2015 — 2016

NAGARJUNA GOVERNMENT COLLEGE, NALGONDA
(Autonomous)
DEPARTMENT OF BIOTECHNOLOGY
BOARD OF STUDIES MEETING

The Board of studies in the Department of Biotechnology met on Date 30-07-2015 under the chairmanship of the Board of studies and adopted the following Resolutions.

1. Introduction of Choice Based Credit System(CBCS)for I year & II year from academic year 2015-2016
2. Each semester will have 4 units
3. To Conduct 2 (two)internal assignments 30 marks(20 marks for written examination ,5 marks for Assignment and 5 marks for Seminar)forI&II year and10 marks for III year.
4. It is compulsory to a student to pass in internal exam has to secure 40% marks.
5. To conducts semester end Examination for 70 marks for I&II year.
6. To pass end examination are has to get a minimum of 36% of marks in each paper.
7. Conducting of I internal in the last week of August and II internal in the first week of October of the academic year.
8. To Design the question paper in the following pattern:
   For I & II year in section-A to give 5 Questions and ask the students to answer all Questions(VSA) 5x2=10,
   In section-B to give 6 Questions and ask the students to answer 4 Questions (SA) 4x5=20.
   In section-C to give 4 Questions with internal choice and ask the students to answer 4 Questions 4x10=40.
   For III year in section-A to give 4 Questions with internal choice and ask the students to answer 4 Questions– 4x8=32.
   In section-B to give 8 questions and ask them to answer 4 Questions – 4x2=8.
9. Commencement of All Semester to prepare and supply question Banks (Description & Objective type) to the students.
10. Continuous internal assessment method to evaluate the progress of the students
11. Approved the panel of examiner for paper setting and evaluation for the year 2015-16.

1. Chairman Board of Studies: Sri A.Ramana Rao, Asst.Prof. In-Charge Dept. of Biotechnology N.G. College, Nalgonda.

2. University Nominee: Dr T.Sivaram, Asst.Prof. Head Dept. of Biotechnology, MGU, Nalgonda.

Assistant Professor
University College of Science & Informatics
Mahatma Gandhi University
Yellareddyguda, NALGONDA-508254.

3. Subject expert-from out side college: 1.Dr.Prem Sagar, Asst.Prof, Dept. of Biotechnology, MGU, Nalgonda.

Dr. K. PREMSAGAR
Asst. Professor
Dept. of Biotechnology
MAHATMA GANDHI UNIV.
NALGONDA-508254 A.P. INDIA.

2.Dr. , Asst.Prof, Dept.of Biotechnology, MGU.Nalgonda.

4. Members
The faculty
Members of the Dept.

1. G.Anjaiah, Guest Faculty in Biotechnology
2. Ayesha Guest Faculty in Biotechnology

Dr. M. RAMCHANDER
Asst. Professor, Dept. of Bio-Chemistry
MAHATMA GANDHI UNIVERSITY
NALGONDA-508 254. A.P. INDIA.

From
Sri Dr T.Sivaram,
Head Department of Biotechnology
MG University
Nalgonda.

To
Sri Dr.R.Nagender Reddy,
Principal,
N.G.College,
Nalgonda.

Sir,

In response to your letter dated 29 9-2015, I acknowledge my consent to act as hon'ble member / Subject expert of BOS in your Dept.of Biotechnology , Nagarjuna Govt. College, Nalgonda.

Thanking you,

Yours Sincerely,

Assistant Professor
University College of Science & Informatics
Mahatma Gandhi University
Velugodu, NALGONDA-508 254.

From
Dr.Prem Sagar, Asst.Prof
Department of Biotechnology,
MG University
Nalgonda.

To
Sri Dr.R.Nagender Reddy,M.A.,Ph.D.,
Principal
N.G.College,
Nalgonda.

Sir,

In response to your letter dated 29-9-2015, I acknowledge my consent to act as hon'ble member / Subject expert of BOS in your Dept.of Biotechnology , Nagarjuna Govt. College, Nalgonda.

Thanking you,

29/09/2015

Yours Sincerely

Dr. K. PREMSAGAR
Asst. Professor
Dept. of Biotechnology
MAHATMA GANDHI UNIV.
NALGONDA-508254. A.P. INDIA.

From
Dr. M. Ramchander, Asst.Prof
Dept.of ~~Biotechnology~~ Chemistry,
MGU.Nalgonda

To
Sri Dr.R.Nagender Reddy,M.A.,Ph.D.,
Principal
N.G.College,
Nalgonda.

Sir,

In response to your letter dated 29-09-2015, I acknowledge my consent to act as hon'ble member / Subject expert of BOS in your Dept.of Biotechnology , Nagarjuna Govt. College, Nalgonda.

Thanking you,

Yours Sincerely,

Dr. M. RAMCHANDER
Asst. Professor, Dept. of Bio-Chemistry
MAHATMA GANDHI UNIVERSITY
NALGONDA-508 254. A.P. INDIA.

NAGARJUNA GOVERNMENT COLLEGE,NALGONDA
(AUTONOMOUS)
ALLOCATION OF CREDITS AT SUBJECT LEVEL

College: N.GCOLLEGE Course: B.Sc., Subject: BIOTECHNOLOGY

S.No.	Semester	Module(Paper)	Hours	Max. Marks	Credits
1	I(Core)	**FUNDAMENTAL OF GENETICS**	04	100	03
2	II (Core)	**MOLECULAR BIOLOGY-BIOINFORMATICS**	04	100	03
3	Practicals-1	**FUNDAMENTAL OF GENETICS MOLECULAR BIOLOGY-BIOINFORMATICS**	03	100	02
4	III (Core)	**BIOCHEMISTRY**	04	100	03
5	IV (Core)	**ENZYMOLOGY &BIOCHEMICAL TECHNIQUES**	04	100	03
6	Practicals-2	**BIOCHEMISTRY ENZYMOLOGY &BIOCHEMICAL TECHNIQUES**	03	100	02
7	V Advanced	**MOLECULARBIOLOGY,PLANT AND ANIMALBIOTECHNOLGY**	04	100	03
	Advanced Elective I	**ENVIRONMENTAL BIOTECHNOLOGY**	03	100	02*
	Advanced ElectiveII	**MEDICAL BIOTECHNOLOGY**	03	100	02*
8	VI Applied	**GENETIC ENGINEERING &INDUSTRIAL,ENVIRONMENTAL BIOTECHNOLOGY**	04	100	03
	Applied Elective I	**BIOTECHNOLOGY FOR CROP IMPROVEMENT**	03	100	02*
	Applied Elective II	**FOOD SCIENCE AND TECHNOLOGY**	03	100	02*
	Practicals-3	**MOLECULARBIOLOGY,PLANT AND ANIMALBIOTECHNOLGY**	03	100	02
	Practicals-4	**GENETIC ENGINEERING &INDUSTRIAL,ENVIRONMENTAL BIOTECHNOLOGY**	03	100	02
	TOTAL CREDITS				30
	Project Work	On the given topic		100	03
	* One Elective only is compulsory in Respective Sem.				

