

**Choice based Credit System
(CBCS) For
B.Sc.,
(Biotechnology)
(Undergraduate
Programme)
(Effective from the Academic Year 2018-19)**



DEPARTMENT OF BIOTECHNOLOGY
Sri Y.N.College (Autonomous)
Narsapur,
Andhra Pradesh

DETAILS OF PAPER TITLES & CREDITS

Sem	Course no.	Course Name	Course type (T/L/P)	Hrs./ Week: Science:4+2	Credits : Science:4+1	Max. Marks Cont/Internal/Mid Assessment	Max.Marks Sem-end Exam
I	1	Bio-molecules & Analytical Techniques	T	4	4	25	75
		Bio-molecules & Analytical Techniques Lab	L	2	1	-	50
II	2	Microbiology, Cell and Molecular Biology	T	4	4	25	75
		Microbiology, Cell and Molecular Biology Lab	L	2	1	-	50
III	3	Immunology and rDNA technology	T	4	4	25	75
		Immunology and rDNA technology Lab	L	2	1	-	50
IV	4	Plant and Animal Biotechnology	T	4	4	25	75
		Plant and Animal Biotechnology Lab	L	2	1	-	50
	5	Environmental & Industrial Biotechnology	T	4	4	25	75
		Environmental & Industrial Biotechnology Lab	L	2	1	-	50

Note: *Course type code: T: Theory, L: Lab, P: Problem solving.

Batch: 2018 - 21

SRI Y.N.COLLEGE (AUTONOMOUS), NARASAPUR
(Affiliated to Adikavi Nannayya University)
Accredited by NAAC at "A" Grade with a CGPA of 3.40
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I B.Sc: BIOTECHNOLOGY
FIRST SEMESTER – PAPER I (A)
MICROBIOLOGY AND CELL BIOLOGY

UNIT I

History, Development and Microscopy

History and development of microbiology: contributions of Louis Pasteur, Robert Koch and Edward Jenner. Microscopy: Compound microscopy: Numerical aperture and its importance, resolving power, oil immersion objectives, Electron microscopy: Principle, ray diagram and applications, TEM and SEM, comparison between optical and electron microscope, limitations of electron microscopy.

Stains and staining procedures: Acidic, basic and neutral stains, Gram staining, Acid fast staining, Flagella staining

UNIT II

Bacteria: Bacterial morphology and sub cellular structures, general morphology of bacteria, shapes and sizes, generalized diagram of typical bacterial cell.

Slime layer and capsule. Cell wall of gram +ve and Gram -ve cells, Prokaryotic classification. General account of flagella and fimbriae. Chromatin material, plasmids; definition and kind of plasmids (conjugative and non-conjugative) F, R, and Col plasmids. A brief idea Bergey's manual. Morphology of archaea, archaeal cell membrane

Viruses: General characteristics of viruses, difference between virus and typical microbial cell, structure, different shapes and symmetries with one example of each type, classification of viruses on the basis of nucleic acids, phage and animal cell viruses, example of each and their importance.

UNIT III

Microbial Nutrition: Basic nutritional requirements: Basic idea of such nutrients as water, carbon, nitrogen, sulfur and vitamins etc., natural and synthetic media, nutritional classification of bacteria.

UNIT IV

Microbial growth and control Growth

Growth rate and generation time, details of growth curve and its various phases. Concept of synchronous cultures, continuous and batch cultures (chemostat and turbidostat). Measurement of growth. Physical conditions required for growth: Temperature (classification of microorganisms on the basis of temperature requirements), pH etc. Pure cultures and cultural characteristics. Maintenance of pure culture. Microbial Control: Terminologies - Sterilization, disinfection, antiseptic, sanitization, germicide, microbistasis, preservative and antimicrobial agents. Physical control: Temperature (moist heat, autoclave, dry heat, hot air oven and incinerators), dessication, surface tension, osmotic pressure, radiation, UV light, electricity, ultrasonic sound waves, filtration.

