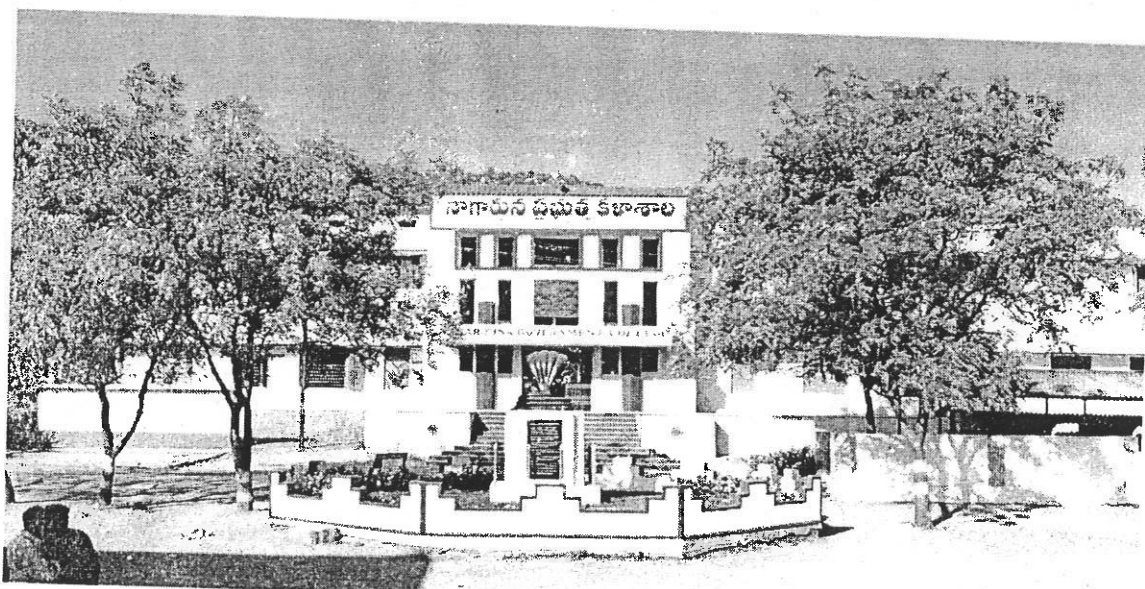
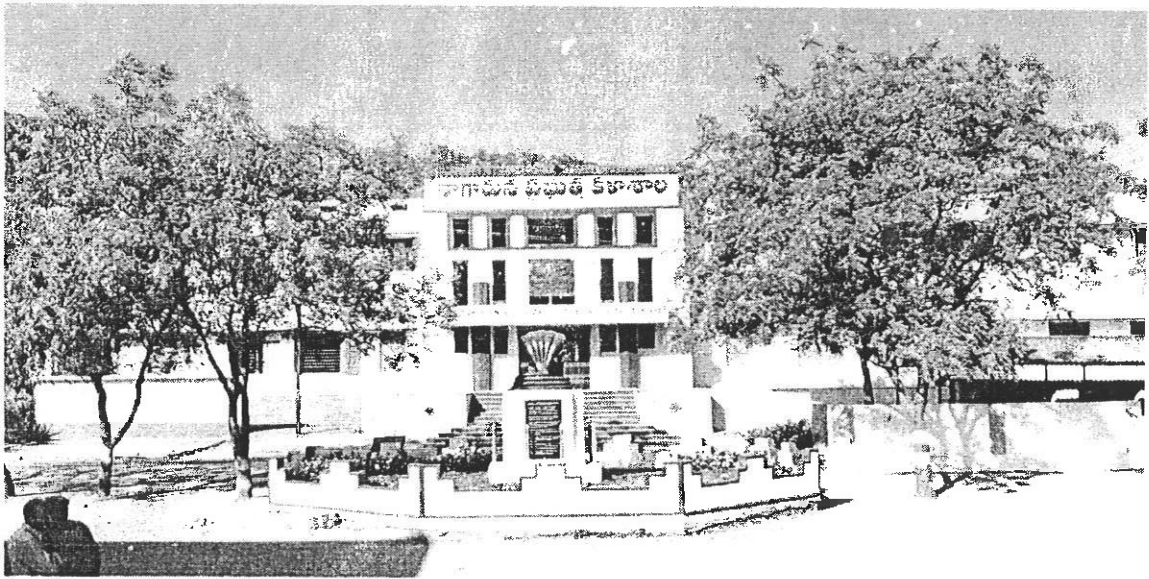
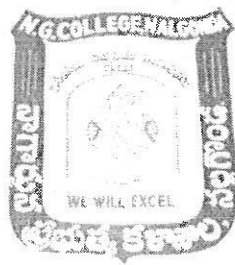


**NAGARJUNA GOVERNMENT COLLEGE,
(AUTONOMOUS)
NALGONDA**



**SYLLABUS
CHOICE BASED CREDIT SYSTEM
SEMESTER PATTERN
B.Sc. Microbiology
(Students admitted from 2018-2019 onwards)**

**NAGARJUNA GOVERNMENT COLLEGE,
(AUTONOMOUS)
NALGONDA**



**SYLLABUS
CHOICE BASED CREDIT SYSTEM
SEMESTER PATTERN
B.Sc. Microbiology
(Students admitted from 2018-2019 onwards)**

NAGARJUNA GOVERNEMENT COLLEGE NALGONDA
(AUTONOMOUS)
(Re-Accredited with NAAC "A" GRADE)

Date - 2018

To
The Principal
N.G.College
Nalgonda.

Madam,

Sub:-Grant of Autonomous Status – Constitution of BOARD OF STUDIES in Microbiology Department-
Request for Approval-Reg.

Ref:-

- 1.) No.F.22-1/2007(AC)Dt:3rd April 2007
- 2.) OU Lr.mr.69/H/2007/Acad.Dt.12-06-2007
- 3.) GO RT.No.467 HE.(CE-1)Dept.Dt.29-06-2007.
- 4.) MGU Lr.347/MGU/NLG/2017-18,Dt.17-08-2017.

With Reference to the Subject cited above ,I am submitted the list of members of Board of Studies for Academic Years 2018-19 for your Approval.

S.NO	NAME	DESIGNATION
1.	Sri, B.Nagaraju,Asst.Prof In-Charge Dept of Microbiology N.G. College, Nalgonda.	CHAIRPERSON
2.		UNIVERSITY NOMINEE
3.		SUBJECT EXPERT
4.		SUBJECT EXPERT
5.	B.Rupa, Lecturer in Microbiology	FACULTY MEMBER

Submitted by
[Signature]
Chairman BOS
Dept. of Microbiology

Board of Studies
Dept. of Microbiology
Nagarjuna Government College (A)
Nalgonda (TS) - 508 001

[Signature]
Dr. Annapurna Dutt
member,

Proposal Approved
[Signature]
Principal/Chair Person Acad.Council

[Signature]
Mr. Stevenson
Dept. of
Hyg & ...

[Signature]
12/3
Dr. Ravi Alurky
Academic Director
MGU, member
Acad. Council

18

NAGARJUNA GOVERNMENT DEGREE COLLEGE, NALGONDA

(Autonomous),

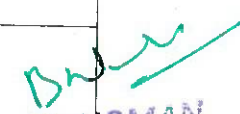
Reaccredited by NAAC with "A" GRADE

DEPARTMENT OF MICROBIOLOGY

BOARD OF STUDIES MEETING -2018-19

The Board of Studies in the Department of Microbiology has been constituted with the following members for the Academic year 2018-2019

S.No.	Composition of B.O.S	Name and Designation
1.	Chairman ,Board of studies	Sri.B. Nagaraju Head&Asst. Prof. Dept.of microbiology Nagarjuna Government College Nalgonda.
2.	University Nominee,Nominated By Vice-Chancellor	
3.	Subject Experts- from outside the College nominated by Principal	
4.	Members: All the faculty members of the Department	Kum.B.Rupa, Guest faculty in Microbiology N.G.College,Nalgonda.


CHAIRMAN
Board of Studies
Dept. of Microbiology
Nagarjuna Government College (N.G.C.)
Nalgonda (TS) - 508 001

PRINCIPAL

NAGARJUNA GOVERNMENT DEGREE COLLEGE, NALGONDA
(Autonomous),
Reaccredited by NAAC with "A" GRADE
DEPARTMENT OF MICROBIOLOGY
BOARD OF STUDIES MEETING -2018

The Board of Studies Meeting of Microbiology department is being held Today i.e On _____ in the Department of Microbiology under the Chairmanship of Sri . B . Nagaraju, Head ,Department Of Microbiology to discuss the following Agenda and to formulate certain Resolutions.

Agenda:

1. To continue **CBCS**(Choice based credit system),introduced during the academic year 2014 -15.
2. To approve the syllabus of B.Sc. I,II,and III year(all papers) .
3. To approve to conduct two (2) internal assessments for 30 marks twice in a semester,each in the form of (20 marks for written examination,5 marks for assignment and 5 marks for student seminar)for the students admitted during 2018-19 & after.
4. To continue the **Pass Percentage as (40%)** for **CBCS** students.
5. To approve the **Model Question Papers** for **CBCS I, II, III, IV,V and VI Semesters** .
6. To approve the Semester End Examinations - **70 marks for I,II,III Year students (CBCS)** and to conduct **Practical examinations for 50 marks at the semester end(I,II,III Yr)**
7. To approve to continue **Diagnostic Microbiology, Certificate Course**(4 months duration)
8. To approve the Panel of **Paper Setters and Examiners** for evaluation of papers.
9. To approve the skill enhancement course(SEC- I)i.e **Medical Diagnostics** for III Semester & **SEC II** for IV Semester will be adapted according to University Guidelines(MGU).
- 10.To approve the examination pattern for SEC -I&SEC-II.

Members :

1. **Sri B. Nagaraju,**
Chairman , Board of Studies,
Department Of Microbiology,
N.G College , Nalgonda.

B Nagaraju
CHAIRMAN
Board of Studies
Dept. of Microbiology
Nagarjuna Government College (A)
Nalgonda (TS) - 508 001

2.

3.

