	1	3 Hrs	80	20	100	50
	Chemistry	DSC-3B	4	2	4	1	3 Hrs	80	20	100	50
	Total		24	6	27			450	100	550	150

Group (Biotech, Micro ,Chem.) II semester

Sub Code	Sub Name	Course Type	Hours/ week		Credit		Exam Duration	Marks			
			Th	Pr	Th	Pr	Th/Pr	Sem	Internal 30 min	Total	Practical
	Gender Sensitization	AECC-2	2	-	2	-	2 Hrs	50	-	50	-
	English	CC-1B	5	-	5	-	3 Hrs	80	20	100	-
	Second Language	CC-2B	5	-	5	-	3 Hrs	80	20	100	-
	Biotechnology	DSC-1B	4	2	4	1	3 Hrs	80	20	100	50
	Microbiology	DSC-2B	4	2	4	1	3 Hrs	80	20	100	50
	Chemistry	DSC-3B	4	2	4	1	3 Hrs	80	20	100	50
	Total		24	6	27			450	100	550	150



J. Sridevi
J. SRIDEVI
 Asst. Professor
 Department of Microbiology
 Government Degree College (Women)
 BEGUMPET, HYD. NALLAKUNTA

J. Sridevi
 Dept. of Micro Biology BV

HINDI MAHAVIDYALAYA, NALLAKUNTA, HYDERABAD
(AUTONOMOUS)

CBCS Syllabus
B.Sc. 1st Year Microbiology
Semester – II
Paper-II

Code:

Instruction

Theory Classes

4 Hrs/Week

Practical Classes

2 Hrs/Week

Credit for Theory

4

Credit for Practical

1

Duration of Semester Examination

3 Hrs

Duration of Internal Examination

30 Min

Semester Examination Marks

80 Marks

Internal Examination Marks

20 Marks

Title: GENERAL MICROBIOLOGY-II

Unit-1 (BIOLOGY OF MICROORGANISMS)

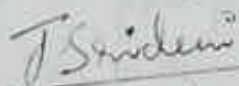
15 h (1 hr/week)

Classification of living organisms; Heckel, Whittaker and Carl Woese systems. Place of microorganisms in the living world. Differentiation of prokaryotes and eukaryotes. Prokaryotes—General characteristics of bacteria, Archea bacteria. Rickettsias, Mycoplasma, cyanobacteria and Actinomycetes. Classification of bacteria as per the second edition of Bergey's manual of systematic bacteriology.

UNIT-2 (STRUCTURE OF MICROORGANISMS)

15 h (1 hr/week)

Ultra structure of bacteria cell; invariant components-cell wall, cell membrane, Ribosomes, nucleoid. Variant components-Capsule, flagella, fimbriae, endospores & storage granules. General characteristics and classification of virus. Morphology and structure of TMV and HIV. Structure and multiplication of lambda bacteriophage. Eukaryotes- General characteristics and classification. Eukaryotic microorganism- protozoa, microalgae, molds and yeast.



J. SRIDEVI

Asst. Professor

Department of Microbiology
Government Degree College (Women)
BEGUMPET, HYDERABAD


Dept. of Micro Biology BV

UNIT-3 (BIOMOLECULES)

15 h (1 hr/week)

Outline classification and general characteristics of carbohydrate (Monosaccharides, disaccharides and polysaccharides). General characteristics of Amino acids and proteins, Fatty acids (saturated and unsaturated) and lipids (sphingo lipids, sterols and phospholipids)

UNIT-4 (BIOMOLECULES)

15 h (1 hr/week)

Structure of nitrogenous bases, nucleotides and nucleic acids. Hydrogen ion concentration in biological fluids. pH measurement. Types of buffers and their uses in biological reactions. Principles and application of colorimetry and chromatography (paper and thin layer)

References:

1. Michael J. Pelczar, Jr. E.C.S.Chan, Noel R. Krieg Microbiology Tata McGraw- Hill Publisher.
2. Prescott, M.J., Harley, J.P. and Klein Microbiology 5th Edition, WCB Mc GrawHill, New York.
3. Madigan, M.T., Martinkl, J.M and Parker, J. Broch Biology of Microorganism, 9th Edition, MacMillan Press, England.
4. Dube, R.C. and Maheshwari, D.K. General Microbiology S Chand, New Delhi.
5. Voet, D Biochemistry WCB. Mc GrawHill, Iowa.
6. N.J. Dimmock, A.J Easton, and K.N. Leppard. Introduction to Modern Virology. Blackwell Publishing.



P. Lakshmi
Dept. of Micro Biology BV

J. Sridevi
J. SRIDEVI
Asst. Professor
Department of Microbiology
Government Degree College (Women)
BEQUMPET, HYDERABAD.

HINDI MAHAVIDYALAYA, NALLAKUNTA, HYDERABAD
(AUTONOMOUS)
CBCS Syllabus
B.Sc. 1st Year Microbiology
Semester – II
Practical Paper- II

Code:


Instruction	2 Hrs / Week
Duration of Exam	3 Hrs
Marks for Exam	50 Marks
Laboratory Course	30 Hrs

GENERAL MICROBIOLOGY-II

1. Paper chromatography-separation of sugars/amino acids
2. Determination of pH
3. Preparation of Buffers
4. Colorimetry- Principles, laws, determination of absorption maximum.
5. Microscopic observation of algae
6. Microscopic observation of fungi (sacharomyces, Rhizopus, Aspergillus, Pencillium, Fusarium)

