PARVATHANENI BRAHMAYYA
SIDDHARTHA COLLEGE OF ARTS & SCIENCE
Autonomous
Siddhartha Nagar, Vijayawada–520010
Re-accredited at 'A+' by the NAAC

23BOMDL101: PRINCIPLES OF BIOLOGICAL SCIENCES

Offered to: B.A. Hons (Economics)

Course Type: THEORY

Semester: I 30 Hours **Credits:** 02

Course Description: This course will provide one with a basic and comprehensive understanding of diversity of life Enable the student with depth of topics and helps them to gain an appreciation in the biomolecules and etabolism On the other hand, importance of understanding principles of biology provides an extensive knowledge to the student.

Learning Objectives: By the end of this course the learner can:

1. Acquire logic to evaluate fundamental biological concepts at various levels of biologicalorganisation including the molecular, cellular, organismal and systems levels.
2. Communicate fundamental biological knowledge between tiers of biological organisation.
3. Apply common biological principles across all levels of biological organization.

Course Outcomes: On completion of this course students will be able to:

1. Understand the relationship between structure and function at all levels.
2. Recognise the mechanisms underlying biological evolution, its patterns, and itssignificance as biology's overarching unifying principle.
3. Understand the contributions of biology to the resolution of medical, ethical, social, andenvironmental concerns in human affairs.

UNIT-I Diversity of Life

1.1 Introduction to Biology, Branches of Biology, Basic Principles of Biology
1.2 Biological Classification-Two kingdom and Five kingdom classification, Viruses, Viroid'sand Lichens
1.3 Diversity in the living world, Taxonomic categories, Taxonomic aids
1.4 Plant organization-The form, structure and function of plant vegetative and reproductiveorgans, Classification of Plant Kingdom,
1.5 Basis of Animal Classification, Classification of Animal Kingdom

UNIT-II Biomolecules and metabolism

2.1 Ultra structure of cell and Cell organelles (Structure and Functions), Plant cell vs Animalcell

2.2 Plant Physiology: Photosynthesis, Respiration, Transportation, Mechanisms of Nitrogenfixation.
2.3 Plant growth and development, physiology of flowering.
2.4 Human Physiology: Digestion, Respiration, Circulation
2.5 Male and female reproductive organs, gametogenesis, fertilization.

UNIT-III Principles of Biology

3.1 Genetics: Mendel's laws of inheritance, Genetic disorders- Colour blindness, Sickle cellanaemia.
3.2 Evolution: Geological time scale for evolution of plants and vertebrates, Origin andevolution of plants and man
3.3 Common Human Diseases: causing organism, prevention and treatment- malaria, dengue,AIDS, cancer, corona.
3.4 Common Plant Diseases: causing organism, prevention and treatment- Black spot, Leafspots, Powdery mildew, Blight, Canker.
3.5 Biotechnology: Tools and process of recombinant DNA technology, Applications ofbiotechnology in agriculture, food industry, medicine and transgenic animals.

Text Books

1. Pandey, B.P. (2013) College Botany, Volume-I, S. Chand Publishing, New Delhi.
2. Kotpal, R.L.2022. Modern textbook of zoology, Vertebrates. (Rastogi Publ., Meerut).
3. Verma P.S., Agarwal V.K., 2006. Cell biology, genetics, Molecular Biology, Evolutionand Ecology. S. Chand publishers, New Delhi, India.

Reference Books

1. Sreekrishna V. 2005. Biotechnology –I, Cell Biology and Genetics. New AgeInternational Publ. New Delhi, India.
2. Rastogi, S.C., 2019. Essentials of animal physiology. 4th Edition. New Age InternationalPublishers.

Model Question Paper

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Offered to: B.A Hons(Economics) **Course Type:** THEORY

Semester: I

Max.Marks: 35 Max.Time: 3Hours

Pass Min: 14

Section-A

Answer any **THREE** from the following 3x5 =15Marks

1. Write a short note on viruses
2. Write the structure and functions of mitochondria
3. Explain the mendels law of inheritence
4. Differentiate between plant and animal cell
5. Describe the structure and functions of human heart

Section-B

Answer any **TWO** from the following 2 x10 = 20Marks

6. Explain in detail the plant organization
7. Describe the human reproductive system
8. Write an essay on geological time scale for evolution of plants and vertebrates