4

5. kum.B.Rupa, Guest Faculty, N.g college , Nalgonda

23

NAGARJUNA GOVERNMENT DEGREE COLLEGE, NALGONDA
(Autonomous),
Reaccredited by NAAC with "A" GRADE
DEPARTMENT OF MICROBIOLOGY

BOARD OF STUDIES MEETING -2018

Resolutions:

1. Approved to continue **CBCS(Choice based credit system)**,introduced during the academic year 2014 -15.
2. Approved the **syllabus of B.Sc. I,II,and III year(All papers) .**
3. Approved to conduct two (2)**internal assessments for 30 marks** twice in a semester,each in the form of (20 marks for written examination,5 marks for assignment and 5 marks for student seminar)for the students admitted during 2018-18 & after.
4. Approved the **Pass Percentage for CBCS (40%)**
5. Approved the **Model Question Papers** for cbc s I, II, III, IV, V and VI Semesters ,
6. Approved the Semester-End Examinations - **70 marks for (CBCS)**,and to conduct **practical examinations for 50 marks at the semester end** (for I,II,III Yr)
7. Approved to continue **Diagnostic microbiology, Certificate Course**(4 months duration)
8. Approved the panel of **Paper Setters and Examiners** for evaluation of papers.
9. Approved the skill enhancement course(SEC- I)i.e **Medical Diagnostics** for III Semester & **SEC II** for IV Semester adapted as per University Guidelines(MGU).
10. Approved the Scheme of examination for SEC-I i.e. for III Sem Students As follows:**10 Marks Internal Exam And Written Examination for 40 Marks.**

Members Present :

1. **Sri B. Nagaraju,**
Head&Assistant .Prof.
Chairman , Board of Studies
Department Of Microbiology,
N.G College , Nalgonda

2.

3.

4.

- 5.Kum.B.Rupa, Guest Faculty , N.G. college , Nalgonda.

B. Nagaraju
CHAIRMAN
Board of Studies
Dept. of Microbiology
Nagarjuna Government College (A)
Nalgonda (TS) - 508 001

B.Sc. Microbiology I Year Syllabus

(Applicable to the students admitted in 2018-19&After)

I Year B.Sc. (Microbiology)CBCS

SEMESTER-I

Paper I: INTRODUCTORY MICROBIOLOGY-I

UNIT - I: HISTROY OF MICROBIOLOGY

Meaning, definition and history of Microbiology. 2 Hrs

Contributions of Antony von Leeuwenhoek, Edward Jenner, Louis Pasteur, Robert Koch, Iwanowsky, Beijerinck, Winogradsky and Alexander Fleming. 10 Hrs

Importance and applications of Microbiology. 2 Hrs

UNIT -II: MICROSCOPY

Principles of microscopy - . Principles of Bright field, dark field, phase-contrast, fluorescent and electron microscopy (SEM and TEM). Ocular and stage micrometers. 10 Hrs

Size determination of microorganisms. 2 Hrs

Principles and types of stains - Simple stain, differential stain, negative stain, structural stains - spore, capsule, flagella. Hanging-drop method. 4 Hrs

UNIT - III : MICROBIOLOGICAL TECHNIQUES

sterilization. 2 Hrs

Physical methods - autoclave, hot-air oven, pressure cooker, laminar air flow, filter sterilization. 5 Hrs

Radiation methods - UV rays, gamma rays, ultrasonic methods. 4 Hrs

Chemical methods - Use of alcohols, aldehydes, fumigants, phenols, halogens and hypochlorites. Phenol coefficient. 5 Hrs

UNIT-IV: PURE CULTURE TECHNIQUES

Isolation of pure culture techniques - Enrichment culturing, dilution-plating, streak-plate, spread-plate and micromanipulator. 8 Hrs

Preservation of microbial cultures - subculturing, overlaying cultures with mineral oils, lyophilization, sand cultures, storage at low temperature. 6 Hrs

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.


B.S.
Board of Studies
Dept. of Microbiology
Nagarjuna Government College (A)
Nalgonda (TS) - 508 001

LAB - I: (B.Sc. I Yr) INTRODUCTORY MICROBIOLOGY (Practicals) 45 Hrs

1. Precautions to work in Microbiology laboratory.
2. Preparation of culture media: Solid / Liquid.
3. Sterilization techniques: Autoclaving, hot-air oven and filtration.
4. Isolation of single colonies on solid media.
5. Enumeration of bacterial numbers by serial dilution and plating.
6. Light compound microscope and its handling.
7. Microscopic observation of bacteria(slides): (Gram +ve bacilli and cocci, Gram -ve bacilli), cyanobacteria (*Nostoc*, *Spirulina*), algae (*Scenedesmus* sp., diatoms), and fungi (*Saccharomyces*, *Rhizopus*, *Aspergillus*, *Penicillium*, *Fusarium*).

REFERENCE BOOKS for LAB:

1. Experiments in Microbiology by K.R. Aneja.
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.


CHAIRMAN
Board of Studies
Dept. of Microbiology
Nagarjuna Government College (A)
Nalgonda (TS) - 508 001

B.Sc. Microbiology I Year Syllabus
(Applicable to the students admitted in 2018-19)
I Year B.Sc. (Microbiology)
SEMISTER-II
Paper II: INTRODUCTORY MICROBIOLOGY-II

UNIT - I : BIOLOGY OF MICROORGANISMS

Outline classification of living organisms: Heckel, Whittaker and Carl Woese systems. 6 Hrs

Place of microorganisms in the living world. 2 Hrs

Differentiation of prokaryotes and eukaryotes. 1 Hr

Prokaryotes - General characteristics of bacteria, archeae, rickettsias, mycoplasmas, cyanobacteria and actinomycetes. 6 Hrs

Outline classification for bacteria as per the second edition of Bergey's Manual of Systematic Bacteriology (up to section level). 2 Hrs

UNIT-II: STRUCTURE OF MICROORGANISMS

Ultrastructure of a bacterial cell: Invariant components - cell wall, cell membrane, ribosomes, nucleoid. Variant components - Capsule, flagella, fimbriae, endospore and storage granules. 6 Hrs

General characteristics and classification of viruses. Morphology and structure of TMV and HIV. 2 Hrs

Structure and multiplication of lambda bacteriophage. 2 Hrs

Eukaryotes - General characteristics and classification (up to the order level) of eukaryotic microorganisms - Protozoa, microalgae, molds and yeasts. 3 Hrs

UNIT - III: GENERAL CHARACTERISTICS OF BIOMOLECULES

Biomolecules of microorganisms. 1 Hr

Outline classification and general characteristics of carbohydrates (monosaccharides, disaccharides and polysaccharides). 5 Hrs

General characteristics of amino acids and proteins. 5 Hrs

Structure of nitrogenous bases, nucleotides, nucleic acids. 5 Hrs

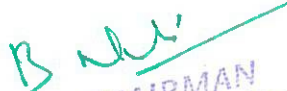
UNIT IV :BIOMOLECULES AND TECHNIQUES

Fatty acids (saturated and unsaturated) and lipids (spingolipids, sterols and phospholipids). 5 Hrs

Hydrogen ion concentration in biological fluids, pH measurement. 3 Hrs

Types of buffers and their use in biological reactions. 3 Hrs

Principle and application of colorimetry and chromatography (paper and thin-layer).


CHAIRMAN
Board of Studies
Dept. of Microbiology
Nagarjuna Government College (A)
Nalgonda (TS) - 508 001

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.

LAB -II: (B.Sc. I Yr) INTRODUCTORY MICROBIOLOGY (Practicals) 45 Hrs

1. Calibrations of microscopic measurements (Ocular, stage micrometers).
2. Measuring dimensions of fungal spores
3. Simple and differential staining (Gram staining).
4. Spore staining, capsule staining and negative staining.
5. Diagrammatic or Electron photomicrographic observation of TMV, HIV, T4 phage and adenovirus
6. Qualitative tests for sugars and Amino Acids.
7. Qualitative test and estimation of Glucose.

REFERENCE BOOKS FOR LAB:

1. Experiments in Microbiology by K.R. Aneja.
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.


CHAIRMAN
Board of Studies
Dept. of Microbiology
Nagarjuna Government College (A)
Nalgonda (TS) - 508 001

B.Sc. Microbiology II Year Syllabus
(Applicable to the students admitted in 2018-19)

SEMISTER-III

Paper III: MICROBIAL PHYSIOLOGY (Theory)

UNIT - I MICROBIAL NUTRITION

Microbial nutrition - nutritional requirements and uptake of nutrients by cells.
Nutritional groups of microorganisms - autotrophs, heterotrophs, mixotrophs, methylotrophs. 5 Hrs
Growth media - synthetic, nonsynthetic, selective, enrichment and differential media.

UNIT-II MICROBIAL GROWTH

Microbial growth - different phases of growth in batch cultures. 6 Hrs
Factors influencing microbial growth. 2 Hrs
Synchronous, continuous, biphasic growth. 3 Hrs
Methods for measuring microbial growth – Direct microscopy, viable count estimates, turbidometry, biomass. 4 Hrs

UNIT-III - & -ENZYMES

Enzymes - properties and classification, enzyme unit. 3 Hrs
Biocatalysis - induced fit, and lock and key model, coenzymes, cofactors, factors affecting catalytic activity of enzymes. 4 Hrs
Inhibition of enzyme activity - competitive, noncompetitive, uncompetitive and allosteric. 3 Hrs

UNIT - IV MICROBIAL METBOLISM AND PHOTOSYNTHESIS

Aerobic respiration - Glycolysis, HMP pathway, ED pathway, TCA cycle, electron transport, oxidative and substrate-level phosphorylation. Anaplerotic reactions. β -Oxidation of fatty acids. Glyoxylate cycle. 13 Hrs
Anaerobic respiration (nitrate, sulphate respiration). 7 Hrs
Fermentation - Common microbial fermentations with special reference to alcohol and lactic acid fermentations. 5 Hrs
Photosynthetic apparatus in prokaryotes. Outlines of oxygenic and anoxygenic photosynthesis in bacteria. 5 Hrs


CHAIRMAN
Board of Studies
Dept. of Microbiology
Nagarjuna Government College (A)
Nalgonda (TS) - 508 001

References:

1. Gottschalk, G. (1986). *Bacterial Metabolism*, Springer-Verlag, New-York.
2. Caldwell, D.R. (1995). *Microbial Physiology and Metabolism*, W.C. Brown Publications, Iowa, USA.
3. Moat, A.G. and Foster, J.W. (1995). *Microbial Physiology*, John-Wiley, New York.
4. White, D. (1995). *The Physiology and Biochemistry of Prokaryotes*, Oxford University Press, New York.
5. Reddy, S.R. and Reddy, S.M. (2004). *Microbial Physiology*, Scientific Publishers, Jodhpur, India.
6. Lehninger, A.L., Nelson, D.L. and Cox, M.M. (1993). *Principles of Biochemistry*, 2nd Edition, CBS Publishers and Distributors, New Delhi.
7. Elliot, W.H. and Elliot, D.C. (2001). *Biochemistry and Molecular Biology*, 2nd Edition, Oxford University Press, U.S.A.