General Elective: Food and Nutrition:02 credits

Dr. M. RAMCHANDER
Asst. Professor, Dept. of Biochemistry
MAHATMA GANDHI UNIVERSITY
NALGONDA-508 254. A.P. INDIA

DEEKI PREMSAGAR
Asst. Professor
Dept. of Biotechnology
MAHATMA GANDHI UNIVERSITY
NALGONDA-508 254. A.P. INDIA

Assistant Professor
University College of Sciences & Informatics
Mahatma Gandhi University
NALGONDA-508 254

NAGARJUNA GOVERNMENT COLLEGE, NALGONDA
(Autonomous)
DEPARTMENT OF BIOTECHNOLOGY
BOARD OF STUDIES MEETING

The Board of studies in the Department of Biotechnology met on Date - - 2015 under the chairmanship of the Board of studies and adopted the following Resolutions.

1. Introduction of Choice Based Credit System(CBCS)for I year & II year from academic year 2015-2016
2. Each semester will have 4 units
3. To Conduct 2 (two)internal assignments 30 marks(20 marks for written examination ,5 marks for Assignment and 5 marks for Seminar)forI&II year and10 marks for III year.
4. It is compulsory to a student to pass in internal exam has to secure 40% marks.
5. To conducts semester end Examination for 70 marks for I&II year.
6. To pass end examination are has to get a minimum of 36% of marks in each paper.
7. Conducting of I internal in the last week of August and II internal in the first week of October of the academic year.
8. To Design the question paper in the following pattern:
   For I & II year in section-A to give 5 Questions and ask the students to answer all Questions(VSA) 5x2=10,
   In section-B to give 6 Questions and ask the students to answer 4 Questions (SA) 4x5=20.
   In section-C to give 4 Questions with internal choice and ask the students to answer 4 Questions 4x10=40.
   For III year in section-A to give 4 Questions with internal choice and ask the students to answer 4 Questions– 4x8=32.
   In section-B to give 8 questions and ask them to answer 4 Questions – 4x2=8.
9. Commencement of All Semester to prepare and supply question Banks (Description & Objective type) to the students.
10. Continuous internal assessment method to evaluate the progress of the students
11. Approved the panel of examiner for paper setting and evaluation for the year 2015-16.

1. Chairman Board of Studies:	Sri A.Ramana Rao, Asst.Prof. In-Charge Dept of Biotechnology N.G. College, Nalgonda.
2. University Nominee	Dr T.Sivaram, Asst.Prof. Head Dept of Biotechnology, MGU, Nalgonda.
3. Subject expert-from out side college	1.Dr.Prem Sagar, Asst.Prof, Dept of Biotechnology, MGU, Nalgonda. 2.Dr. M. Ramchander, Asst.Prof, Dept.of Biotechnology, MGU.Nalgonda.
4. Members The faculty Members of the Dept.	1. G.Anjaiah, Guest Faculty in Biotechnology 2. Ayesha Guest Faculty in Biotechnology

Dr. K. PREMSAGAR
Asst. Professor
Dept. of Biotechnology
MAHATMA GANDHI UNIVERSITY
NALGONDA-508 254, A.P. INDIA.

Dr. M. RAMCHANDER
Asst. Professor, Dept. of Biotechnology
MAHATMA GANDHI UNIVERSITY
NALGONDA-508 254, A.P. INDIA.

DEPARTMENT OF BIOTECHNOLOGY

BOARD OF STUDIES

Board of Studies in the Department of Biotechnology has been constituted with the following members for the year 2015-16.

S.No	Category	Name and Designation
1	Chairman Board of Studies	Sri A.Ramana Rao, Incharge Dept. of Biotechnology, N.G. College.Nlg.
2	University Nominee	1.Dr T.Sivaram, Asst.Prof, Head Dept of Biotechnology, MGU, Nlg.
3	Subject expert- from outside the college	1.Dr.K.Prem Sagar, Asst.Prof, Dept of Biotechnology, MGU, Nalgonda. 2.Dr.M.Ramchander Asst.Prof Dept of Biochemistry, MGU, Nalgonda.
4	Members: The Faculty Members of the Dept.	1.G.Anjaiah, Guest Faculty in Biotechnology. 2.Ayesha, Guest Faculty in Biotechnology.

NAGARJUNA GOVERNMENT COLLEGE,NALGONDA
(AUTONOMOUS)
B.Sc- I Biotechnology
FUNDAMENTALS OF GENETICS
SEMESTER-I
PAPER-I

60 hrs
(4 hrs/ week)

MODULES- I **Cell Structure and Function**

1.1 Cells as basic units of living organisms
Viral, bacterial, fungal, plant and animal cells

1.2 Ultra structure of prokaryotic cell (Cell membrane, plasmids)

1.3 Ultra structure of eukaryotic cell (Cell wall, cell membrane, mitochondria, chloroplast, endoplasmic reticulum, Golgi apparatus, vacuoles).

MODULE -II **Chromosome Organization and Cell Division**

1.4 Chromosome organization in Prokaryotes and Eukaryotes

1.5 Structure of specialized chromosomes (Polytene and Lamp Brush)

1.6 Cell Division and Cell Cycle

1.7 Significance of mitosis and meiosis

MODULE - III **Mendalism & Mendel's Laws**

2.1 Mendel's experiments – Factors contributing to success of Mendel's experiments

2.2 Law of segregation – Monohybrid ratio

2.3 Law of Independent assortment – Dihybrids, Trihybrids

2.4 Deviation from Mendel's Laws - partial or incomplete dominance, co-dominance

2.5 Penetrance and expressivity, pleiotropism

2.6 Epistatic gene interaction – Modified dihybrid ratios (12:3:1; 9:7; !5:1; 9:3:4:, 9:6:1; 13:3)

MODULE -IV **Sex Determination & Recombination**

2.7 Genes and environment – phenocopies

2.8 Linkage and recombination – Discovery of linkage, cytological proof of crossing
o over
Recombination frequency and map distance
Interference and coincidence
Mitotic crossing over in *Drosophila*

2.9 Mechanism of sex determination-genic balance theory - *Drosophila*
Homogametic and Heterogametic theory (Human, Mamalian, Birds)

2.10 X – linked inheritance (eg. Haemophilia)

Dr. K. PREMSAGAR
Asst. Professor
Dept. of Biotechnology

Asst. Professor, Dept. of Bio-Chemistry
MAHATMA GANDHI UNIVERSITY
NALGONDA-508 254. A.P. INDIA

NAGARJUNA GOVERNMENT COLLEGE,NALGONDA
(AUTONOMOUS)
B.Sc- I Biotechnology
MOLECULAR BIOLOGY- BIO INFOMATICS
SEMESTER-II
PAPER-II

60 hrs
(4 hrs/ week)

MODULE- I Structure of Nucleic Acids

3.1 DNA as the genetic material – Griffiths experiments on transformation in *Streptococcus pneumoniae*. Avery, McEleod and Mc Carty's experiments. Hershey – Chase experiments with radio-labelled T_2 bacteriophage