UNIT V

Cell Biology

Eukaryotic Cell - Structure and function of the following: nucleus, nuclear membrane, nucleoplasm, nucleolus, golgi complex, Mitochondria, Chloroplast, endoplasmic reticulum, lysosomes, peroxisomes, glyoxisomes and vacuoles. Mitosis and meiosis. Brief idea of cell cycle.

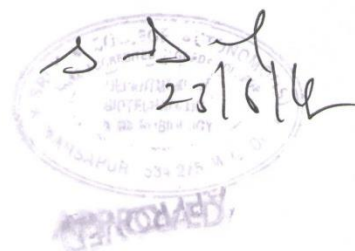
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Unit No	Essay questions	Short answer questions
I	2	1
II	2	2
III	2	1
IV	2	2
V	2	2

T. Fawell
23/6/2018

K. J. ...
23/6/18

Santhosh
23/6/18



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I B.Sc BIOTECHNOLOGY
FIRST SEMESTER - PAPER I (A)
CELL BIOLOGY AND MICROBIOLOGY

Time: 3Hrs

Max. Marks: 75

SECTION - A

I. Answer Any **FIVE** of the following Questions.

5 x 5 = 25

1. Louis Pasteur
2. Gram positive bacteria
3. Difference between virus and typical microbial cells
4. Natural and synthetic media
5. Ultrasonic sound waves
6. Antimicrobial gent
7. Nucleus
8. Vacuoles

SECTION - B

II. Answer any five questions choosing atleast **TWO** from each section B and C

5 X 10 = 50M

9. Define microscope and explain the compound microscope with diagrams
10. Explain the general characteristics of Viruses
11. Write in detail the basic nutritional requirements
12. What is Sterilization and explain it
13. Describe the mitochondria, chloroplast, endoplasmic reticulum with diagrams

SECTION - C

14. Write an essay on TEM and SEM
15. Describe the general morphology of bacteria
16. Explain the nutritional classification of bacteria
17. Detail account on growth curve and its various phases
18. Define cell and explain the structure of Eukaryotic cell

T. Ramell
23/6/2018

K. V. S. S. S.
23/6/18

S. S. S. S.
23/6/18

23/6/18
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I B.Sc BIOTECHNOLOGY

SECOND SEMESTER - PAPER I (B)

MACROMOLECULES, ENZYMOLOGY AND BIOENERGETICS

UNIT I

Nucleic Acids and Chromosomes

Chemical structure and base composition of nucleic acids, Chargaff's rules, Watson Crick Model (B-DNA), other forms of DNA (A and Z-DNA). Maxam and Gilbert DNA sequencing and Sanger's method.

Concept of prokaryotic genes and eukaryotic genes: Definition of a gene, concept of split genes, introns, exons, spacers, C-value and C-value paradox.

Chromatin structure: Nucleosome, types of histones, arrangement of histones in the octamer, H1 histone and its role, role and length of linker DNA, 300 nm fibers (arrangement of nucleosome in a helical structure), domain and loop structure. Role of telomere and centromere, telomeric and centromeric repeat sequences.

UNIT II

Amino acids and Proteins

Amino acids: Structure of amino acids occurring in proteins, classification of amino acids (pH based, polarity based and nutrition based), Physico-chemical properties of amino acids (solubility, boiling and melting points, reactions like Edman's, Sanger's, Dansyl chloride, ninhydrin).

Primary structure of proteins: Determination of primary structure (end group analysis, cleavage of disulfide bonds, amino acid composition, use of endopeptidase specificity, sequence determination, assignment of disulfide position).

Secondary structure of proteins: The α -helix, β -structures (parallel, antiparallel).

Tertiary structure of proteins: Forces that β stabilize the structure (electrostatic forces, hydrogen and disulfide bonds, hydrophobic associations), myoglobin as an example of tertiary structure, concept of domains, protein denaturation.

Quaternary structure of proteins: Forces stabilizing quaternary structure.

UNIT III:

Carbohydrates

Definition, classification, nomenclature of carbohydrates, structures of monosaccharides, disaccharides and polysaccharides (structures of starch and glycogen as examples of homopolysaccharides) and examples of heteropolysaccharides.