LAB – III: MICROBIAL PHYSIOLOGY (Practicals) 45 Hrs

1. Preparation of media for culturing autotrophic and heterotrophic microorganisms - Algal medium, mineral salts medium, nutrient agar medium, McConkey agar, and blood agar.
2. Enrichment culturing and isolation of phototrophs and chemoautotrophs.
3. Setting and observation of Winogradsky column.
4. Determination of viable count of bacteria.
5. Turbidometric measurement of bacterial growth.
6. Bacterial growth curve.
7. Factors affecting bacterial growth – pH, temperature, salts.

References:

1. Wilson, K. and Walker, J. (1994). Practical Biochemistry. 4th Edition, Cambridge University Press England.
2. Sawhney, S.K. and Singh, R. (2000). Introductory Practical Biochemistry, Narosa Publishing House, New Delhi.
3. Dubey, R.C. and Maheswari, D.K. (2002). Practical Microbiology. S. Chand & Co. Ltd., New Delhi.
4. Plummer, D.T. (1988). An Introduction to Practical Biochemistry. 3rd Edition, Tata Mc GrawHill New Delhi.
3. Reddy, S.M. and Reddy, S.R. (1998). Microbiology – Practical Manual, 3rd Edition, Sri Padmavathi Publications, Hyderabad.
4. Jaya Babu (2006). Practical Manual on Microbial Metabolisms and General Microbiology. Kalyani Publishers, New Delhi.
7. Sashidhara Rao, B. and Deshpande, V. (2007). Experimental Biochemistry: A student Companion
I.K. International Pvt. Ltd
8. Gopal Reddy, M., Reddy, M.N., Saigopal, DVR and Mallaiah, K.V. (2007). Laboratory Experiments
in Microbiology, . Himalaya Publishing House, Mumbai.


CHAIRMAN
Board of Studies
Dept. of Microbiology
Nagarjuna Government College (A)
Nalgonda (TS) - 508 001

B.Sc. Microbiology II Year Syllabus
(Applicable to the students admitted in 2018-19)
II Year B.Sc. (Microbiology)
SEMISTER-IV

Paper IV : MICROBIAL GENETICS

UNIT – I

DNA and RNA as genetic materials. 8 Hrs
Structure of DNA – Watson and Crick model. 2 Hrs
Extrachromosomal genetic elements – Plasmids and transposons. 2 Hrs
Replication of DNA – Semiconservative mechanism. 3 Hrs
Outlines of DNA damage and repair mechanisms. 4 Hrs

UNIT-II


Mutations – spontaneous and induced, base pair changes, frame shifts, deletions, inversions, tandem duplications, insertions. 4 Hrs
Various physical and chemical mutagens. 2 Hrs
Brief account on horizontal gene transfer among bacteria – transformation, transduction and conjugation. 5 Hrs

UNIT – III

Concept of gene – Muton, recon and cistron. One gene-one enzyme, one gene-one polypeptide, one gene-one product hypotheses. 4 Hrs
Types of RNA and their functions. 2 Hrs
Outlines of RNA biosynthesis in prokaryotes. 3 Hrs
Genetic code. Structure of ribosomes and a brief account of protein synthesis. 4 Hrs
Types of genes -- structural, constitutive, regulatory. 2 Hrs
Operon concept. Regulation of gene expression in bacteria – *lac* operon. 3 Hrs

UNIT-IV

Basic principles of genetic engineering - restriction endonucleases, DNA polymerases and ligases, vectors. 3 Hrs
Outlines of gene cloning methods. 2 Hrs
Genomic and cDNA libraries. 3 Hrs
General account on application of genetic engineering in industry, agriculture and medicine. 4 Hrs


B.A.M.R.M.V.
Board of Studies
Dept. of Microbiology
Nagarjuna Government College (A)
Nizampet (TQ) - 503 001

References:

1. Freifelder, D. (1997). *Essentials of Molecular Biology*. Narosa Publishing House, New Delhi.
2. Crueger, W. and Crueger, A. (2000). *Biotechnology: A Text Book of Industrial Microbiology*, Prentice-Hall of India Pvt. Ltd., New Delhi.
3. Glick, B.P. and Pasternack, J. (1998). *Molecular Biotechnology*, ASM Press, Washington D.C., USA.
4. Freifelder, D. (1990). *Microbial Genetics*. Narosa Publishing House, New Delhi.
5. Strickberger, M.W. (1967). *Genetics*. Oxford & IBH, New Delhi.
6. Sinnot E.W., L.C. Dunn and T. Dobzhansky. (1958). *Principles of Genetics*. 5th Edition. McGraw Hill, New York.
7. Glazer, A.N. and Nikaido, H. (1995). *Microbial Biotechnology – Fundamentals of Applied Microbiology*, W.H. Freeman and company, New York.
8. Old, R.W. and Primrose, S.B. (1994) *Principles of Gene Manipulation*, Blackwell Science Publication, New York.
9. Verma, P.S. and Agarwal, V.K. (2004). *Cell Biology, Genetics, Molecular Biology, Evolution and Ecology*. S. Chand & Co. Ltd., New Delhi.

LAB – IV: MICROBIAL GENETICS (Practicals) 45 Hrs

1. Colorimetric estimation of proteins by Biuret / Lowery method.
2. Colorimetric estimation of DNA by Diphenyl amine method.
3. Colorimetric estimation of RNA by Orcinol method
4. Extraction of genomic DNA
5. Agarose gel Electrophoresis
6. Problems related to DNA and RNA characteristics, Transcription and Translation

References:

1. Wilson, K. and Walker, J. (1994). Practical Biochemistry. 4th Edition, Cambridge University Press, England.
2. Sawhney, S.K. and Singh, R. (2000). Introductory Practical Biochemistry, Narosa Publishing House, New Delhi.
3. Dubey, R.C. and Maheswari, D.K. (2002). Practical Microbiology. S. Chand & Co. Ltd., New Delhi.
4. Plummer, D.T. (1988). An Introduction to Practical Biochemistry. 3rd Edition, Tata Mc GrawHill, New Delhi.
5. Reddy, S.M. and Reddy, S.R. (1998). Microbiology – Practical Manual, 3rd Edition, Sri Padmavathi Publications, Hyderabad.
6. Jaya Babu (2006). Practical Manual on Microbial Metabolisms and General Microbiology. Kalyani Publishers, New Delhi.
7. Sashidhara Rao, B. and Deshpande, V. (2007). Experimental Biochemistry: A student Companion. I.K. International Pvt. Ltd.
8. Gopal Reddy, M., Reddy, M.N., Saigopal, DVR and Mallaiah, K.V. (2007). Laboratory Experiments in Microbiology, . Himalaya Publishing House, Mumbai.

B. Reddy
CHAIRMAN
Board of Studies
Dept. of Microbiology
Nagarjuna Government College (A)
Nalgonda (TS) - 508 001

B.Sc. Microbiology III Year Syllabus
(Applicable to the students admitted in 2018-19)
III Year B.Sc. (Microbiology)

SEMISTER-V
Paper V: IMMUNOLOGY

UNIT – I HISTORY OF IMMUNOLOGY AND IMMUNITY

Development of immunology. 2 Hrs

Types of immunity – innate and acquired; active and passive; humoral and cell-mediated immunity. 6 Hrs

Primary and secondary organs of immune system – thymus, bursa fabricius, bone marrow, spleen and lymph nodes. 6 Hrs

Cells of immune system- B and T lymphocytes, null cells, monocytes, macrophages, neutrophils, basophils and eosinophils. 6 Hrs

UNIT – II

22 Hrs

Antigens – types, chemical nature, antigenic determinants, haptens. 2 Hrs

Factors affecting antigenicity. 1 Hr

Antibodies – basic structure, types, properties and functions of immunoglobulins. 2 Hrs

Components of complement and activation of complement. 2 Hrs

UNIT-III ANTIGENS AND ANTIBODY REACTION


Types of antigen-antibody reactions – agglutination, blood groups, precipitation, neutralization, complement fixation. 4 Hrs

Labeled antibody based techniques – ELISA, RIA and Immunofluorescence. 3 Hrs

UNIT-IV IMMUNOLOGICAL PROCESSES AND APPLICATIONS

Polyclonal and monoclonal antibodies – production and applications. 3 Hrs

Autoimmunity and its significance. 2 Hrs


CIP
Board of Studies
Dept. of Microbiology
Nagarjuna Government College (A)
Nalgonda (TS) - 508 001

References:

1. Sudha Gangal. Shubhangi Sontakke. Text book of Basic and Clinical Immunology, Universitie Press.
2. Tizard, I.R. (1995). Immunology : An Introduction, WB Saunders, Philadelphia, USA.
3. Riott, I.M. (1998). Essentials of Immunology, ELBS and Black Well Scientific Publishers, England.
4. Goldsby, Kindt, T.J. and Osborne, B.A. (2004). Kuby Immunology, 6th Edition, W.H.Freeman and Company, New York.
5. Lydyard, P.M., Whelan, A. and Fanger, M.W. (2000). Instant Notes in Immunology, Viva Books Pvt. Ltd., New Delhi.
6. Chakraborty, B. (1998). A Text Book of Microbiology, New Central Book Agency (P) Ltd, Calcutta, India. 12
7. Ananthanarayana, R. and Panicker, C.K.S. (2000). Text Book of Microbiology, 6th Edition, Oriental Longman Publications, USA.
8. Annadurai, B. (2008). A Textbook of Immunology and Immunotechnology. S. Chand & Co. Ltd., New Delhi.
9. Dey, N., T.K. and Sinha, D. (1999). Medical Bacteriology Including Medical Mycology and AIDS. New Central Book Agency (P) Ltd. Calcutta, India.
10. Shetty, N. (1994). Imuunology – Introductory Textbook. New Age International Pvt. Ltd., New Delhi.
11. Singh, R.P. (2007). Immunology and Medical Microbiology. Kalyani Publishers, New Delhi.
12. Reddy, S.R. and Reddy, K.R. (2006). A Text Book of Microbiology - Immunology and Medical Microbiology, Himalaya Publishing House, Mumbai.
13. Gupte, S. (1995). Short Text Book of Medical Microbiology, 8th Edition, Jaypee Brothers Medical Publishers (P) Ltd, New Delhi