3.2 RNA as genetic material – Tobacco Mosaic Virus

3.3 Structure of DNA – Watson and Crick Model
Forms of DNA – A, B and Z forms of DNA, Super coiled and related DNA – Role of topoisomerases

MODULE - II Funtions& Mechanisms of Nucleic Acids

3.4 DNA Replication – Models of DNA replication (Semi-conservative, non-conservative models)
Mechanisms of DNA replication – Linear and circular – Rolling circle and theta mechanism of replication

3.6. DNA damage and Repair

3.7. DNA Recombination

3.8. Reverse Transcriptase

MODULE- III Concepts of Biostatistics

4.1 Concept of probability, basic laws and its application to Mendelian segregation. Concept of probability distribution. Binomial and Poisson distributions, Normal distribution and their application to biology

4.2 Concept of sampling and sampling distribution. Concept of test of hypothesis. Applications of t-test statistics to biological problems/data: Chi-square, statistic applications in biology

4.3 Simple Regression and Correlation. Concept of analysis of variance (one-way classification

MODULE -IV Concepts of Bioinfomatics

4.4 Introduction to Bioinformatics
Biological Databases – Nucleotide sequence and Protein databases, their utilization in Biotechnology, Storage of biological data in databanks, data retrieval from databases and their utilization

Assistant Professor
University College of Science & Informatics
Mahatma Gandhi University
Nalgonda-508254.

Dr. K. PREMSAGAR
Asst. Professor
Dept. of Biotechnology
MAHATMA GANDHI UNIVERSITY
NALGONDA-508254. A.P. INDIA.

Dr. M. RAMCHANDER
Assistant Professor, Dept. of Bio-Chemistry
MAHATMA GANDHI UNIVERSITY
NALGONDA-508254. A.P. INDIA.

Practical Paper – I

45hrs
(4 hrs/ week)

1. Monohybrid and dihybrid ratio in *Drosophila*/maize
2. Estimation of DNA by diphenylamine method
3. Estimation of RNA by orcinol method
4. Preparation of different stages of Mitosis and Meiosis
5. Types of chromosomes
6. Finding statistical significance of a given data using 't' test
7. Graphical representation of data (Histograms, frequency polygen, Pie diagram)
8. Fitting of binomial and Poisson distributions
9. Acquaintance with the Biological databases through Internet

Recommended Books

1. Biometry - By Sokal and Rohlf W.H. Freeman
2. Fundamentals of Biometry - By L.N. Balaram (George Allen and Unwin Ltd, London (1972)
3. Biostatistics - By N.T.J. Bailey
4. Biostatistics- Manual of biostatistical methods for use in health, nutrition and Anthropology - By K. Visweshwar Rao (Jaypee Publications).
5. Genetics - By Gardner (Macmillan Press)
6. An introduction to Genetic Analysis - By Griffith and others – Freeman and Company
7. Bioinformatics and Bioprogramming in C - By L.N. Chavali
8. Cell Biology - By S.C. Rastogi (New Age International (P) Ltd)
9. Statistical Genetics – Principles and Practice - By Prem Narain
10. Biotechnology - By K. Trehan
11. Biotechnology –I - By R.S. Setty and G.R. Veena
12. Biotechnology – II - By R.S. Setty and V. Sreekrishna
13. Fundamentals of Genetics – By B.D. Singh, N. Pratibha, P.H. Rao and P.B. Kavi Kishor
13. Genetics - By B.D. Singh
14. Genetics - By Mohan P. Arora, Gurdarshan and S. Sandhu
15. Introduction to Bioinformatics - By V. Kothekar
16. An Introduction to Kothekar - By V. Kothekar and T. Nandi
17. Introduction to Bioinformatics - By Arthur M. Lesk
18. Cell and Molecular Biology - By De Robertis
19. Cell and Molecular Biology - By Lodish
20. Cell Biology and Genetics - By P.K. Gupta
21. Theory and Problems in Genetics - By Stransfield

Assistant Professor
University College of Science & Informatics
Mahatma Gandhi University
Nalgonda-508254.

Dr. K. PREMSAGAR
Asst. Professor
Dept. of Biotechnology
MAHATMA GANDHI UNIVERSITY
NALGONDA-508254, A.P. INDIA

Dr. M. RAMCHANDER
Asst. Professor, Dept. of Bio-Chemistry
MAHATMA GANDHI UNIVERSITY
NALGONDA-508254, A.P. INDIA

NAGARJUNA GOVERNMENT COLLEGE,NALGONDA
(AUTONOMOUS)
B.Sc –Biotechnology
BIOLOGICAL CHEMISTRY
SEMESTER-III
PAPER-III

60hr
4hr/week

MODULE-I CARBOHYDRATES

1. Carbohydrates: Importance, classification
2. Structure and configuration of Monosaccharides, monosaccharides: structure, classification and properties
3. Dissacharides- structures of sucrose, laclose, maltose and trehalose glycosidic linkage and sugas as reducing agents.
4. Polysaccharides- storage polysaccharides – starch and glycogen; structural polysaccharides- cellulose and chitin

MODULE-II CARBOHYDRATES-METOBOLISMS

1. Glycolysis
2. Citric acid cycle
3. Gluconeogenesis and its significance
4. Mitochondrial electron transport, chemiosmotic theory of ATP synthesis
5. Photosynthesis- Light and dark reaction

MODULE-III PROTEINS & AMINO ACID-METOBOLISM

1. Proteins: classification and structural features of amino acids
2. Stero isomerism and Zwitter ion properties alloforms of amino acids
3. Peplide bond characteristics, structure and classification different levels of structures of proteins-primary, secondary, tertiary and quaternary
4. Deamination, decarboxylaltion and transamination reactions famino acids.
5. Inborn errors in amino acis catobolisms – phenyl alanine and tyrosine (phenylketonuria and albinism)
6. urea cycle

MODULE-IV LIPID- METOBOLISM

1. Lipids: Fatty acids: Saturated and unsaturated
2. Classification of lipids- Saponifiable and non-saponifiable Triao, glycerols, Phosphoglycerols, Spingollipids, Sterols,Lipid bilayer membranes
3. B-Oxidation of fatty acid- knoop's theory

Practicals

1. Qualitative tests of sugars.
2. Qualitative tests of amino acids.
3. Qualitative tests of lipids.
4. Quantitative estimations of protein by Biuret Methods
5. Estimation of total sugars by Amino acids

Assistant Professor
University College of Science & Informatics
Mahatma Gandhi University
Yellareddyguda, NALGONDA-508 254.

Dr. K. PREMSAGAR
Asst. Professor
Dept. of Biotechnology
MAHATMA GANDHI
NALGONDA

Dr. M. RAMCHANDER
Asst. Professor, Dept. of Bio-Chemistry
MAHATMA GANDHI UNIVERSITY
NALGONDA-508 254. A.P. INDIA.