Lipids

Types of lipids, structures of saturated and unsaturated fatty acids, triglycerides, phospholipids, plasmalogens, gangliosides and sphingolipids. Terpenoids and isoprenoids - definition and representative structures, steroids. Chemistry of Porphyrines, Heme, Cytochromes, and Chlorophylls

UNIT IV

Enzymes

Terminology: Active site, allosteric site, Holoenzyme, apoenzyme, coenzyme, substrate, inhibitor, activator, modulator etc. Classification and nomenclature. Concept of isoenzymes (example Lactate Dehydrogenase) and multienzymes (example pyruvate dehydrogenase) Substrate Specificity (bond specificity, group specificity, absolute specificity, stereo-specificity, proof-reading mechanism), lock and key and induced fit models.

Assay of Enzymes: Concept of activity, specific activity, turnover number, units of enzyme activity (katal, international unit),

Enzyme kinetics: Michaelis-Menten equation, effect of substrate concentration, effect of enzyme

concentration, effect of pH and temperature, temperature quotient, enzyme inhibition kinetics (reversible inhibition types – competitive, uncompetitive and non-competitive)

UNIT V

Bioenergetics: Concept of free energy, Entropy, Enthalpy & Redox Potential. Concept of high energy bonds as related to the structure of ATP, Phosphoenolpyruvate etc. Glycolysis (pathway, entry of other monosachharides and disaccharides, regulation, inhibitors) Gluconeogenesis: Bypass reactions.

Structure of Mitochondria

Blue Print

Unit no	Essay Questions	Short Answer Questions
I	2	2
II	2	2
III	2	0
IV	2	2
V	2	2

T. Kameel 23/6/2018

23/6/18

K. J. 23/6/18

Sandosh 23/6/18

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I B.Sc BIOTECHNOLOGY
SECOND SEMESTER - PAPER I (B)
MACROMOLECULES, ENZYMOLOGY AND BIOENERGETICS

Time: 3Hrs

Max. Marks: 75

SECTION – A

I. Answer Any **FIVE** of the following Questions.

5 x 5 = 25

1. Chargaff's rule
2. Classification of lipids
3. Phospholipids
4. Reversible and irreversible inhibition
5. Heteropolysaccharides
6. Forms of DNA
7. Classification of enzymes
8. Reducing and non reducing sugars

SECTION – B

II. Answer any five questions choosing atleast **TWO** from each section **B** and **C**

5 X 10 = 50M

9. Describe in detail the structure of Watson and crick model of DNA
10. Explain the Primary,Secondary,Tertiary and Quaternary Structure of Proteins
11. Write in detail the Classification of Carbohydrates with examples and their importance
12. Derive the Michaelis –Menton equation
13. What is Glycolysis and Explain the Glycolysis pathway

SECTION – C

14. Explain the chemical Structure and Composition of Nucleic acid
15. Write in detail the classification of amino acids
16. Write the structures and importance of Saturated and Unsaturated Fatty acids
17. What is mechanism of enzyme action and write an account on Induced Fit Theory
18. Write a brief note on the structure of Mitochondria and Explain in detail Gluconeogenesis

T. Rameel 23/6/2018

K. Rameel 23/6/18
Santhosh 23/6/18



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II B.Sc: BIOTECHNOLOGY

THIRD SEMESTER – PAPER II (A)

BIOPHYSICAL TECHNIQUES

UNIT – I

Spectrophotometry: Spectrum of light, absorption of electromagnetic radiations, Beer's law - derivation and deviations, extinction coefficient. Instrumentation of UV and visible spectrophotometry, Double beam spectrometer; dual-wavelength spectrometer, Applications of UV and visible spectrophotometry.

UNIT II

Chromatography: Partition principle, partition coefficient, nature of partition forces, brief account of paper chromatography. Thin layer chromatography and column chromatography. Gel filtration: Concept of distribution coefficient, types of gels and glass beads, applications. Ion exchange chromatography: Principle, Affinity chromatography: Principle, selection of ligand, specific and non-specific elution, applications.