LAB-V:IMMUNOLOGY (Practicals) 45 Hrs

1. Blood tests – i. Total Count,
ii. Differential Count.
2. Estimation of blood haemoglobin.
3. Determination of blood groups and Rh typing.
4. Antigen-antibody interactions in Widal test, VDRL test, and Precipitation –
Ouchterlony double diffusion test.
5. Parasites – Malarial parasite, *Entamoeba* (study of permanent slides)

REFERENCE BOOKS FOR LAB:

1. Ananthanarayana, R. and Panicker, C.K.S. (2000). Text Book of Microbiology, 6th Edition, Oriental Longman Publications, USA.
2. Gupte, S. (1995). Short Text Book of Medical Microbiology, 8th Edition, Jaypee Brothers Medical Publishers (P) Ltd, New Delhi.
3. Annadurai, B. (2008). A Textbook of Immunology and Immunotechnology. S. Chand & Co. Ltd., New Delhi.
4. Dey, N., T.K. and Sinha, D. (1999). Medical Bacteriology Including Medical Mycology and AIDS. New Central Book Agency (P) Ltd. Calcutta, India.
5. Shetty, N. (1994). Immunology – Introductory Textbook. New Age International Pvt. Ltd., New Delhi


CHAIRMAN
Board of Studies
Dept. of Microbiology
Nagarjuna Government College (A)
Nalgonda (TS) - 508 001

B.Sc. Microbiology III Year Syllabus
(Applicable to the students admitted in 2018-19)

III Year B.Sc. (Microbiology)

SEMESTER-V

Paper VI: AGRICULTURE AND ENVIRONMENTAL MICROBIOLOGY

UNIT - I Microbes in Agriculture

Physical and chemical characteristics of soil. 2 Hrs

Rhizosphere and phyllosphere. 1 Hr

Plant growth-promoting microorganisms -mycorrhizae, rhizobia, *Azospirillum*,
Azotobacter, cyanobacteria, *Frankia* and phosphate-solubilizing microorganisms.

Outlines of biological nitrogen fixation (symbiotic, non-symbiotic). 8 Hrs

Biofertilizers - *Rhizobium*. 1 Hr

UNIT:II Plant Diseases & Biocontrol

Concept of disease in plants. 1 Hr

Symptoms of plant diseases caused by fungi, bacteria, and viruses. 3 Hrs

Plant diseases caused by fungi (groundnut rust), bacteria (angular leaf spot of
cotton) and viruses (tomato leaf curl). 3 Hrs

Principles of plant disease control. 2 Hrs

Biological control of plant diseases. Biopesticides – *Bacillus thuringiensis*,

Nuclear polyhedrosis virus (NPV), *Trichoderma*. 2 Hrs

UNIT : III Microbial ecology

Microorganisms of environment (soil, water and air). 2 Hrs

Role of microorganisms in nutrient cycling (carbon, nitrogen, sulphur). 4 Hrs

Microbial interactions – mutualism, commensalism, antagonism, competition, parasitism,
predation. 4 Hrs

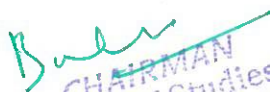
UNIT-IV Role of microbes in environmental Pollution

Microbiology of potable and polluted waters. *E. coli* and *Streptococcus faecalis* as
indicators of water pollution. Sanitation of potable water. 5 Hrs

Sewage treatment (primary, secondary and tertiary). 2 Hrs

Outlines of biodegradation of environmental pollutants – pesticides. 2 Hrs

Solid waste disposal – sanitary land fills, composting. 2 Hrs


CHAIRMAN
Board of Studies
Dept. of Microbiology
Nagarjuna Government College (A)
Nalgonda (TS) - 508 001

References:

1. Alexander, M. (1985). Introduction to Soil Microbiology, 3rd Edition. Wiley Eastern Ltd., New Delhi.
2. Paul, E.A. and Clark, F.E. (1989). Soil Microbiology and Biochemistry, Academic Press, USA.
3. Subba Rao, N.S. (1993). Biofertilizers in Agriculture and Forestry, 3rd Edition Oxford & IBH Publishing Co. Pvt. Ltd., New Delhi. BSc CBCS syllabus 2016-17
4. Rangaswami, G. and Bhagyaraj, D.J. (2001). Agricultural Microbiology, 2nd Edition, Prentice Hall of India, New Delhi.
5. Atlas, R.M. and Bartha, R. (1998). Microbial Ecology - Fundamentals and Applications, Addison Wesley Longman, Inc., USA
6. Lynch, J.M. and Poole, N.J. (1979). Microbial Ecology - A Conceptual Approach, Blackwell Scientific Publications, USA
7. Subba Rao, N.S. (1999). Soil Microorganisms and Plant Growth. Oxford & IBH Publishing Co. Pvt. Ltd., New Delhi.
8. Reddy, S.R. and Singara Charya, M.A. (2007). A Text Book of Microbiology - Applied Microbiology. Himalaya Publishing House, Mumbai.
9. Singh, R.P. (2007). Applied Microbiology. Kalyani Publishers, New Delhi.

LAB - VI: APPLIED MICROBIOLOGY (Practicals) 45 Hrs

1. Isolation and enumeration of major groups of microorganisms from rhizosphere soil.
2. Study of root nodules and isolation of *Rhizobium* from legume root nodules.
3. Isolation of *Azospirillum* / *Azotobacter*.
4. Staining and observation of vesicular-arbuscular mycorrhizal (VAM) fungi.
5. Observation of plant diseases of local importance-Rusts, smuts, powdery mildews, tikka disease of groundnut, citrus canker, bhendi yellow vein mosaic, tomato leaf curl, little leaf of brinjal.
6. Isolation of antagonistic microorganisms by crowded plate technique.
7. Isolation of microorganisms of air by Petri plate exposure method.
8. Determination of biological oxygen demand (BOD) of polluted water.
9. Microbial testing of water by coliform test (multiple tube fermentation method).

References:

1. Stanbury, P.F., Whitaker, A. and Hall, S.J. (1997). Principles of Fermentation Technology, Aditya Books (P) Ltd. New Delhi.
2. Doyle, M.P., Beuchat, L.R. and Montville, T.J. (1997). Food Microbiology: Fundamentals and Frontiers. ASM Press, Washington D.C., USA.
3. Frazier, W.C. and Westhoff, D.C. (1988). Food Microbiology, Mc Graw-Hill, New York.
4. Jay, J.M. (1996). Modern Food Microbiology, Chapman and Hall, New York. 15
5. Ray, B. (1996). Fundamentals of Food Microbiology, CRC Press, USA.


CHAIRMAN
Board of Studies
Dept. of Microbiology
Nagarjuna Government College (A)
Nalgonda (TS) - 508 001

B.Sc. Microbiology III Year Syllabus
(Applicable to the students admitted in 2018-19)
III Year B.Sc. (Microbiology)

SEMESTER-VI
Paper VII: CLINICAL MICROBIOLOGY

UNIT - III Clinical Microbiology 23 Hrs

History of medical microbiology. 1 Hr

Normal flora of human body. 2 Hrs

Definition of infection and types of infections,
antagonism of indigenous flora. 3 Hrs

Anti-bacterial substances – lysozyme, complement, antiviral substances,
phagocytosis. 2 Hrs

UNIT-II

General principles of diagnostic microbiology. 1 Hr

Collection, transport and processing of clinical samples. 3 Hrs

General methods of laboratory diagnosis – cultural, biochemical, serological
and molecular methods. 5 Hrs

Tests for antimicrobial susceptibility. 2 Hrs

Antiviral agents – interferon and base analogues. 2 Hrs

Host-pathogen interactions. Bacterial toxins, virulence and attenuation. 2 Hrs

UNIT - III

Elements of chemotherapy – therapeutic drugs.. 2 Hrs

Mode of action of penicillin and sulpha drugs, and their clinical use.

Drug resistance 3 Hrs

Preventive control of diseases – active and passive immunization. 3 Hrs

Vaccines – natural and recombinant. 2 Hrs

UNIT-IV:

General account of the following diseases – causal organisms, pathogenesis,
epidemiology, diagnosis, prevention and control of:

Air-borne diseases - Tuberculosis, Influenza

Food and water-borne diseases - Cholera, Typhoid, Hepatitis- A

Poliomyelitis, Amoebiasis


Insect-borne diseases - Malaria, Filariasis, Dengue fever

Contact diseases - Syphilis, Gonorrhoea

Zoonotic diseases - Rabies, Anthrax

Blood-borne diseases - Serum hepatitis, AIDS 12 Hrs

General account of nosocomial infections. 1 Hr


CHAIRMAN
Board of Studies
Dept. of Microbiology
Nagarjuna Government College (A)
Nalgonda (TS) - 508 001

References:

1. Ananthanarayana, R. and Panicker, C.K.S. (2000). Text Book of Microbiology, 6th Edition, Oriental Longman Publications, USA.
2. Gupte, S. (1995). Short Text Book of Medical Microbiology, 8th Edition, Jaypee Brothers Medical Publishers (P) Ltd, New Delhi.
3. Annadurai, B. (2008). A Textbook of Immunology and Immunotechnology. S. Chand & Co. Ltd., New Delhi.
4. Dey, N., T.K. and Sinha, D. (1999). Medical Bacteriology Including Medical Mycology and AIDS. New Central Book Agency (P) Ltd. Calcutta, India.
5. Shetty, N. (1994). Immunology – Introductory Textbook. New Age International Pvt. Ltd., New Delhi.
6. Singh, R.P. (2007). Immunology and Medical Microbiology. Kalyani Publishers, New Delhi.

LAB-VII: MEDICAL MICROBIOLOGY (Practicals) 90 Hrs

1. Acid-fast staining of mycobacteria (stained/permanent slides).
2. Isolation and identification of medically important bacteria (*E. coli*, *Klebsiella*, *Pseudomonas*, *Staphylococcus* and *Streptococcus*) by cultural, microscopic and biochemical tests.
3. Antibiotic sensitivity testing – disc diffusion method.
4. Observation of fungal pathogen (*Candida*).
5. Tests for disinfectant (Phenol coefficient).