NAGARJUNA GOVERNMENT COLLEGE,NALGONDA
(AUTONOMOUS)

B.Sc –Biotechnology

ENZYMOLOGY-BIOPHYSICAL TECHNIQUES

SEMESTER-IV

60 hrs
(4 hrs/ week)

PAPER- IV

MODULE-I ENZYMOLOGY

1. Enzymes: Classification of enzymes
2. *Kinetics of enzyme catalyzed reactions*
3. Facters influencing enzymatic reactions

   a) PH b) Temperature c) Substrate concentration d) Enzyme concentration
4. Enzyme inhibition- competitive and non competitive

MODULE -II BIO PHYSICAL TECHNIQUES

1. Colorimetry and Spectrophotometry-Beer-Lambert's Law
2. Microscopy-Light, Inverted, Fluorescent and Electron microscopy
3. Chromatography

a) Paper b) Thin Layer c) Ion-exchange d) Gel-filtration

4. Electrophoresis – Paper, Agarose, SDS-PAGE
5. Centrifugation, Dialysis,Cell fractionation, distraction.

MODULE -III FUNDAMENTALS OF MICROBIOLOGY

3.1 Outlines of classification of microorganisms

3.2 Structure and general characters of Viruses, Bacteria, Fungi and Micro Algae (one example from each group)

3.3 Disease causing pathogens and their symptoms (examples; Typhoid, HIV only Isolation, identification and preservation of microorganisms (Bacteria)

MODULE -IV FUNDAMENTALS OF MICROBIOLOGY

3.5 Identification methods of Fungi and useful Micro Algae

3.6 Methods of sterilization

3.7 Bacterial reproduction and growth kinetics (Batch and continuous Culture). Pure cultures and cultural characteristics

Practicals

1. Paper chromatography of amino acids
2. Separation of compounds by TLC
3. Separation of plant pigments on alumina column/paper chromatography
4. Paper electrophoresis of amino acids
5. Enzyme assays- Catalase (any other enzyme)
6. Preparation of routine microbiological media.
7. Isolation of common non-pathogenic bacteria
8. Staining and identification of bacteria – E.coli, Pseudomonas, Bacillus and Staphylococcus

Assistant Professor
University College of Science & Informatics
Mahatma Gandhi University
Velmareddyguda, NALGONDA-508254.

Dr. K. PREMSAGAR
Asst. Professor
Dept. of Biotechnology
MAHATMA GANDHI UNIVERSITY
NALGONDA-508254. A.P. INDIA.

Dr. M. RAMCHANDER
Asst. Professor, Dept. of Bio-Chemistry
MAHATMA GANDHI UNIVERSITY
NALGONDA-508254. A.P. INDIA.

NAGARJUNA GOVT. DEGREE COLLEGE, NALGONDA 508001

B.Sc –Biotechnology

MOLECULAR BIOLOGY

SEMESTER-V **60 hrs**

3 hrs/ week)

PAPER- V

MODULE-I Gene nature and concept

1.1 Organization of nuclear genome – Genes and gene numbers – essential and non essential genes

1.2 Denaturation and renaturation of DNA - Tm values and Cot curves

1.3 Kinetic classes of DNA - Single copy sequences, and repeated sequences. Inverted, tandem and palindromic repeats

1.4 Satellite DNA

MODULE- II Genome organization

1.5 Mitochondrial genome organization (eg: Human)

1.6 Chloroplast genome organization in plants

1.7 Organization of eukaryotic genes - Exons, introns, promoters and terminators

1.8 Gene families and clusters – eg. Globin gene, histones and ribosomal genes.

MODULE-III Gene expression&regulation

2.1. Prokaryotic and Eukaryotic Transcription
Post-transcriptional modifications (Capping, polyadenylation, splicing and alternate splicing)

2.2 TranslationGenetic code and its features, Wobble Hypothesis,Synthesisof polypeptides - initiation, elongation and termination in prokaryotes and eukaryotes

2.3 Regulation of gene expression in prokaryotes and eukaryotes

Operon concept in bacteria – Lac operon,Tryptophan Operon,Mating types in yeasts

MODULE-IV Cancer Biology

2.4 Cancer-Types of Cancer

2.5 Charcteristics of cancer cells

2.6 Oncogenes

2.7 Tumour Supressor Genes

Practicals

1. Isolation of DNA from plant/animal/bacterial cells
2. Analysis of DNA by agarose gel electrophoresis
3. Restriction digestion of DNA
4. Estimation of Melting temperature of DNA

Recommended Books

1. Concepts in Biotechnology - By D. Balasubramanian, C.F.A. Bryce, K. Dharmalingam, J. Green and Kunthala Jayaraman
2. Essential Immunology - By I. Roitt, Publ: Blackwell
3. Molecular Biology of the Gene - By Watson, Hopkins, Goberts, Steitz and Weiner (Pearson Education)
4. Cell and Molecular Biology - By Robertis & Robertis, Publ: Waverly
5. Text Book of Biotechnology - By H.K. Das (Wiley Publications)
6. Gene Structure & Expression - By J.D. Howkins, Publ: Cambridge
7. Test Book of Molecular Biology - By K.S. Sastry, G. Padmanabhan & C. Subramanyan, Publ: Macmillan India
8. Microbial Genetics - By S.R. Maloy, J.E. Cronan & D. Freifelder, Publ: Jones & Barlett
9. Principles of Gene Manipulation - By R.W. Old & S.B. Primrose, Publ: Blackwell
10. Genes - By B. Lewin - Oxford Univ. Press

Molecular Biology & Biotechnol. - By H.D. Kumar, Publ: Vikas

11. Essentials of Biotechnology – By P.K. Gupta
12. Laboratory Experiments in Microbiology – By M. Gopal Reddy, M.N. Reddy, D.V.R. Sai

Assistant Professor
University College of Science & Informatics
Mahatma Gandhi University
Nalgonda-508254.

Dr. K. PREMSAGAR
Asst. Professor
Dept. of Biotechnology
MAHATMA GANDHI UNIVERSITY
NALGONDA-508254. A.P. INDIA.

Dr. M. RAVICHANDER
Asst. Professor, Dept. of Bio-Chemistry
MAHATMA GANDHI UNIVERSITY
NALGONDA-508254. A.P. INDIA.