UNIT III

Electrophoresis: Migration of ions in electric field, Factors affecting electrophoretic mobility. Paper electrophoresis, Gel electrophoresis: - Types of gels, Solubilizers, Procedure, Column & slab gels Detection, Recovery & Estimation of macromolecules. SDS-PAGE Electrophoresis and applications. Isoelectric focusing.

UNIT – IV

Isotopic tracer technique: Radioactive & stable isotopes, rate of radioactive decay. Units of radioactivity Measurement of Stable isotopes. Biological applications of Radioisotopes.

UNIT V

Centrifugation: Basic principles, concept of RCF, types of centrifuges (clinical, high speed and ultracentrifuges). Preparative centrifugation: Differential and density gradient centrifugation, applications (Isolation of cell components). Analytical centrifugation: Sedimentation coefficient, determination of molecular

weight by sedimentation velocity and sedimentation equilibrium methods.
Biostatistics Basic concepts of mean, median, mode, Standard deviation and
Standard error. Introduction to ANOVA

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Unit No	Essay questions	Short answer questions
I	2	1
II	2	2
III	2	1
IV	2	2
V	2	2

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23/6/2018

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23/6/18

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23/6/18



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II B.Sc BIOTECHNOLOGY
THIRD SEMESTER - PAPER II (A)
BIOPHYSICAL TECHNIQUES

Time: 3Hrs

Max. Marks: 75

SECTION – A

I. Answer Any **FIVE** of the following Questions.

5 x 5 = 25

1. Beer Lambert's law
2. Partition coefficient
3. Gel filtration
4. Isoelectric focusing
5. Isotopes
6. Autoradiography
7. Sedimentation coefficient
8. Standard error

SECTION – B

II. Answer any five questions choosing atleast **TWO** from each section B and C

5 X 10 = 50M

9. Describe in detail about the spectrophotometry
10. Explain the Paper chromatography
11. Describe the SDS PAGE
12. Write the application of Isotopes in Biotechnology
13. What is Centrifugation and types of Centrifugation

SECTION – C

14. Explain the applications the UV and visible Spectrophotometry
15. Write in detail about HPLC
16. Describe the Gel electrophoresis with neat labeled diagrams
17. Write the principle and application of Mass Spectrophotometry
18. Write a brief note on mean, mode, standard deviation and ANOVA

T. Rameel
23/6/2018

K. J. ...
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II B.Sc: BIOTECHNOLOGY
FOURTH SEMESTER – PAPER II (B)

IMMUNOLOGY

UNIT I

Immune system: Organs and cells of immune system Immunity, innate immune mechanism, acquired immune mechanism, Antigen, Humoral immunity, main pathways of complement system.

UNIT II

Antibody and Antigen: Antibody structure and classes, Antibody diversity, Types of Antigens Antigenecity (factors affecting antigenecity). Complement system.

UNIT III

Immunity: Cell mediated immunity: TC mediated immunity, NK cell mediated Immunity, ADCC, brief description of cytokines and MHC (MHC types and diversity)

UNIT IV

Hypersensitivity and vaccination: General features of hypersensitivity, various types of hypersensitivity, autoimmune response, Vaccination: Discovery, principles, significance, Types of Vaccines.

UNIT V

Immunological Techniques: Antigen-antibody reactions: Precipitation, agglutination, complement fixation, immunodiffusion, ELISA. Hybridoma technology: Monoclonal antibodies and their applications in immunodiagnosis.

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Unit No	Essay questions	Short answer questions
I	2	1
II	2	2
III	2	1
IV	2	2
V	2	2

T. Ramani
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K. J. 23/6/18

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III B.Sc BIOTECHNOLOGY
FIFTH SEMESTER – PAPER III (A)
GENETICS AND MOLECULAR BIOLOGY

UNIT I

Mendel's Laws and Inheritance: Mendel experiments, Mendel Laws and deviations: incomplete dominance and Co dominance Penetration and pleiotropism, Recessive and Dominant epistatic gene interactions. Concept of multiple alleles

UNIT II

Genes and their variations: Structure of gene, gene and environment, gene copies and heterogeneity. Non disjunction of chromosomes, linkages, recombination, test cross and back cross, interference and coincidence, sex determination, Hardy Weinberg equations.