REFERENCE BOOKS FOR LAB:

1. Ananthanarayana, R. and Panicker, C.K.S. (2000). Text Book of Microbiology, 6th Edition, Oriental Longman Publications, USA.
2. Gupte, S. (1995). Short Text Book of Medical Microbiology, 8th Edition, Jaypee Brothers Medical Publishers (P) Ltd, New Delhi.
3. Annadurai, B. (2008). A Textbook of Immunology and Immunotechnology. S. Chand & Co. Ltd., New Delhi.
4. Dey, N., T.K. and Sinha, D. (1999). Medical Bacteriology Including Medical Mycology and AIDS. New Central Book Agency (P) Ltd. Calcutta, India.
5. Shetty, N. (1994). Immunology – Introductory Textbook. New Age International Pvt. Ltd., New Delhi


CHAIRMAN
Board of Studies
Dept. of Microbiology
Nagarjuna Government College (A)
Nalgonda (TS) - 508 001

B.Sc. Microbiology III Year Syllabus
(Applicable to the students admitted in 2018-19)
III Year B.Sc. (Microbiology)

SEMISTER-VI
Paper VII: CLINICAL MICROBIOLOGY

UNIT – I Clinical Microbiology 23 Hrs

History of medical microbiology. 1 Hr

Normal flora of human body. 2 Hrs

Definition of infection and types of infections,
antagonism of indigenous flora. 3 Hrs

Anti-bacterial substances – lysozyme, complement, antiviral substances,
phagocytosis. 2 Hrs

UNIT-II

General principles of diagnostic microbiology. 1 Hr

Collection, transport and processing of clinical samples. 3 Hrs

General methods of laboratory diagnosis – cultural, biochemical, serological
and molecular methods. 5 Hrs

Tests for antimicrobial susceptibility. 2 Hrs

Antiviral agents – interferon and base analogues. 2 Hrs

Host-pathogen interactions. Bacterial toxins, virulence and attenuation. 2 Hrs

UNIT – III

Elements of chemotherapy – therapeutic drugs.. 2 Hrs

Mode of action of penicillin and sulpha drugs, and their clinical use.

Drug resistance 3 Hrs

Preventive control of diseases – active and passive immunization. 3 Hrs

Vaccines – natural and recombinant. 2 Hrs

UNIT-IV:

General account of the following diseases – causal organisms, pathogenesis,
epidemiology, diagnosis, prevention and control of:

Air-borne diseases - Tuberculosis, Influenza

Food and water-borne diseases - Cholera, Typhoid, Hepatitis- A

Poliomyelitis, Amoebiasis

Insect-borne diseases - Malaria, Filariasis, Dengue fever

Contact diseases - Syphilis, Gonorrhoea

Zoonotic diseases - Rabies, Anthrax

Blood-borne diseases - Serum hepatitis, AIDS 12 Hrs

General account of nosocomial infections. 1 Hr


CHAIRMAN
Board of Studies
Dept. of Microbiology
Nagarjuna Government College (A)
Nalgonda (TS) - 508 001

LAB-VII: CLINICAL MICROBIOLOGY (Practicals) 90 Hrs

1. Acid-fast staining of mycobacteria (stained/permanent slides).
2. Isolation and identification of medically important bacteria (*E. coli*, *Klebsiella*, *Pseudomonas*, *Staphylococcus* and *Streptococcus*) by cultural, microscopic and biochemical tests.
3. Antibiotic sensitivity testing – disc diffusion method.
4. Observation of fungal pathogen (*Candida*).
5. Tests for disinfectant (Phenol coefficient).

REFERENCE BOOKS FOR LAB:

1. Ananthanarayana, R. and Panicker, C.K.S. (2000). Text Book of Microbiology, 6th Edition, Oriental Longman Publications, USA.
2. Gupte, S. (1995). Short Text Book of Medical Microbiology, 8th Edition, Jaypee Brothers Medical Publishers (P) Ltd, New Delhi.
3. Annadurai, B. (2008). A Textbook of Immunology and Immunotechnology. S. Chand & Co. Ltd., New Delhi.
4. Dey, N., T.K. and Sinha, D. (1999). Medical Bacteriology Including Medical Mycology and AIDS. New Central Book Agency (P) Ltd. Calcutta, India.
5. Shetty, N. (1994). Immunology - Introductory Textbook. New Age International Pvt. Ltd., New Delhi


CHAIRMAN
Board of Studies
Dept. of Microbiology
Nagarjuna Government College (A)
Nalgonda (TS) - 508 001

B.Sc. Microbiology III Year Syllabus
(Applicable to the students admitted in 2018-19)
III Year B.Sc. (Microbiology)

SEMISTER-VI
Paper VIII: FOOD AND INDUSTRIAL MICROBIOLOGY

UNIT – I Food Microbiology 22 Hrs

Microorganisms of food spoilage and their sources. 3 Hrs
Spoilage of different food materials - fruits, vegetables, meat, fish. 3 Hrs
Canned foods. Food intoxication (botulism and staph poisoning), foodborne diseases (salmonellosis and shigellosis) and their detection. 5 Hrs
General account of food preservation. 2 Hrs

UNIT-II

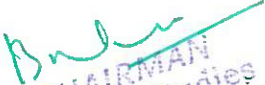
Microbiological production of fermented foods – bread, cheese, yogurt. 3 Hrs
Biochemical activities of microbes in milk. 2 Hrs
Microorganisms as food – SCP, edible mushrooms (white button, oyster and paddy straw). 2 Hrs
Concept of probiotics. 2 Hrs

UNIT – III Industrial Microbiology 22 Hrs

Microorganisms of industrial importance -yeasts, moulds, bacteria, actinomycetes. 2 Hrs
Screening and isolation of industrially-important microorganisms. 3 Hrs
Outlines of strain improvement. 2 Hrs
Types of fermentation – aerobic, anaerobic, batch, continuous, submerged, surface, solid state. 4 Hrs
Design of a stirred tank reactor fermentor. Fermentation media. 3 Hrs

UNIT-IV

Industrial production of alcohols (ethyl alcohol), beverages (beer), enzymes (amylases), antibiotics (penicillin), amino acids (glutamic acid), organic acids (citric acid), vitamins (B12), biofuels (biogas - methane). 8 Hrs


CHAIRMAN
Board of Studies
Dept. of Microbiology
Nagarjuna Government College (A)
Nalgonda (TS) - 508 001

References:

1. Stanbury, P.F., Whitaker, A. and Hall, S.J. (1997). Principles of Fermentation Technology, Aditya Books (P) Ltd. New Delhi.
2. Doyle, M.P., Beuchat, L.R. and Montville, T.J. (1997). Food Microbiology: Fundamentals and Frontiers. ASM Press, Washington D.C., USA
3. Frazier, W.C. and Westhoff, D.C. (1988). Food Microbiology, Mc Graw-Hill, New York.
4. Jay, J.M. (1996). Modern Food Microbiology, Chapman and Hall, New York. 15
5. Ray, B. (1996). Fundamentals of Food Microbiology, CRC Press, USA.
6. Rangaswami, G. and Bhagyaraj, D.J. (2001). Agricultural Microbiology, 2nd Edition, Prentice Hall of India, New Delhi.
7. Atlas, R.M. and Bartha, R. (1998). Microbial Ecology - Fundamentals and Applications, Addison Wesley Longman, Inc., USA
8. Paul, E.A. and Clark, F.E. (1989). Soil Microbiology and Biochemistry, Academic Press, USA.

LAB - VIII: APPLIED MICROBIOLOGY (Practicals) 45 Hr

10. Determination of microbiological quality of milk – MBRT.
11. Observation of different spoiled foods.
12. Isolation of fungi and bacteria from spoiled fruits and vegetables.
13. Alcohol production and estimation; Calculation of fermentation efficiency.
14. Isolation of amylase-producing organisms.
15. Citric acid production and estimation.
16. Estimation of ascorbic acid from fruit juices.

References:

1. Stanbury, P.F., Whitaker, A. and Hall, S.J. (1997). Principles of Fermentation Technology, Aditya Books (P) Ltd. New Delhi.
2. Doyle, M.P., Beuchat, L.R. and Montville, T.J. (1997). Food Microbiology: Fundamentals and Frontiers. ASM Press, Washington D.C., USA.
3. Frazier, W.C. and Westhoff, D.C. (1988). Food Microbiology, Mc Graw-Hill, New York.
4. Jay, J.M. (1996). Modern Food Microbiology, Chapman and Hall, New York. 15
5. Ray, B. (1996). Fundamentals of Food Microbiology, CRC Press, USA.


CHAIRMAN
Board of Studies
Dept. of Microbiology
Nagarjuna Government College (A)
Nalgonda (TS) - 508 001

NAGARJUNA GOVERNMENT DEGREE COLLEGE, NALGONDA
(Autonomous),

Reaccredited by NAAC with "A" GRADE

DEPARTMENT OF MICROBIOLOGY

Model question paper B.Sc.I YEAR CBCS

SEMESTER-I

INTRODUCTORY MICROBIOLOGY-I

70MARKS 2 ½ HRS

SECTION-I

(5X2=10Marks)

ANSWER ALL OF THE FOLLOWING

- 1.Simple staining
- 2.Robert koch
- 3.Filter sterilization.
- 4.Micromanipulator
- 5.Spontaneous generation

SECTION II

(4X5=20Marks)

ANSWER ALL OF THE FOLLOWING

6. Dark field Microscopy
- 7 Acid fast staining
8. Edward Jenner
- 9.Tyndalization
- 10.Streak Plate Method
- 11.Lyophilization

SECTION III

(4X10=40Marks)

ANSWER ALL OF THE FOLLOWING

12.(a) Write about the history of Microbiology.

OR

(b) write the contributions of the following scientists - **Antony von Leeuwenhoek, Edward Jenner, Louis Pasteur, Robert Koch, Iwanowsky, Beijerinck, Winogradsky and Alexander Fleming.**

13.(a)write a brief note on staining techniques.

OR

(b)write a Essay on Electron Microscopy.

14.(a) define Sterilization and write about the Physical Sterilization methods.

OR

(b) what are chemosterillants and write about the chemical sterilization agents.

15.(a)define pure culture and write about the pure culture isolation methods.

OR

(b)write a general account on pure culture preservation methods

**NAGARJUNA GOVERNMENT DEGREE COLLEGE, NALGONDA
(Autonomous),**

Reaccredited by NAAC with "A" GRADE

DEPARTMENT OF MICROBIOLOGY

Model question paper B.Sc.I YEAR CBCS

SEMESTER-II

INTRODUCTORY MICROBIOLOGY-II

70MARKS 2 ½ HRS

SECTION-I

5X2=10M

**VERYSHORT ANSWER TYPE QUESTIONS
ANSWER ANY FIVE OF THE FOLLOWING**

- 1.Mycoplasmas
- 2.Flagella.
- 3.Actinomycetes
- 4.poly sacharides.
- 5.Sterols.