NAGARJUNA GOVT. DEGREE COLLEGE, NALGONDA 508001

B.Sc –Biotechnology

ANIMAL AND PLANT BIOTECHNOLOGY

SEMESTER-V

PAPER - VI **60hr**

(3 hrs/ week)

MODULE-I Animal Tissue culture

1.1 Introduction to animal biotechnology
1.2 Principles of animal cell culture – culture vessels
1.3 Cell culture media preparation, sterilization, types of cultures
1.4 Establishment and preservation of cell lines
1.5 Explants and cell disaggregation
1.6 Culture of cells and tissues (including Stem cells and their application)

MODULE- II Animal Biotechnology Techniques

1.7 *In vitro* fertilization and embryo transfer technology
1.8 Methods of gene transfer – Microinjection and viral mediated gene transfer techniques
Production of transgenic animals and molecular pharming
1.9 Principles of *Ex vivo* and *In vivo* gene therapy

MODULE- III Plant Tissue culture

2.1. Composition of media (Murashige and Skoog's and Gamborg's only)
Preparation of media and methods of sterilizations
2.2. Role of plant growth regulators in differentiation
2.3. Induction of callus
2.4. Meristem culture and production of virus free plants
Clonal propagation of plants on a commercial scale (Somatic embryogenesis and organogenesis)

MODULE- IV Plant Biotechnology and Applications

2.5. Mass cultivation of cell cultures and process engineering – batch and continuous cultures, Bioreactors
2.6. Production of commercially useful compounds by plant cell culture
(Shikonin, alkaloids ,food additives)
2.6 Biotransformation by plant cell cultures (Digitoxin, Beeta methyl digitoxin)
2.7. Methods of gene transfer techniques (*Agrobacterium*, Microprojectile bombardment)
2.8. Applications of recombinant DNA technology in agriculture
2.9. Production of therapeutic proteins from transgenic plants

Practicals

1. Preparation of media, and initiation of callus from any one selected plant species
2. Micropropagation of plants (any one)
3. Preparation of synthetic seeds
4. Preparation of media and culture of animal cells/tissues
5. Cell disaggregation and cell counting

Recommended Books

1. Strategies in Transgenic Animal Sciences - By Glemn M.M. and James M. Robl ASM Press 2000.
2. Practical Biotechnology – Methods and Protocols - By S. janarthanan and S. Vincent (Universities Press)
3. Animal Cells as Bioreactors - By Terence Gartoright, Cambridge Univ Press
4. Molecular Biotechnology- By Chinnarayappa (Universities Press)
5. Principles and Practice of Animal Tissue Culture - By Sudha Gangal (Universities Press)
6. Introduction to Veterinary Genetics - By F.W. Nicholas, Oxford University Press.
7. Text Book of Biotechnology - By H.K. Das (Wiley Publications)
8. Biotechnology -By H.J. Rehm and G. Reed Vol-1-86 VIH Publications, Germany
9. Guide for the care and use of lab animals National Academy Press.
10. Biogas Technology - By b.T. Nijaguna
11. Biotechnology – I - By R.S. Setty and G.R. Veena
12. Biotechnology – II - By R.S. Setty and V. Sreekrishna
13. Introduction to Plant Tissue Culture - By M.K. Razdan (Oxford and IBH Publishing Company, New Delhi)
14. Introduction to Plant Biotechnology - By H.S. Chawla (Oxford and IBH Publishing Comp., New Delhi)

Biotechnology - By K. Trehan

15. Introduction to Biotechnology - By P.K. Gupta
16. Frontiers of Plant Tissue Culture - By T.A. Thorpe
17. Plant Tissue Culture – Theory and Practice - By S.S. Bhojwani and M.K. Razdan
18. Biotechnology – By U. Satyanarayana

Assistant Professor
University College of Science & Informatics

Dr. K. PREMSAGAR
Asst. Professor
Dept. of Biotechnology
MAHATMA GANDHI UNIVERSITY
NALGONDA-508254. A.P. INDIA.

Dr. M. RAMCHANDER
Asst. Professor, Dept. of Bio-Chemistry
MAHATMA GANDHI UNIVERSITY
NALGONDA-508254. A.P. INDIA.

NAGARJUNA GOVT. DEGREE COLLEGE, NALGONDA 508001

B.Sc –Biotechnology

GENETIC ENGINEERING AND IMMUNOLOGY
SEMESTER-VI
PAPER-VII

60 hrs
(3 hrs/ week)

MODULE- I Recombinant DNA Technology

3.1 Enzymes used in gene cloning : Restriction endonucleases, Ligases, Phosphatases, Methylases, Kinases
3.2. Cloning vehicles – Plasmids, Cosmids, Phage vectors, Shuttle vectors,
3.3. Baculovirus vector system, Expression vectors - expression cassettes
3.4. Construction of genomic and cDNA libraries

MODULE- II Applications in rDNA Technology

3.5. Identification of cloned genes
3.6. Application in genetic engineering –HUMILLIN, SOMTOSTATATIN,GOLDEN RICE with Vitamin A
3.7 Recombinant vaccines productions

MODULE- III Basics of Immunology

2.1 Introduction to immune system – Organs and cells of the immune system
2.2 Antigens, Haptens – physico-chemical characteristics
2.3 Structure of different immunoglobulins and their functions – Primary and secondary antibody responses,Antigen - Antibody Reaction
2.4 The Major Histocompatibility gene complex and its role in organ transplantation, Generation of antibody diversity
2.5 Hypersensitivity – Coombs classification, Types of hypersensitivity,Autoimmune diseases – mechanisms of auto immunity

MODULE- IV Virology

1. Structure and composition of viruses.
2. One-step growth and determination of plaque forming units (PFU).
3. Isolation and cultivation of bacterial plaques. Lytic and lysogenic life cycle of λ-phage.
4. TMV, Retro viruses- HIV.
   Prions and Mycoplasma

Practicals

1. Immuno-diffusion test
2. ELISA Test
3. Microagglutination using microtiter plates (eg. ABO and Rh Blood grouping)
4. Viability tests of cells/bacteria (Evans blue test or Trypan blue test)
5. Coomb's test
6. Multiple sequence alignment

Recommended Books

1. Genetic Engineering - By R. Williamson, Publ: Academic Press
2. Test Book of Molecular Biology - By K.S. Sastry, G. Padmanabhan & C. Subramanyan, Publ: Macmillan India
3. Microbial Genetics - By S.R. Maloy, J.E. Cronan & D. Freifelder, Publ: Jones & Barlett
4. Principles of Gene Manipulation - By R.W. Old & S.B. Primrose, Publ: Blackwell
5. Genes - By B. Lewin - Oxford Univ. Press
6. Molecular Biology & Biotechnol. - By H.D. Kumar, Publ: Vikas
7. Immunology - By G. Reever & I. Todd, Publ: Blackwell
8. From Genes to Clones - By E.L. Winnacker, Publ: Panima, New Delhi
9. Methods for General & Molecular Bacteriology - By P. Gerhardf et al., Publ: ASM
10. Molecular Biotechnology - By G.R. Click and J.J. Pasternak, Publ: Panima
11. Recombinant DNA - By J.D. Watson et al., Publ: Scikentific American Books
12. Immuno diagnostics - By S.C. Rastogi, Publ: New Age
13. Molecular Biology - By D. Freifelder, Publ: Narosa
14. Genes and Genomes – By Maxine Singer and Paul Berg
15. Cell and Molecular Biology - By S.C. Rastogi
16. Genetic Engineering and Biotechnology - By V. Kumar Gera
17. Essentials of Biotechnology – By P.K. Gupta
18. Immunology - By Kubey
19. Gene Biotechnology - By Jogdand
20. Genome - T.A. Brown
21. Gene Cloning - T.A. Brown

Assistant Professor
University College of Science & Informatics
Mahatma Gandhi University
Yellareddyguda, NALGONDA-508254.

