SCHOOL OF STUDIES IN BIOTECHNOLOGY

Pt. Ravishankar Shukla University

Raipur-492 010

Syllabus

Choice Based Credit System

in

Biotechnology

Session

2019-2020
2020-2021

School of Studies in Biotechnology

Course: Choice Based Course, **Semester: Second**

Name of Paper: Paper – I (Basic Biotechnology)

Total Credit: 03 (Three) **M.M.:100**

1. Introduction of Biotechnology; aims & scope of biotechnology.
2. Different areas of biotechnology; application of biotechnology & future prospects.
3. Structure of prokaryotic and eukaryotic cells; comparison between plant and animal cell.
4. Function of cell organelles: Nucleus, Mitochondria, Golgi-complex, Endoplasmic reticulum, etc.
5. Macromolecules in biological system: Amino acids; DNA & RNA; structure and function.
6. Carbohydrate; structure, classification, properties and function.
7. Protein; primary, secondary, tertiary & quaternary structure of protein and their importance.
8. Lipid; structure, classification and function.
9. Introduction and scope of microbiology; general account of Bacteria, Fungi and Virus.

Note: There will be 5 questions of equal marks.

Books:

1. Pelczar, M.J. Jr., Chan, E.C.S. and Kreig, N.R. (2009) Microbiology, Tata McGraw Hill.
2. Prescott L.M., Harley J., Klein D. (2001) Microbiology, McGraw Hill 5th Edition.
3. U Satyanarayana, First Edition: 2005, reprint (2010), Biotechnology, Books and Allied (P) Ltd. Kolkata.
4. Madigan M.T., Martinko J.M., Parker J., Brock Biology of microorganisms, Prentice-Hall.
5. C.B. Powar (2005) Cell Biology, Third edition, reprint Himalaya Publishing House.
6. Nelson and Cox (2009) Principal of Biochemistry, 5th edition.
7. Voet D., Voet J.G., Pratt C.W. (2006) Fundamentals of Biochemistry, 2nd Edition. Wiley.
8. Gerald Karp (2007) Cell and Molecular Biology, 5th edition.
9. Geoffrey M. Copper, Robert E. Hausman (2009) The Cell: A Molecular Approach.

School of Studies in Biotechnology

Course: Choice Based Course, **Semester: Third**

Name of Paper: Paper – II **(Applied Biotechnology)**

Total Credit: 03 (Three) **M.M.:100**

1. Introduction of Bioprocess technology; isolation, screening, identification, preservation and maintenance of industrial microorganisms; applications of bioprocess technology.
2. Pharmaceutical biotechnology: Antibiotic production.
3. Plant tissue culture techniques; basic media and nutrients, micro-propagation, multiplication, acclimatization, green house.
4. Genetic engineering: introduction, tools & techniques, transgenic plants.
5. Environmental pollution: air, water and soil pollution; different biotechnological approaches for the prevention & control of environment pollution: bioremediation, phytoremediation, sewage and effluent treatment.
6. Bioinformatics: general introduction, online-website & tools of bioinformatics; application of bioinformatics.
7. Animal biotechnology: general introduction, tools & techniques, applications,
8. Transgenic animal, cloning.

Note: There will be 5 questions of equal marks.

Books:

1. Prescott L.M., Harley J., Klein D. (2001) Microbiology, McGraw Hill 5th Edition.
2. U Satyanarayana, First Edition: 2005, reprint (2010) Biotechnology, Books and Allied (P) Ltd. Kolkata.
3. Gerald Karp (2007) Cell and Molecular Biology, 5th edition.
4. L.E. Casida (1994) Industrial Microbiology edition.
5. H.S. Chawla- Introduction of Plant Biotechnology, Oxford & IBH Publishing Co. (P) Ltd.
6. Razdan M.K. (2010) Introduction of Plant Tissue Culture, 2nd edition, Oxford & IBH Publishing Co. (P) Ltd.
7. Bhojwani SS and Razdan MK – Plant Tissue Culture; Elsevier.
8. Geoffrey M. Copper, Robert E. Hausman (2009) The Cell: A Molecular Approach.
9. TA Brown (2005) Gene Cloning and DNA Analysis, 4th Edition.
10. Indu Shekher Thakur (2006) Environmental Biotechnology: Basic concepts and Application, first edition, I.K. International Pvt. Ltd.
11. Gareth G. Evans, Judy Furlong (2011) Environmental Biotechnology: Theory and Application, 2nd edition, John Wiley and Sons.
12. Stanbury and Whittaker – Principles of Sterilization techniques, first Indian reprint edition (1997), Aditya Book (P) Ltd. New Delhi.
13. C.S.V. Murthy (2003) Bioinformatics. First Edition, Himalaya Publishing House.
14. S.C. Rastogi, Namita Mendiratta, Parag Rastogi (2003) Bioinformatics: Concepts, Skills and Applications, CBS Publishers and Distributors, New Delhi.
15. B.D. Singh (2004) Biotechnology: An Expanding Horizons, 1st Edition.

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