SECTION-II

4X5=20

**SHORT ANSWER TYPE QUESTIONS
ANSWER ANY FOUR OF THE FOLLOWING**

6. Cyanobacteria.
7. TMV(Tobacco Mosaic Virus)
8. Nucleotides.
9. Phospholipids.
10. Storage Granules.
- 11.Archeabacteria


SECTION-III

4X10=40

(ESAY TYPE QUESTIONS)

ANSWER ANY FOUR OF THE FOLLOWING

- 1.(a) Write about the Diffentiation of Procaryotes and Eucaryotes.
OR
(b) write the CARL WOOSE System of Classification.
- 2.(a)write a brief note on Ultra Structure of Bacteria.
OR
(b)write a Essay on General characteristics of Viruses.
- 3.(a) write about the Classification of carbohydrates.
OR
(b) Give general account of Amino acida and Proteins.
- 4.(a)discuss about the fatty acids and lipids.
OR
(b)write about the Buffers And their Biological Significance


CHAIRMAN
Board of Studies
Dept. of Microbiology
Nagarjuna Government College (A)
Nalgonda (TS) - 508 001

NAGARJUNA GOVERNMENT DEGREE COLLEGE, NALGONDA
(Autonomous),

Reaccredited by NAAC with "A" GRADE

DEPARTMENT OF MICROBIOLOGY

Model question paper B.Sc.II YEAR CBCS
SEMESTER-III

MICROBIAL PHYSIOLOGY-III

70MARKS 2 ½ HRS

SECTION-III

5X2=10M

VERYSHORT ANSWER TYPE QUESTIONS
ANSWER ALL OF THE FOLLOWING

1. Autotrophs
2. Enriched media.
3. Effect of temperature on Enzyme activity.
4. Glyoxalate Cycle.
5. Anaerobic Respiration.

SECTION-II

4X5=20

SHORT ANSWER TYPE QUESTIONS
ANSWER ANY FOUR OF THE FOLLOWING

6. Active transport
7. Effect of temperature on microbes
8. Lock and key model
9. Cofactors.
10. Alcohol fermentation.
11. β -Oxidation of fatty acids.

SECTION-I

4X10=40

(ESAY TYPE QUESTIONS)
ANSWER ANY FOUR OF THE FOLLOWING

- 1.(a) Write about the Nutritional Groups of Microorganisms.
OR
(b) Define media and write about the types of Media.
- 2.(a) what are Biocatalysts and write about the properties and classification of them .
OR
(b) Define Enzyme Inhibition and write about the types of Enzyme Inhibition .
- 3.(a) Write about the GLYCOLYSIS.
OR
(b) What is Oxidative phosphorylation and write about ETS(Electron Transport System).
- 4.(a) write about Fermentation.
OR
(b) write a General account on Oxygenic and Non-Oxygenic Photosynthesis in Bacteria.

B. S. S.
CHAIRMAN
Board of Studies
Dept. of Microbiology
Nagarjuna Government College (A)
Nalgonda (TS) - 508 001

NAGARJUNA GOVERNMENT DEGREE COLLEGE, NALGONDA
(Autonomous),

Reaccredited by NAAC with "A" GRADE

DEPARTMENT OF MICROBIOLOGY

Model question paper B.Sc.II YEAR CBCS
SEMESTER-IV

MICROBIAL GENETICS-IV

70MARKS 2 ½HRS

SECTION-I

5X2=10M

VERYSHORT ANSWER TYPE QUESTIONS
ANSWER ALL OF THE FOLLOWING

1. Conjugation
2. Semi-conservative Replication
3. Muton
4. Structural Genes
5. Ligases

SECTION-II

4X5=20

SHORT ANSWER TYPE QUESTIONS
ANSWER ANY FOUR OF THE FOLLOWING

6. chemical mutagens
7. t-RNA
8. Ribosomes
9. lac-Operon
10. Restriction enzymes
11. c-DNA Libraries.

SECTION-III

4X10=40

(ESAY TYPE QUESTIONS)

ANSWER ANY FOUR OF THE FOLLOWING

1.(a) Write about the Structure of DNA.

OR

(b) Define plasmid and write about the types of Plasmids.

2.(a) what are Mutagens and write about the physical and chemical mutagens .

OR

(b) write a brief note on Induced Mutations.

3.(a) Write about the RNA Biosynthesis(Transcription)in prokaryotes.

OR

(b) write a brief note on Genetic Code.

4.(a) Discuss the Enzymes involved in Genetic Engineering.

OR

(b) write a general account on Cloning methods.

B. S. S.
Board of Studies
Dept. of Microbiology
Nagarjuna Government College (A)
Nalgonda (TS) - 508 001

NAGARJUNA GOVERNMENT DEGREE COLLEGE, NALGONDA
(Autonomous),

Reaccredited by NAAC with "A" GRADE

DEPARTMENT OF MICROBIOLOGY

Model question paper B.Sc.III YEAR

CBCS

SEMESTER-V

IMMUNOLOGY-V

70MARKS 2 ½HRS

SECTION-I

5X2=10M

VERYSHORT ANSWER TYPE QUESTIONS
ANSWER ALL FIVE OF THE FOLLOWING

1. Macrophages
2. Antibodies
3. Agglutination
4. Blood Groups
5. HAT Medium

SECTION-II

4X5= 20

SHORT ANSWER TYPE QUESTIONS
ANSWER ANY FOUR OF THE FOLLOWING

6. Louis Pasteur
7. Humoral immunity
8. Ig E
9. Poly clonal Antibodies
10. Autoimmunity.
11. ELISA

SECTION-I

4X10=40

(ESAY TYPE QUESTIONS)
ANSWER ANY FOUR OF THE FOLLOWING

- 12.(a) Write about the History of Immunology.
OR
(b) Define Immunity and write about the types of Immunity.
- 13.(a). what are Antigens and Write about the types of Antigens
OR
(b) write a brief note on Basic Structure of Immunoglobullins
- 14.(a) Discuss about RIA (Radio Immuno Assay).
OR
(b) Write about ELISA.
- 15.(a) Discuss about Autoimmunity.
OR
(b)write a general account on Hybridoma Technology


Board of Studies
Dept. of Microbiology
Nagarjuna Government College (A)
Nalgonda (TS) - 508 001

NAGARJUNA GOVERNMENT DEGREE COLLEGE, NALGONDA

(Autonomous),

Reaccredited by NAAC with "A" GRADE

DEPARTMENT OF MICROBIOLOGY

Model question paper B.Sc.III YEAR

CBCS

SEMESTER-V; Agri&Environmental Microbiology -VI

70MARKS 2 ½ HRS

SECTION-I

5X2=10M

(SHORT ANSWER TYPE QUESTIONS)

ANSWER ALL OF THE FOLLOWING

- 1.Cyanobacteria.
- 2.Nuclear Poly Hedrosis Virus.
- 3.Sulphur Cycle.
- 4.Trickling filters.
- 5.Commensalism.

SECTION-II

4X5=20

SHORT ANSWER TYPE QUESTIONS

ANSWER ANY FOUR OF THE FOLLOWING

- 6.Write a note on PGPR.
- 7.Discuss Nitrogen cycle.
- 8.Explain about Mycorrhizae.
- 9.Mutualism.
- 10.Write about Bacillus Thuringensis.
- 11.Degradation of pesticides.

SECTION-III

4X10=40

(ESAY TYPE QUESTIONS)

ANSWER ANY FOUR OF THE FOLLOWING

1. (a) Write about the Biological Nitrogen fixation.
OR
(b) Discuss about Biofertilizers.
2. (a) write about the Biological Control of Diseases .
OR
(b)write a brief note on Biopesticides.
3. (a) what are Bio-Geo-Chemical Cycles and write about N₂ Cycle.
OR
(b) write a brief note on Microbial Interactions.
- 4 .(a) Discuss about the sewage treatment methods.
OR
(b)write a general account on Biodegradation of Environmental Pollutants.

B. S. S.
CHAIRMAN
Board of Studies
Dept. of Microbiology
Nagarjuna Government College (A)
Nalgonda (TS) - 508 001

NAGARJUNA GOVERNMENT DEGREE COLLEGE, NALGONDA
(Autonomous),

Reaccredited by NAAC with "A" GRADE

DEPARTMENT OF MICROBIOLOGY

Model question paper B.Sc.III YEAR
SEMESTER-VI

CBCS

Medical microbiology-VII

70MARKS 2 ½HRS

SECTION-I

5X2=10

(VERY SHORT ANSWER TYPE QUESTIONS)
ANSWER ALLOF THE FOLLOWING

- 1.Infection
- 2.ELISA
- 3.Antibiotics
- 4.AIDS
- 5.Paul Ehrlich

SECTION-II

4X5=20

SHORT ANSWER TYPE QUESTIONS
ANSWER ANY FOUR OF THE FOLLOWING

5. Phagocytosis
6. Lysozyme
7. ELISA
8. Drug resistance
9. Vaccines
10. Bacterial toxins.
- 11.Nosocomial infections

SECTION-III

4X10=40

(ESAY TYPE QUESTIONS)
ANSWER ANY FOUR OF THE FOLLOWING

- 1.(a) Write about the History of Medical microbiology.
OR
(b) write about the Normal flora of Human body.
- 2.(a) write about the Different types of Laboratory diagnosis methods.
OR
(b)write a brief note on Sample collection,transport and processing of clinical samples.
- 3.(a) what are Antibiotics and Write about the mode of action and clinical uses of Penicillins.
OR
(b) write a brief note on sulfa Drugs.
- 4.(a) Discuss the Pathogenicity and treatment for Tuberculosis.
OR
(b)write a general account on Zoonotic infections.

B. S. Rao
CHAIRMAN
Board of Studies
Dept. of Microbiology
Nagarjuna Government College (A)
Nalgonda (TS) - 508 001

NAGARJUNA GOVERNMENT DEGREE COLLEGE, NALGONDA
(Autonomous),

Reaccredited by NAAC with "A" GRADE

DEPARTMENT OF MICROBIOLOGY

Model question paper B.Sc.III YEAR

CBCS

SEMESTER-VI

FOOD&INDUSTRIAL MICROBIOLOGY-VIII

70MARKS 2 ½HRS

SECTION-I

5X2=10

(VERY SHORT ANSWER TYPE QUESTIONS)

ANSWER ALLOF THE FOLLOWING

- 1.Food Spoilage
- 2.SCP
- 3.Submerged Fermentation
- 4.Citric Acid Uses
- 5.Fermentor

SECTION-II

4X5=20

SHORT ANSWER TYPE QUESTIONS

ANSWER ANY FOUR OF THE FOLLOWING

5. Botulism
6. Appertization(canning)
7. Edible mushrooms
8. Bioreactor
9. Fermentation media
10. Amylases
11. Citric acid production.