Dr. K. PREMSAGAR
Asst. Professor
Dept. of Biotechnology
MAHATMA GANDHI UNIVERSITY
NALGONDA-508254. A.P. INDIA.

Dr. M. RAMCHANDER
Asst. Professor, Dept. of Bio-Chemistry
MAHATMA GANDHI UNIVERSITY
NALGONDA-508254. A.P. INDIA.

NAGARJUNA GOVT. DEGREE COLLEGE, NALGONDA 508001

B.Sc –Biotechnology

INDUSTRIAL AND ENVIRONMENTAL BIOTECHNOLOGY

SEMESTER-VI

PAPER-VIII

60 hrs
(3 hrs/ week)

MODULE- I Industrial Biotechnology I

3.1 Introduction to industrial biotechnology.
3.2 Primary and secondary metabolic products of microorganisms
3.3 Screening and isolation and preservation of industrial microorganisms
3.4 Principles of Fermentation technology
3.5 Commercial production of fuels and chemicals by microbial fermentations

MODULE- II Industrial Biotechnology II

3.6 Fermentative production of microbial enzymes (amylases, proteases), and antibiotics
3.7 Fermentative production of foods and dairy products
3.8 Animal cells as bioreactors; characteristics of bioreactors, expression and over production of targeted proteins – human growth hormones – production of α and β - interferons, monoclonal antibodies
3.9 Good manufacturing practices, Biosafety issues, Bioethics
3.10 Intellectual Property Rights and Patenting issues

MODULE- III Environmental Biotechnology I

4.1 Introduction to environmental biotechnology
4.2 Renewable and non-renewable energy resources
4.3 Conventional energy sources and their impact on environmental
4.4 Non-conventional fuels and their impact on environment (biogas, bioethanol, microbial hydrogen production)
4.5 Microbiological quality of milk, food and water

MODULE- IV Environmental Biotechnology II

4.6 Microbiological treatment of municipal and industrial effluents
4.7 Microbial degradation of pesticides and toxic chemicals
4.8 Biopesticides and Biofertilizers (Nitrogen fixing, phosphate solubilizing microorganisms)
4.9 Microbial ore leaching
Introduction to Bioremediation
4.10 **Molecular Techniques** 1 .Basic P.C.R.-modifications of PCR
2. Bloting Techniques (southern ,northern & western)3. DNA fingerprinting

Practicals

6. Production of wine using common yeast
7. Production of hydrogen or biogas using cow/cattle dung
8. Isolation of microbes from soil or industrial effluents
9. Estimation of BOD in water samples
10. Production of alcohol by fermentation and Estimation of alcohol by colorimetry
11. Production of biofertilizers (*Azolla*)
12. Growth curves of bacteria, Measurement of growth in liquid cultures
13. Quality testing of milk by MBRT

Recommended Books

19. Biotechnology - By K. Trehan
20. Industrial Microbiology - By L.E. Casida
21. Food Microbiology - By M.R. Adams and M.O. Moss
22. Introduction to Biotechnology - By P.K. Gupta
    Bioprocess Engineering - By Shuler (Pearson Education)
23. Biotechnology – I - By R.S. Setty and G.R. Veena
24. Biotechnology – II - By R.S. Setty and V. Sreekrishna
22. Bioethics – Readings and Cases - By B.A. Brody and H. T. Engelhardt

Assistant Professor
University College of Science & Informatics
Mahatma Gandhi University
Yellareddyguda, NALGONDA-508254.

Dr. K. PREMSAGAR
Asst. Professor
Dept. of Biotechnology
MAHATMA GANDHI UNIVERSITY
NALGONDA-508254. A.P. INDIA.

Dr. M. RAMCHANDER
Asst. Professor, Dept. of Bio-Chemistry
MAHATMA GANDHI UNIVERSITY
NALGONDA-508254. A.P. INDIA.

NAGARJUNA GOVERNMENT COLLEGE,NALGONDA(AUTONOMOUS)
DEPARTMENT OF BIOTECHNOLOGY

GENERAL ELECTIVE: FOOD AND NUTRITION

Credits 2 **45 h**

10h

Unit I

Introduction to Nutrition ,Food and Our Body:

Definition, optimum nutrition, nutritional status, good nutritional status, poor nutritional status, malnutrition, under nutrition, signs of good nutritional status, signs of poor nutritional status, definition and functions of nutrients .Food and its functions, digestion, absorption and metabolism of food. Buccal digestion, gastric digestion and intestinal digestion, factors that affect digestion, absorption and metabolism, Five food groups.

11h

Unit II

Energy Metabolism and Carbohydrates:

Introduction, unit of measurement, energy value of food- calorimetry or bi proximate composition; energy needs of the body- reference man and reference woman; basal metabolic rate, factors affecting the BMR .

Carbohydrates

Introduction, classification of carbohydrates, digestion, absorption and metabolism, functions, deficiency, recommended dietary intake and sources.

Role of dietary fibre in prevention and treatment of diseases

12h

Unit III

Lipids and Proteins:

Lipids:

Introduction , classification of lipids, saturated and unsaturated fatty acid, functions of fat, digestion, absorption and metabolism of fat, deficiency, food sources and RDA

Proteins:

Introduction, classifications of proteins, nutritional classification of amino acids protein quality - biological value, net protein utilization, protein efficiency ratio.

Function, deficiency, sources and requirements.

12h

Unit IV

Vitamins, Minerals and Water

Vitamins: Classification- fat soluble and water soluble vitamins;

Fat soluble vitamins, A, D, E and K - introduction, function, deficiency, sources, RDA

Water soluble vitamins- B complex and C-introduction, functions, deficiency, sources, RDA

Minerals: Major or macro minerals- General functions of minerals, deficiency, sources and RDA

Major minerals- calcium, phosphorus, sodium, potassium, iron

Minor minerals- iron and manganese

Trace elements – iodine, fluorine, zinc

Water: Introduction, functions, water, daily intake of water, daily loss of water, body water, water balance, deficiency of water, retention of water, daily requirements, fat.

REFERENCES

- Begum, R. A text book of Foods, Nutrition and Dietetics. Second revised edition, Sterling Publishers (P) Ltd, New Delhi, 1991.
- Joshi, S. A Nutrition and dietetics. Third edition, Tata McGraw Hill education pvt ltd, New Delhi, 2010
- Mudambi, S. R., Rajagopal M. V., Fundamentals of food and Nutritions, 2nd edition, Wiley Eastern Ltd, New Delhi 1990.
- Roday, S., Food science and nutrition. Third edition, Oxford University Press, New Delhi, 2008.
- Srilakshmi, B, Nutrition Science, New age international (P) Ltd publishers, New Delhi, 2006.
- Swaminathan, M., Hand book of Food & Nutrition, Bappco Ltd, Bangalore, 1978.
- Swaminathan, M. Essential of Food and Nutrition, Vol.I. Bangalore Printing and Publishing Co. Ltd Bangalore.