Unit III

Genome Structure: Watson and Crick model of DNA; Genome size. Concepts of Genetic Material, Gene, Chromosome and Genome. Experiments to prove DNA as genetic material (Griffith experiment, Hershey- Chase experiment)

Unit IV

DNA Replication: Enzymology of replication (DNA polymerase I, pol II and III, helicases, topoisomerases, single strand binding proteins, DNA melting proteins, primase. Proof of semi conservative replication, Replication origins, initiation, elongation, and termination. Rolling circle replication of DNA.

Unit V

Transcription: Enzymatic synthesis of RNA: Basic features of transcription, structure of prokaryotic RNA polymerase (core enzyme and holo enzyme, sigma factor), concept of promoter (Pribnow box, -10 and -35 sequences), four steps of transcription (promoter binding and activation, RNA chain initiation, chain elongation, termination and release). Reverse transcription.

Blue Print

Unit no	Essay Questions	Short Answer Questions
I	2	2
II	2	2
III	2	0
IV	2	2
V	2	2

T. Kameel
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23/6/18

Santhosh
23/06/18



Batch: 2018-21
SRI Y.N.COLLEGE (AUTONOMOUS), NARSAPUR
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III B.Sc., Degree Examinations

(At the end of Vth Semester)

Part – II

BIOTECHNOLOGY Paper – III (A)
(Genetics and Molecular Biology)

Duration: 3Hrs

Max. Marks: 75M

Section – A

I. Answer any FIVE of the following questions.

5 X 5 = 25 M

1. Test cross and back cross
2. Co-dominance
3. Law of purity of gametes
4. Hardy Weinberg equations
5. Chromosomes
6. Topoisomerases
7. Replication origin
8. Reverse transcription

Section – B

II. answer any FIVE questions choosing atleast TWO from each section B and C

5 X 10 = 50M

9. Describe Mendel's laws of inheritance
10. What are linkages? Explain the types of linkages
11. Describe the Hershey – Chase Experiment
12. Explain the Enzymology of replication
13. Describe Enzymes involved in transcription and process of transcription

Section – C

14. Describe Recessive and Dominant epistatic gene interaction.
15. Explain sex determination with examples
16. Write an essay on Watson and crick model of DNA
17. Describe process of replication. Proof of semi conservative method of replication
18. Describe the concept of Promoter

T. Farrell
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III B.Sc BIOTECHNOLOGY
FIFTH SEMESTER – PAPER IV (A)
GENE EXPRESSION AND rDNA TECHNOLOGY

Unit I

Genetic Code

Genetic code: codon and its characteristics, identification of start and stop codons, universality, degeneracy and commaless nature of codons.

The decoding system: aminoacyl synthetases, the adaptor hypothesis, attachment of amino acids to tRNA

Codon – anticodon interaction – the wobble hypothesis.

Selection of initiation codon – Shine and Dalgarno sequence

Unit II

Protein Synthesis

Initiation, elongation, termination and post translational modification.

Regulation of translation: phage T4 protein p32 translational regulation

Unit III

Gene Expression and regulation

Regulation of gene expression: clustered genes and the operon concepts – negative and positive control of the lac operon, trp operon, and control of gene expression.

Unit IV

rDNA Technology

DNA Cloning: Basics of genetic engineering, restriction endonucleases

Vectors: plasmid vectors (pBR322 and pUC18)

Phage vector: lambda replacement and insertion

Vectors cosmids, phagemids and YAC

Cutting and joining DNA (Cohesive end ligation, methods of blunt end ligation)

Blotting techniques: Southern and Northern blotting

Unit V

Genomic DNA library and cDNA library

Construction of genomic and cDNA libraries. Advantages and disadvantages of genomic and cDNA libraries. General consideration of Polymerase chain reaction, designing of primers for PCR. Application of recombinant DNA technology.