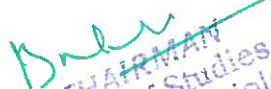
SECTION-III

4X10=40

(ESAY TYPE QUESTIONS)

ANSWER ANY FOUR OF THE FOLLOWING

- 1.(a) Write about the Food Spoilage.
OR
(b) Discuss about the Food intoxication.
- 2.(a) write about the Food Preservation methods .
OR
(b)write a brief note on Single Cell Proteins.(SCP)
- 3.(a) Write about the types of Screening methods for the isolation of industrially important microorganisms.
OR
(b) write a brief note on types of Fermentation.
- 4.(a) write about the industrial production of Alcohol by fermentation.
OR
(b)write a General account on the industrial production of Penicillin.


CHAIRMAN
Board of Studies
Dept. of Microbiology
Nagarjuna Government College (A)
Nalgonda (TS) - 508 001

NAGARJUNA GOVERNMENT DEGREE COLLEGE, NALGONDA
(Autonomous),
Reaccredited by NAAC with "A" GRADE
DEPARTMENT OF MICROBIOLOGY
MODEL PRACTICAL QUESTION PAPER FOR B.Sc.I,II AND III YEAR CBCS


50MARKS		2HRS
	SECTION-I	1X20=20
1.MAJOR QUESTION		
	SECTION-II	1X10=10
2.MINOR QUESTION		
	SECTIONIII (SPOTTINGS)	5X2=10
3.		
4.		
5.		
6.		
7.		
Record& viva		10

B. S. S.
CHAIRMAN
Board of Studies
Dept. of Microbiology
Nagarjuna Government College (A)
Nalgonda (TS) - 508 001

NAGARJUNA GOVERNMENT DEGREE COLLEGE, NALGONDA
(Autonomous),
Reaccredited by NAAC with "A" GRADE
DEPARTMENT OF MICROBIOLOGY
PANNEL OF QUESTION PAPER SETTERS AND EXAMINERS FOR BS.c. MICROBIOLOGY I,II
AND III YEARS 2018-2019

SEMESTER-I,
INTRODUCTORY MICROBIOLOGY-I

S.No.	Name&Address	Contact No.
1.	Dr.P.Muthenna Asst.Prof.&Head Department of Microbiology SRR GDC,Karimnagar	9959029563
2.	Dr. B.Bheema Assist. prof.&Head Department of microbiology Osmania university	9391363605 040-27682246
3.	Dr. P.Pallavi Assistant prof. of microbiology Department of microbiology KDC,Hanmakonda.	9912535999
4.	Dr.T. Sujatha Asst.Prof. of Microbiology Department of Microbiology GDC Pinglee.	9440392455


CHAIRMAN
Board of Studies
Dept. of Microbiology
Nagarjuna Government College (A)
Nalgonda (TS) - 508 001

2

NAGARJUNA GOVERNMENT DEGREE COLLEGE, NALGONDA
(Autonomous),
Reaccredited by NAAC with "A" GRADE
DEPARTMENT OF MICROBIOLOGY
PANNEL OF QUESTION PAPER SETTERS AND EXAMINERS FOR BS.c. MICROBIOLOGY I,II
AND III YEAR 2018-2019

SEMESTER-II,
INTRODUCTORY MICROBIOLOGY-II

S.No.	Name&Address	Contact No.
1.	Dr. B.Bheema Assist. prof.&Head Department of microbiology Osmania university	9391363605 040-27682246
2.	Dr. P.Muttenna Assist. prof.&Head Department of microbiology SRR,GDC Karimnagar	9959029563
3.	Dr. P.Pallavi Assistant prof. of microbiology Department of microbiology GDC(W),Nalgonda	9912535999
4.	Dr. T.Ramachandraiah Assistant prof. of Biochemistry Mahatma Ghandi University Nalgonda	9989427725


CHAIRMAN
Board of Studies
Dept. of Microbiology
Nagarjuna Government College (A)
Nalgonda (TS) - 508 001

**NAGARJUNA GOVERNMENT DEGREE COLLEGE, NALGONDA
(Autonomous),**


Reaccredited by NAAC with "A" GRADE

DEPARTMENT OF MICROBIOLOGY

**PANNEL OF QUESTION PAPER SETTERS AND EXAMINERS FOR BS.c. MICROBIOLOGY I,II
AND III YEAR 2018-2019**

**SEMESTER-III,
MICROBIAL PHYSIOLOGY-I**

S.No.	Name&Address	Contact No.
1.	Dr. B.Bheema Asst. prof.&Head Department of microbiology Osmania university	9391363605 040-27682246
2.	Sri .N.Hari Krishna Asst. prof. of microbiology Department of microbiology GDC (M),Gajwel	9966222110
3.	Dr. P.Pallavi Asst. prof. of microbiology Department of microbiology KDC,Hanmakonda	9912535999
4.	Sri.T.Srinivas Asst. prof. of microbiology Department of microbiology GDC Jadcharla	9985737320
5.	Sridevi Asst.Prof. of Microbiology Department of Mcrobiology Indira Priyadarshini College	



CHAIRMAN
Board of Studies
Dept. of Microbiology
Nagarjuna Government Coliege (A)
Nalgonda (TS) - 508 001

(2)

NAGARJUNA GOVERNMENT DEGREE COLLEGE, NALGONDA
(Autonomous),
Reaccredited by NAAC with "A" GRADE
DEPARTMENT OF MICROBIOLOGY
PANNEL OF QUESTION PAPER SETTERS AND EXAMINERS FOR BS.c. MICROBIOLOGY I,II
AND III YEAR 2018-2019

SEMESTER-IV,
MICROBIOAL GENETICS-IV

S.No.	Name&Address	Contact No.
1.	Dr. B.Bheema Associate prof.&Head Department of microbiology Osmania university	9391363605 040-27682246
2.	Dr.A.Madhuri Assistant prof. of microbiology Department of microbiology GDC(W) Begumpet , Hyderabad	9581208104
3.	Dr. P.Muttanna Assist. prof.&Head Department of microbiology SRR,GDC Karimnagar	9959029563
4.	Dr. T.Ramachandraiah Assistant prof. of Biochemistry GDC Kukatpally	9989427725
5.	Dr. P.Shivaram Assistant prof. of Bio-Technology Mahatma Ghandi University Nalgonda	9032694559


CHAIRMAN
Board of Studies
Dept. of Microbiology
Nagarjuna Government College (A)
Nalgonda (TS) - 508 001

NAGARJUNA GOVERNMENT DEGREE COLLEGE, NALGONDA
(Autonomous),
Reaccredited by NAAC with "A" GRADE
DEPARTMENT OF MICROBIOLOGY
PANNEL OF QUESTION PAPER SETTERS AND EXAMINERS FOR BS.c. MICROBIOLOGY I,II
AND III YEAR 2018-2019

SEMESTER-V,
IMMUNOLOGY -V

S.No.	Name&Address	Contact No.
1.	Dr. P.Muttenna Assist. prof.&Head Department of microbiology SRR,GDC Karimnagar	9959029563
2.	Sri .N.Hari Krishna Assistant prof. of microbiology Department of microbiology GDC Gajwel	9966222110
3.	Dr. P.Pallavi Assistant prof. of microbiology Department of microbiology GDC ,Hanmakonda	9912535999
4.	Sri.T.Srinivas Assistant prof. of microbiology Department of microbiology GDC,Jadcharla	9985737320
5.	Ramachandraiah Asst.Prof. of Microbiology Department of Microbiology GDC,Kukatpally	8897354254


CHAIRMAN
Board of Studies
Dept. of Microbiology
Nagarjuna Government College (A)
Nalgonda (TS) - 508 001

NAGARJUNA GOVERNMENT DEGREE COLLEGE, NALGONDA
(Autonomous),
Reaccredited by NAAC with "A" GRADE
DEPARTMENT OF MICROBIOLOGY
PANNEL OF QUESTION PAPER SETTERS AND EXAMINERS FOR BS.c. MICROBIOLOGY I,II
AND III YEAR 2018-2019

SEMESTER-V,
 AGRICULTURE & ENVIRONMENTAL MICROBIOLOGY-VI

S.No.	Name&Address	Contact No.
1.	Dr. B.Bheema Assist. prof.&Head Department of microbiology Osmania university	9391363605 040-27682246
2.	Dr. P.Shivaram Assistant prof. of Bio-Technology Mahatma Ghandi University Nalgonda	9032694559
3.	Sri.T.Srinivas Assistant prof. of microbiology Department of microbiology GDC,Jadcharla	9985737320
4.	Smt.A.Madhuri Assistant prof. of microbiology Department of microbiology GDC(W) Begumpet, Hyderabad	9581208104
5.	Dr.M.Renuka Asst.Prof. of Microbiology Department of Microbiology GDC Pinglee,	9849263336

B. Srinivas
CHAIRMAN
 Board of Studies
 Dept. of Microbiology
 Nagarjuna Government College (A)
 Nalgonda (TS) - 508 001

NAGARJUNA GOVERNMENT DEGREE COLLEGE, NALGONDA
(Autonomous),
Reaccredited by NAAC with "A" GRADE
DEPARTMENT OF MICROBIOLOGY
PANNEL OF QUESTION PAPER SETTERS AND EXAMINERS FOR BS.c. MICROBIOLOGY I,II
AND III YEAR 2018-2019

SEMESTER-VI,
 MEDICAL MICROBIOLOGY-VII

S.No.	Name&Address	Contact No.
1.	Dr. P.Muttenna Assist. prof.&Head Department of microbiology SRR,GDC Karimnagar	9959029563
2.	Sri .N.Hari Krishna Assistant prof. of microbiology Department of microbiology GDC (M)Gajwel	9966222110
3.	Dr. P.Pallavi Assistant prof. of microbiology Department of microbiology KDC,Hanmakonda	9912535999
4.	Sri.T.Srinivas Assistant prof. of microbiology Department of microbiology GDC Jadcharla	9985737320
5.	Dr Smt.Deva Vani Asst.Prof. of Microbiology Department of Microbiology GDC(W),Nalgonda .	9052528822