Assistant Professor
University College of Science & Informatics
Mahatma Gandhi University
Yellareddyguda, NALGONDA-508254.

Dr. K. PREMSAGAR
Asst. Professor
Dept. of Biotechnology
MAHATMA GANDHI UNIVERSITY
NALGONDA-508254. A.P. INDIA.

Dr. M. RAMCHANDER
Asst. Professor, Dept. of Bio-Chemistry
MAHATMA GANDHI UNIVERSITY
NALGONDA-508254. A.P. INDIA.

NAGARJUNA GOVERNMENT COLLEGE AUTONOMOUS
MODEL QUESTION PAPER
I YEAR –SEMISTER-I
PAPER-I
FUNDAMENTALS OF GENETICS

MARKS: 70

SECTION-A

I.ANSWER THE FOLLOWING QUESTIONS **5X2=10**

1.Mitochondria
2.Cell cycle
3.Pleiotropism
4.Polytene chromosomes
5.Haemophilia

SECTION –B

II.ANSWER ANY FOUR OF THE FOLLOWING QUESTIONS **4X5=20**

6.Write in detail about ultrstructure of Prokaryotic cell structure?
7.Explain briefly about Eukaryotic chromosome organization?
8. Factors contributing the Mendel's experiments- Explain?
9.Explain briefly about Epistaticgene interaction?
10. what is Linkage? Explain with examples?
11.Explain cytological proof of crossing over?

SECTION-C

III.ANSWER THE FOLLOWING QUESTIONS **4X10=40**

12. a.) Cell as basic units of living organisms-explain?

Or

b.)Explain in detail about cell membrane ?

13. a.)Explain briefly about deviation from Mendel's law?

Or

b.) Describe the stages of Meiosis?

14. a.)Explain briefly about Law of Segregation?

Or

b.)Describe briefly about Lamp Brush chromosomes?

15.a.)Explain Mitotic crossing over in Drosophila?

Or

b.) Describe about recombination frequency and map distance?

Assistant Professor
University College of Science & Informatics
Mahatma Gandhi University
Yellareddyguda, NALGONDA-508254.

Dr. K. PREMSAGAR
Asst. Professor
Dept. of Biotechnology
MAHATMA GANDHI UNIVERSITY
NALGONDA-508254. A.P. INDIA

Dr. M. RAMCHANDER
ASST. PROFESSOR, Dept. of Bio-Chemistry
MAHATMA GANDHI UNIVERSITY
NALGONDA-508254. A.P. INDIA

NAGARJUNA GOVERNMENT COLLEGE AUTONOMOUS
MODEL QUESTION PAPER
I YEAR –SEMISTER-II
PAPER-II
MOLECULAR BIOLOGY- BIO INFOMATICS

MARKS: 70

SECTION-A

I. ANSWER THE FOLLOWING QUESTIONS **5X2=10**

1.T2 bacteriophage
2.Watson & Crick
3.Topoisomarase
4.Klenw fragments
5.Bionomal Distribution

SECTION –B

II.ANSWER ANY FOUR OF THE FOLLOWING QUESTIONS **4X5=20**

6.Explain Hershey- chase Expriment with Radiolabelled T2 bateriophage?
7.Write different models of DNAReplication?
8.Describe briefly about DNA damage and Repair?
9.Describe about concept of probability distribution ?
10.Explain Storage of biological data in data banks?
11.Write briefly application of t-test statistics to biological problems/data?

SECTION-C

III.ANSWER THE FOLLOWING QUESTIONS **4X10=40**

12.a.)DNA as Genetic Material- Expalin
Or
b.)Write the various forms of DNA Models.

13.a.) What is DNA replication? Explain
Or
b.) Rolling circle of replication Explain

14.a.)What is Probability? Explain with Mendel's laws
Or
b.)Explain the Concept of Sampling?

15.a.)What is Bioinformatics? Explain?
Or
b.)Explain the Biological Data bases?

Assistant Professor
University College of Science & Informatics
Mahatma Gandhi University
Yellareddyguda, NALGONDA-508254.

Dr. K. PREMSAGAR
Asst. Professor
Dept. of Biotechnology
MAHATMA GANDHI UNIVERSITY
NALGONDA-508254. A.P. INDIA.

Dr. M. RAMCHANDER
Asst. Professor, Dept. of Bio-Chemis
MAHATMA GANDHI UNIVERSI
NALGONDA-508254. A.P. IN

NAGARJUNA GOVERNMENT COLLEGE AUTONOMOUS

MODEL QUESTION PAPER

BIOCHEMISTRY

II YEAR –SEMESTER-I

PAPER-III

I.ANSWER THE FOLLOWING QUESTIONS **5X2=10**

1.Trehalose
2.Chemiosmotic theory
3.Zwitter ion
4.Spingolipids
5.Deamination

SECTION-B

II.ANSWER ANY FOUR OF THE FOLLOWING QUESTIONS **4X5=20**

6.Write detailed structure of Disaccharides
7.Explain briefly about Gluconeogenesis and its significance.
8.Explain different levels of structures of proteins
9.Write about classifications of lipids
10.Write about inborn errors in amino acids catabolism
11.Write about Z scheme Photosynthesis reaction

SECTION –C

III.ANSWER THE FOLLOWING QUESTIONS **4X10=40**

13. a.)Write the Carbohydrate classification and importance

Or

b.)Write about structure and configuration of monosaccharides and its properties

14. a.)What is mitochondrial ETC cycle

Or

b.)Explain briefly about Gluconeogenesis and its significance

15. a.)Write the classification and structural features of amino acids

Or

b.)Write about Physico chemical properties of amino acids

16. a.)Write about β-oxidation of fatty acids

Or

b.)Write about saturated and unsaturated fatty acids

Assistant Professor
University College of Science & Informatics
Mahatma Gandhi University
NALGONDA-508254.

Dr. K. PREMSAGAR
Asst. Professor
Dept. of Biotechnology
MAHATMA GANDHI UNIVERSITY
NALGONDA-508254. A.P. INDIA

Dr. M. RAMCHANDER
Asst. Professor, Dept. of Bio-Chemis
MAHATMA GANDHI UNIVERSI
NALGONDA-508254. A.P. IN

NAGARJUNA GOVERNMENT COLLEGE AUTONOMOUS
MODEL QUESTION PAPER
ENZYMOLOGY &BIOPHYSICAL TECHNIQUES
II YEAR –SEMESTER-IV
PAPER-IV

SECTION-A

I.ANSWER THE FOLLOWING QUESTIONS **5X2=10**

1.Competitive inhibition.
2.Inverted Microscope.
3.TEM.
4.Microalgae.
5.Hot air Oven.

SECTION-B

II.ANSWER ANY FOUR OF THE FOLLOWING QUESTIONS **4X5=20**

6. Write about the types of enzyme inhibitions.
7.Briefly describe the Thin layer chromatography.
8.Write about the Fluorescent Microscopy.
9.Describe the Typhoid causing pathogen and the symptoms.
10.Write about Pure cultures and their cultural characteristics.
11.Write the methods of sterilization.