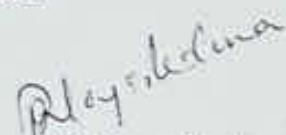
References:

1. Experiments in Microbiology by K.R. Aheja.
2. Gopal Reddy.M., Reddy. M.N., Sai Gopal, DVR and Mallaiah K.V. Laboratory Experiments in Microbiology.
3. Dubey, R.C. and Maheshwari, D.K. Practical Microbiology, S. Chand and Co. New Delhi.
4. Alcamo, I.E. Laboratory Fundamentals of Microbiology. Jones and Bartlett Publishers, USA.
5. Mahy, B.W.J. and Kangro, H.O. Virology – Methods Manual Academic Press, USA.
6. Burleson et al Virology – A Laboratory Manual. Academic Press, USA.


J. SRIDEVI

Asst. Professor

Department of Microbiology
Government Degree College (Women)
BEGUMPET, HYDERABAD


Dept. of Micro Biology IV

HINDI MAHAVIDYALAYA, NALLAKUNTA, HYDERABAD
(AUTONOMOUS)

CBCS Syllabus

B.Sc Microbiology 1st Year

Semester – I & II

Internal Examination Paper Pattern

Time – 30 Min

Total Marks: 15 Marks

Section -A

1. 10 Multiple choice type questions

10 X ½ = 5 M

Section -B

2. 10 Fill in the blanks

10 x ½ = 5 M

Section-C

3. 5 Short answer Questions

5 x 1 = 5 M

J. Sridevi

J. SRIDEVI
Asst. Professor
Department of Microbiology
Government Degree College (Women)
BEGUMPET, HYDERABAD

P. S. Srinivas
Dept. of Micro Biology BY:

HINDI MAHAVIDYALAYA, NALLAKUNTA, HYDERABAD
(AUTONOMOUS)

CBCS Syllabus

B.Sc Microbiology Ist Year

Semester – I & II

Theory Question Paper Pattern

Time: 3hrs

Max. Marks: 80

SECTION A

I Answer any four of the following (Short Answer questions)

4 X 5 = 20 Marks

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

II Essay Questions. Answer all the Questions

4 X 15 = 60 Marks

- 11 (a) A Question from Unit I
(OR)
(b) A Question from Unit I
12. (a) A Question from Unit II
(OR)
(b) A Question from Unit II
13. (a) A Question from Unit III
(OR)
(b) A Question from Unit III
14. (a) A Question from Unit IV
(OR)
(b) A Question from Unit IV

Note: Question Paper pattern is subjected to change as prescribed by Osmania University at later stages



J. Sridevi

J. SRIDEVI

Asst. Professor

Department of Microbiology

Government Degree College (Women)

BEGUMPET, HYDERABAD.

Dr. P. S. Srinivasulu
Dept. of Micro Biology BVU

HINDI MAHAVIDYALAYA, NALLAKUNTA, HYDERABAD
(AUTONOMOUS)
CBCS Syllabus
B.Sc Microbiology 1st Year
Semester – I & II
Practical Question Paper Pattern

Time – 3 Hrs

Total Marks: 50 Marks.

- | | | |
|-----|--|----------|
| I | Major practical question | 20 Marks |
| II | Minor practical question | 10 marks |
| III | Identify the following spotters (5x2=10) | 10 Marks |
| IV. | Record | 5 Marks |
| V. | Viva-voce | 5 Marks |




J. SRIDEVI

Asst. Professor

Department of Microbiology

Government Degree College (Women)

BEGUMPET, HYDERABAD.



Dept. of Micro Biology BV

Hindi Mahavidyalaya, Nallakunta, Hyderabad

(Autonomous)

CBCS Syllabus

Microbiology Department

Panel of Examiners

I/II Sem

S.No.	Name and Designation	Mobile No.
1	Dr. P. Nagapadma Department of Microbiology Bharatiya Vidya Bhavans Vivekananda College of Science, Humanities, Commerce, Sainikpuri, Hyderabad	
2	Ms. J. Sridevi Department of Microbiology Govt. Degree College for Womens Begumpet, Hyderabad	
3	Ms. A.Ch. Pradyutha Department of Microbiology RBVRR Women's College, Narayanguda, Hyderabad	
4	Dr. Madhuri Department of Microbiology Hussaini Alam Government Degree College, Hyderabad	
5	Ms. Ramakalyani Department of Microbiology HRD Degree College, Narayanguda, Hyderabad	



Dept. of Micro Biology BVI

J. Sridevi

Dr.

20/10/2023

6	Mrs. Martha Paul Department of Microbiology Shadan Degree College, Khairatabad, (women) Hyderabad	
7	Dr. K. Anuradha Department of Microbiology Bharatiya Vidya Bhavans Vivekananda College of Science, Humanities, Commerce, Sainikpuri, Hyderabad	
8	Dr. S.P. Sreedhar Bhattar Department of Microbiology Bharatiya Vidya Bhavans Vivekananda College of Science, Humanities, Commerce, Sainikpuri, Hyderabad	

~~Signature~~

Pragathi
Dept. of Micro Biology BVC

J. Sridevi
J. SRIDEVI
Asst. Professor
Department of Microbiology
Government Degree College (Women)
Begumpet, Hyderabad.