B. S. S.
CHAIRMAN
 Board of Studies
 Dept. of Microbiology
 Nagarjuna Government College (A)
 Nalgonda (TS) - 508 001

NAGARJUNA GOVERNMENT DEGREE COLLEGE, NALGONDA
(Autonomous),
Reaccredited by NAAC with "A" GRADE
DEPARTMENT OF MICROBIOLOGY
PANNEL OF QUESTION PAPER SETTERS AND EXAMINERS FOR BS.c. MICROBIOLOGY I,II
AND III YEARS 2018-2019

SEMESTER-I,
 INTRODUCTORY MICROBIOLOGY-I

S.No.	Name&Address	Contact No.
1.	Dr.P.Muthenna Asst.Prof.&Head Department of Microbiology SRR GDC,Karimnagar	9959029563
2.	Dr. B.Bheema Assist. prof.&Head Department of microbiology Osmania university	9391363605 040-27682246
3.	Dr. P.Pallavi Assistant prof. of microbiology Department of microbiology KDC,Hanmakonda.	9912535999
4.	Dr.T. Sujatha Asst.Prof. of Microbiology Department of Microbiology GDC Pinglee.	9440392455
5.	Smt.K.Deva Vani Asst.Prof. of Microbiology Department of Microbiology GDC(W),Nalgonda .	9052528822


CHAIRMAN
 Board of Studies
 Dept. of Microbiology
 Nagarjuna Government College (W)
 Nalgonda (TS) - 508 001

9

NAGARJUNA GOVERNMENT DEGREE COLLEGE, NALGONDA
(Autonomous),
Reaccredited by NAAC with "A" GRADE
DEPARTMENT OF MICROBIOLOGY
PANNEL OF QUESTION PAPER SETTERS AND EXAMINERS FOR BS.c. MICROBIOLOGY I,II
AND III YEAR 2018-2019

SEMESTER-II,
INTRODUCTORY MICROBIOLOGY-II

S.No.	Name&Address	Contact No.
1.	Dr. B.Bheema Assist. prof.&Head Department of microbiology Osmania university	9391363605 040-27682246
2.	Dr. P.Muttenna Assist. prof.&Head Department of microbiology SRR,GDC Karimnagar	9959029563
3.	Dr. P.Pallavi Assistant prof. of microbiology Department of microbiology GDC(W),Nalgonda	9912535999
4.	Dr. T.Ramachander Assistant prof. of Biochemistry Mahatma Gandhi University Nalgonda	9989427725


CHAIRMAN
Board of Studies
Dept. of Microbiology
Nagarjuna Government College (A)
Nalgonda (TS) - 508 001

NAGARJUNA GOVERNMENT DEGREE COLLEGE, NALGONDA
(Autonomous),
Reaccredited by NAAC with "A" GRADE
DEPARTMENT OF MICROBIOLOGY
PANNEL OF QUESTION PAPER SETTERS AND EXAMINERS FOR BS.c. MICROBIOLOGY I,II
AND III YEAR 2018-2019

SEMESTER-III,
 MICROBIAL PHYSIOLOGY-I

S.No.	Name&Address	Contact No.
1.	Dr. B.Bheema Asst. prof.&Head Department of microbiology Osmania university	9391363605 040-27682246
2.	Sri .N.Hari Krishna Asst. prof. of microbiology Department of microbiology GDC (M),Gajwel	9966222110
3.	Dr. P.Pallavi Asst. prof. of microbiology Department of microbiology KDC,Hanmakonda	9912535999
4.	Sri.T.Srinivas Asst. prof. of microbiology Department of microbiology GDC Jadcharla	9985737320
5.	Smt. K.Sridevi Asst.Prof. of Microbiology Department of Mcrobiology Indira Priyadarshini College	9848873122


CHAIRMAN
 Board of Studies
 Dept. of Microbiology
 Nagarjuna Government College
 Nalgonda (TS) - 508 001

NAGARJUNA GOVERNMENT DEGREE COLLEGE, NALGONDA
(Autonomous),
Reaccredited by NAAC with "A" GRADE
DEPARTMENT OF MICROBIOLOGY
PANNEL OF QUESTION PAPER SETTERS AND EXAMINERS FOR BS.c. MICROBIOLOGY I,II
AND III YEAR 2018-2019

SEMESTER-IV,
 MICROBIOAL GENETICS-IV

S.No.	Name&Address	Contact No.
1.	Dr. B.Bheema Associate prof.&Head Department of microbiology Osmania university	9391363605 040-27682246
2.	Dr.A.Madhuri Assistant prof. of microbiology Department of microbiology GDC(W) Begumpet , Hyderabad	9581208104
3.	Dr. P.Muttenna Assist. prof.&Head Department of microbiology SRR,GDC Karimnagar	9959029563
4.	Sri. T.Ramachander Assistant prof. of Microbiology GDC Kukatpally	9989427725
5.	Dr. P.Siva Ram Assistant prof. of Bio-Technology Mahatma Ghandi University Nalgonda	9032694559

B. Srinivas
CHAIRMAN
 Board of Studies
 Dept. of Microbiology
 Nagarjuna Government Degree College
 Nalgonda (T.S.) - 508 001

NAGARJUNA GOVERNMENT DEGREE COLLEGE, NALGONDA
(Autonomous),
Reaccredited by NAAC with "A" GRADE
DEPARTMENT OF MICROBIOLOGY
PANNEL OF QUESTION PAPER SETTERS AND EXAMINERS FOR BS.c. MICROBIOLOGY I,II
AND III YEAR 2018-2019

SEMESTER-V,
IMMUNOLOGY -V

S.No.	Name&Address	Contact No.
1.	Dr. P.Muttenna Assist. prof.&Head Department of microbiology SRR,GDC Karimnagar	9959029563
2.	Sri .N.Hari Krishna Assistant prof. of microbiology Department of microbiology GDC Gajwel	9966222110
3.	Dr. P.Pallavi Assistant prof. of microbiology Department of microbiology GDC(KDC) ,Hanmakonda	9912535999
4.	Sri.T.Srinivas Assistant prof. of microbiology Department of microbiology GDC,Jadcharla	9985737320
5.	Sri.T.Ramachander Asst.Prof. of Microbiology Department of Microbiology GDC,Kukatpally	8897354254


CHAIRMAN
Board of Studies
Dept. of Microbiology
Nagarjuna Government College (A)
Nalgonda (TS) - 508 001

NAGARJUNA GOVERNMENT DEGREE COLLEGE, NALGONDA
(Autonomous),
Reaccredited by NAAC with "A" GRADE
DEPARTMENT OF MICROBIOLOGY
PANNEL OF QUESTION PAPER SETTERS AND EXAMINERS FOR BS.c. MICROBIOLOGY I,II
AND III YEAR 2018-2019

SEMESTER-V,
 AGRICULTURE & ENVIRONMENTAL MICROBIOLOGY-VI

S.No.	Name&Address	Contact No.
1.	Dr. B.Bheema Assist. prof.&Head Department of microbiology Osmania university	9391363605 040-27682246
2.	Dr. P.Siva Ram Assistant prof. of Bio-Technology Mahatma Ghandi University Nalgonda	9032694559
3.	Sri.T.Srinivas Assistant prof. of microbiology Department of microbiology GDC,Jadcharla	9985737320
4.	Smt.A.Madhuri Assistant prof. of microbiology Department of microbiology GDC(W) Begumpet, Hyderabad	9581208104
5.	Dr.M.Renuka Asst.Prof. of Microbiology Department of Microbiology GDC(W) Pinglee,Warangal	9849263336

B. Srinivas
CHAIRMAN
 Board of Studies
 Dept. of Microbiology
 Nagarjuna Government College (W)
 Nalgonda (TS) - 508 001

NAGARJUNA GOVERNMENT DEGREE COLLEGE, NALGONDA
(Autonomous),
Reaccredited by NAAC with "A" GRADE
DEPARTMENT OF MICROBIOLOGY
PANNEL OF QUESTION PAPER SETTERS AND EXAMINERS FOR BS.c. MICROBIOLOGY I,II
AND III YEAR 2018-2019

SEMESTER-VI,
MEDICAL MICROBIOLOGY-VII

S.No.	Name&Address	Contact No.
1.	Dr. P.Muttenna Assist. prof.&Head Department of microbiology SRR,GDC Karimnagar	9959029563
2.	Sri .N.Hari Krishna Assistant prof. of microbiology Department of microbiology GDC (M)Gajwel	9966222110
3.	Dr. P.Pallavi Assistant prof. of microbiology Department of microbiology KDC,Hanmakonda	9912535999
4.	Sri.T.Srinivas Assistant prof. of microbiology Department of microbiology GDC Jadcharla	9985737320
5.	Smt.K.Deva Vani Asst.Prof. of Microbiology Department of Microbiology GDC(W),Nalgonda .	9052528822


CHAIRMAN
Board of Studies
Dept. of Microbiology
Nagarjuna Government College (A)
Nalgonda (TS) - 508 001

NAGARJUNA GOVERNMENT DEGREE COLLEGE, NALGONDA
(Autonomous),
Reaccredited by NAAC with "A" GRADE
DEPARTMENT OF MICROBIOLOGY
PANNEL OF QUESTION PAPER SETTERS AND EXAMINERS FOR BS.c. MICROBIOLOGY I,II
AND III YEAR 2018-2019

SEMESTER-VI,
 FOOD & INDUSTRIAL MICROBIOLOGY-VIII

S.No.	Name&Address	Contact No.
1.	Dr. B.Bhima Asst. prof.&Head Department of microbiology Osmania university	9391363605 040-27682246
2.	Dr. P.Siva Ram Asst. prof. of Appld.Bio.Sciences Mahatma Ghandi University Nalgonda	9032694559
3.	Sri.T.Srinivas Asst. prof. of microbiology Department of microbiology GDC Jadcharla	9985737320
4.	Smt.A.Madhuri Asst. prof. of microbiology Department of microbiology GDC(W) Begumpet , Hyderabad	9581208104
5.	Dr.K.Jyothi Asst.Prof. of Microbiology Department of Microbiology Tara GDC,Sangareddy	9885824325

B. Srinivas
CHAIRMAN
 Board of Studies
 Dept. of Microbiology
 Nagarjuna Government College (A)
 Nalgonda (TS) - 508 001