SECTION –C

III.ANSWER THE FOLLOWING QUESTIONS **4X10=40**

12. a.)Explain details of enzyme classifications.

Or

b.)Write the factors influencing enzymatic reactions.

13. a.)What is Beer-Lambert's law –Explain

Or

b.)Write the principle and procedure of electrophoresis with example.

14. a.)Write the structure and characters of different Microorganisms

Or

b.)Disease causing pathogens and their symptoms –Typhoid

15. a.)Write different methods of Sterilizations.

Or

b.)Write the Bacterial growth –Explain.

Assistant Professor
University College of Science & Informatics
Mahatma Gandhi University

Dr. K. PREMSAGAR
Asst. Professor
Dept. of Biotechnology
MAHATMA GANDHI UNIVERSITY
NALGONDA-508254. A.P. INDIA

Dr. M. RAMCHANDER
Asst. Professor, Dept. of Bio-Chemis
MAHATMA GANDHI UNIVERSI
NALGONDA-508254. A.P. IN

NAGARJUNA GOVERNMENT COLLEGE
AUTONOMOUS
MODEL QUESTION PAPER

III YEAR –SEMISTER-V PAPER-V

TIME 2.30 hrs MARKS: 40

ANSWER ALL QUESTIONS

I **(4 X8=32)**

a. Write the re-association kinetics of DNA detail.

Or

b. Write about kinetic classes of DNA.

II

a. Mitochandrial genome organization in human.

Or

b. Explain in detail Globulin gene clutures

III

a. Write an account on post-trascriptional modifications.

Or

b. Give an account on Operon concept of Lac gene.

IV

a. Write the characteristics of Cancer cells

Or

b. Give an account on Tumor suppressor genes

ANSWER ANY FOUR **(4 X2=8)**

1.C-value paradox
2.Tm-curve
3.Palindromic repeats
4.TATA box
5.Promoters
6.Exons
7.Oncogenes
8.Satellite DNA

Assistant Professor
University College of Science & Informatics
Mahatma Gandhi University

Dr. K. PREMSAGAR
Asst. Professor
Dept. of Biotechnology
MAHATMA GANDHI UNIVERSITY
NALGONDA-508254. A.P. INDIA.

Dr. M. RAMCHANDER
Asst. Professor, Dept. of Bio-Chemistry
MAHATMA GANDHI UNIVERSITY
NALGONDA-508254. A.P. INDIA

NAGARJUNA GOVERNMENT COLLEGE
AUTONOMOUS
MODEL QUESTION PAPER

III YEAR –SEMISTER-V PAPER-VI

TIME 2.30 hrs MARKS: 40

ANSWER ALL QUESTIONS **(4X8=32)**

I

a. Write a brief account on preparation of animal cell culture media.

Or

b. Give an account of stem cells and their applications.

II

a. Write a brief account on In vitro fertilizations.

Or

b. Explain about gene therapy with principles

III

a. Write the role of micronutrients and hormones in morphogenesis.

Or

b. Production of viral free plants in commercial scale.

IV

a. Write an account on Biotransformation by plant cell cultures.

Or

b. Write an account on vector mediated gene transfer in plants.

ANSWER ANY FOUR **(4X2=8)**

1.Inbreeding
2.Super ovulation
3.Auxins
4.Shikonins
5.Bioreactor
6.Ti plasmid
7.Liposome
8.Ttransgenic animals

Assistant Professor
University College of Science & Informatics
Mahatma Gandhi University
Yellareddyguda, NALGONDA-508254.

Dr. K. PREMSAGAR
Asst. Professor
Dept. of Biotechnology
MAHATMA GANDHI UNIVERSITY
NALGONDA-508254. A.P. INDIA.

Dr. M. RAMCHANDER
Asst. Professor, Dept. of Bio-Chemist
MAHATMA GANDHI UNIVERSITY
NALGONDA-508254. A.P. INDI

NAGARJUNA GOVERNMENT COLLEGE
AUTONOMOUS
MODEL QUESTION PAPER

III YEAR –SEMISTER-VI PAPER-VII

TIME 2.30 hrs MARKS: 40

ANSWER ALL QUESTIONS **(4 X8=32)**

I

c. Write the role of restriction endonuclease enzymein gene cloning.

Or

d. Write the brief an account on construction of rDNA.

II

a. What is gene libraries Exlain with significance of Genomic DNA.

Or

c. Production of somatostatin and wtite the applications in Genetic engineering

III

c. Write the physico-chemical properties of Antigens

Or

b. What is Hypersensitivity- Explain

IV

c. Isolation and cultivations of plaques-Explain

Or

d. Give the account on Retro virus

ANSWER ANY FOUR **(4X2=8)**

1.Methylase
2.PBR322
3.Marker genes
4.Golden rice
5.Thymus
6.MHC
7.TMV
8.Mycoplasma

Assistant Professor
University College of Science & Informatics
Mahatma Gandhi University
Yellareddyguda, NALGONDA-508254.

Dr. K. PREMSAGAR
Asst. Professor
Dept. of Biotechnology
MAHATMA GANDHI UNIVERSITY
NALGONDA-508254. A.P. INDIA

Dr. M. RAMCHANDER
Asst. Professor, Dept. of Bio-Chemistry
MAHATMA GANDHI UNIVERSITY
NALGONDA-508254. A.P. INDIA

NAGARJUNA GOVERNMENT COLLEGE
AUTONOMOUS
MODEL QUESTION PAPER

III YEAR–SEMISTER-VI PAPER- VIII

MARKS: 40

TIME 2.30 hrs

(4X8=32)

ANSWER ALL QUESTIONS

I

e. Write about Primary and secondary metabolic products of microorganisms.

Or

f. Explain briefly about screening and isolations of industrial microorganisms.

II

a. Give an account of fermentative productions of foods and diary products

Or

d. Give brief an account on production of interferons and monoclonal antibodies

III

d. Write about Renewable and Non renewable energy resources.

Or

e. Write about Non-conventional fuels and their impact on environment.

IV

c. Microbial degradation of pesticides and toxic chemicals .

Or

d. Write the different methods of Blotting techniques

(4X2=8)

ANSWER ANY FOUR

1.Amylase
2.Biofertilizers
3.Solar energy converters
4.Chemical sterilizers
5.Biogas
6.Taq-polymerase
7.Ethydiam bromide
8.Bioethics

Assistant Professor
University College of Science & Informatics
Mahatma Gandhi University
Yellareddyguda, NALGONDA-508254.

Dr. K. PREMSAGAR
Asst. Professor
Dept. of Biotechnology
MAHATMA GANDHI UNIVERSITY
NALGONDA-508254. A.P. INDIA.

Dr. M. RAMCHANDER
Asst. Professor, Dept. of Bio-Chemistry
MAHATMA GANDHI UNIVERSITY
NALGONDA-508254. A.P. INDIA