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Unit no	Essay Questions	Short Answer Questions
I	2	2
II	2	2
III	2	0
IV	2	2
V	2	2

T. Kameel
23/6/2018

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23/6/18

Santhosh
23/06/18



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III B.Sc: BIOTECHNOLOGY

VI SEMESTER- Elective: ECOLOGY

Unit I

The Environment: Physical environment; biotic environment; biotic and abiotic interactions. **Habitat and Niche:** Concept of habitat and niche; niche width and overlap; fundamental and realized niche; resource partitioning; character displacement.

Unit II

Population Ecology: Characteristics of a population; population growth curves; population regulation

Unit III

Community Ecology: Nature of communities; community structure and attributes; levels of species diversity and its measurement; edges and ecotones. **Ecological Succession:** Types; mechanisms; changes involved in succession; concept of climax.

Unit IV

Species Interactions: Types of interactions, interspecific competition, herbivory, carnivory, pollination, symbiosis.

Unit V

Ecosystem Ecology: Ecosystem structure; ecosystem function; energy flow and mineral cycling (C, N, P); primary production and decomposition; structure and function of some Indian ecosystems: terrestrial (forest, grassland) and aquatic (fresh water, marine, eustarine).

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Unit no	Essay Questions	Short Answer Questions
I	2	2
II	2	2
III	2	0
IV	2	2
V	2	2

T. Kameel
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III B.Sc: BIOTECHNOLOGY
VI SEMESTER- Elective: ECOLOGY

Time: 3 Hours

Maximum Marks: 75

Section - A

I. Answer any **FIVE** questions

5 x 5 = 25 M

1. Ecological Succession and Niche
2. Population growth curves
3. Edges and Ecotones
4. Symbiosis
5. Components of Ecosystem
6. Abiotic interaction
7. Definitions and examples of Individual, population, community and habitat
8. Upright energy flow and inverted energy flow in ecosystem with example

Section - B

II. Answer any **FIVE** questions choosing atleast Two from each section **B** and **C**

5 x 10 = 50 M


9. Describe Abiotic and Biotic Components of Environment and their interaction with Plants
10. Describe Population and characteristics of Population
11. Describe structure and attributes of Community
12. Describe different types of species interactions and their effects
13. Describe different types of Energy flow and Carbon cycling

Section - C

14. Describe Niche and different types of Niche

15. Describe Population curve and its regulation.
16. Describe succession mechanism and types
17. Describe Symbiosis and types of symbiotic relations with examples
18. Describe different types of Ecosystems with energy flow and examples

T. Fawcett
23/6/2018

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III B.Sc: BIOTECHNOLOGY

VI SEMESTER- Cluster Elective: DIVERSITY IN LIFE

Unit I

Principles & methods of taxonomy: Concepts of species and hierarchical taxa, biological nomenclature, classical & quantitative methods of taxonomy of plants, animals and microorganisms.

Unit II

Levels of structural organization: Unicellular, colonial and multicellular forms. Levels of organization of tissues, organs & systems. Comparative anatomy, adaptive radiation, adaptive modifications.

Unit III

Natural history of Indian subcontinent: Major habitat types of the subcontinent, geographic origins and migrations of species.

Unit IV

Organisms of health & agricultural importance: Common parasites and pathogens of humans, domestic animals and crops.

Unit V

Organisms of conservation concern: Rare, endangered species. Conservation strategies.

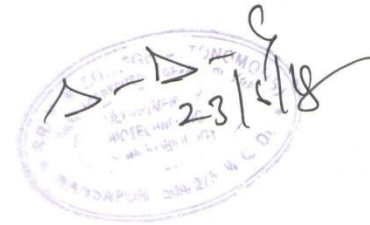
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Unit no	Essay Questions	Short Answer Questions
I	2	2
II	2	2
III	2	0
IV	2	2
V	2	2

T. Kanneel
23/6/2018

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23/6/18

Santhosh
23/06/18



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III B.Sc: BIOTECHNOLOGY
VI SEMESTER- Elective: DIVERSITY IN LIFE

Time: 3 Hours

Maximum Marks: 75

Section - A

I. Answer any FIVE questions

5 x 5 = 25M

1. Hierarchical taxa
2. Adaptive radiation
3. Circadian rhythms
4. Continental drift and gene pool
5. Two types of symbiotic relation between plants and microbes with mechanism
6. Endangered, Rare and Extinct Species with examples
7. Principles of taxonomy
8. Totipotency, aneuploidy and polyploidy with examples

Section - B

II. Answer any FIVE questions choosing atleast Two from each section B and C

5 x 10 = 50 M

9. Describe principles and methods of taxonomy
10. Describe multicellular forms of life
11. Describe circadian rhythms behind migration of species with two elaborate examples
12. Describe importance of organisms in health and agriculture
13. Describe strategies for conservation of endangered species

Section -C

14. Describe classical and quantitative methods of taxonomy in microbes
 15. Describe comparative taxonomy with examples.
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III B.Sc: BIOTECHNOLOGY
VI SEMESTER- Cluster Elective: EVOLUTION

Unit I

Emergence of evolutionary thoughts Lamarck; Darwin—concepts of variation, adaptation, struggle, fitness and natural selection; Mendelism; Spontaneity of mutations; the evolutionary synthesis.

Unit II

Origin of cells and unicellular evolution: Origin of basic biological molecules; Concept of Oparin and Haldane; Experiment of Miller (1953); The first cell; Evolution of prokaryotes; Origin of eukaryotic cells; Evolution of unicellular eukaryotes; Anaerobic metabolism, photosynthesis and aerobic metabolism.

Unit III

Molecular Evolution: Concepts of neutral evolution, molecular divergence and molecular clocks; Molecular tools in phylogeny, classification and identification;

Unit IV

The Mechanism: Population genetics- Populations, Gene pool, Gene frequency; Hardy-Weinberg Law; concepts and rate of change in gene frequency through natural selection, migration and random genetic drift;

Unit V

Adaptive radiation; Isolating mechanisms; Speciation; Allopatricity and Sympatricity; Convergent evolution; Sexual selection; Co-evolution.

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23/06/18



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Batch: 2018 - 21
SRI Y.N.COLLEGE (AUTONOMOUS), NARASAPUR
(Affiliated to Adikavi Nannayya University)
Accredited by NAAC at "A" Grade with a CGPA of 3.40
Recognized by UGC as "College with Potential for Excellence"

III B.Sc: BIOTECHNOLOGY
VI SEMESTER- Elective: EVOLUTION

Time: 3 Hours

Maximum Marks: 75

Section - A

I. Answer any FIVE questions

5 x 5 = 25M

1. Darwin's concept of Evolution
2. Putrefaction
3. Neutral evolution
4. Hardy-weinberg law
5. Allopatricity and Sympatricity
6. UPGMA
7. Gene frequency and allelic frequency with example
8. Graphical representation of r-selection and k-selection

Section - B

II. Answer any FIVE questions choosing atleast Two from each section B and C

5 x 10 = 50 M

9. Describe Mendelian principles of Evolution
10. Describe Anaerobic metabolism in Prokaryotes
11. Describe molecular divergence and molecular clocks with mechanism
12. Describe concepts and rate of change in gene frequency through natural selection
13. Describe Speciation and types of speciation

Section - C

14. Describe Spontaneity of Mutation and natural mutation with examples.
15. Describe concept of Oparin and Haldane concept of Evolution with Muller's experiment

16. Describe molecular phylogeny and different types of phylogeny concepts
17. Describe Hardy-Weinberg Law with elaboration of equation
18. Describe r-selection and k-selection

T. Fawaz

23/6/2018

K. S. P. 23/6/18

Sandhu
23/6/18



APPROVED

Batch: 2018-219

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III B.Sc: BIOTECHNOLOGY

VI SEMESTER- Cluster Elective: PROJECT

Time: 3 Hours

Maximum Marks: 100

Thesis Submission (Quality of work) - 25 Marks

Result- 25Marks

Power point presentation - 25Marks

Viva- 25 Marks

Should submit Thesis hard copy and Power point presentation handouts hard copy to the Examiner

T. Fancey
23/6/2018

K. J. prd
23/6/18

Son Thosy
23/6/18



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