ST. JOSEPH’S COLLEGE FOR WOMEN (AUTONOMOUS) VISAKHAPATNAM

III SEMESTER  **BIOTECHNOLGY** TIME: 2Hrs/Week

BTH-Ma-3-3751 (3) **MOLECULAR BIOLOGY**  Max. Marks: 50

W.e.f. 2024-25 admitted batch (23AK)  **PRACTICAL SYLLABUS**

**OBJECTIVES:** To enable the students to –

1. Improve the awareness on genetic engineering problems.
2. Be trained in restriction digestion of DNA.
3. Observe the nucleases action on DNA/RNA.
4. Be proficient in isolation of Plasmid DNA

**COURSE OUTCOMES: Students will**

* **CO1:** Be proficient in transformation in bacteria.
* **CO2:** Attain expertise in restriction digestion and its evaluation.
* **CO3:** Be Able to evaluate the kinetics of nucleases activity.
* **CO4:** Be expertise in isolation of Plasmid DNA.

1. **COURSE:**
2. Effect of UV radiations on the growth of microorganisms.
3. Determination of absorption maxima of DNA and RNA and their quantification
4. Quantitative estimation of RNA
5. Quantitative estimation of DNA
6. Isolation of plasmid DNA from bacteria
7. Isolation of genomic DNA from *E.coli*
8. Isolation of DNA from sheep liver
9. Isolation of DNA from plant leaves (Rice or Tobacco or any other plant)
10. Separation of DNA by Agarose gel Electrophoresis
11. Purity analysis of the Nucleic acids
12. **REFERENCES**
13. Textbook of Biotechnology - 2007, By H.K. Das (Wiley Publications)
14. Principles of Gene Manipulation - 7th edition, 2006, By R.W. Old & S.B. Primrose, Publ: Blackwell
15. Molecular Biology & Biotechnology- 1996, By H.D. Kumar, Publ: Vikas
16. Molecular Biotechnology - 4th edition, 2010, G.R. Click and J.J. Pasternak, Publ: Panima
17. Genes and Genomes – 1991, By Maxine Singer and Paul Berg
18. Genes VII- 2000, By B. Lewin - Oxford Univ. Press
19. Molecular Biology - 4th Edition, 2008, By D. Freifelder, Publ: Narosa Publishing house New York, Delhi
20. Brown TA. (2006). Gene Cloning and DNA Analysis. 5th edition. Blackwell Publishing, Oxford, U.K.
21. Clark DP and Pazdernik NJ. (2009). Biotechnology-Applying the Genetic Revolution.

Elsevier Academic Press, USA.

1. Glick, B.R., Pasternak, J.J. (2003). Molecular Biotechnology-Principles and Applications of recombinant DNA. ASM Press, Washington
2. Primrose SB and Twyman RM. (2006). Principles of Gene Manipulation and Genomics, 7thedition. Blackwell Publishing, Oxford, U.K.
3. Sambrook J, Fritsch EF and ManiatisT. (2001). Molecular Cloning-A Laboratory Manual. 3rdedition. Cold Spring Harbor Laboratory Press.
4. **CO-Curricular Activities**

a) **Suggested Co-Curricular Activities**

1. Assignments
2. Seminars, Group Discussions on related topics
3. Visit to instrumentation labs. \*\* \*\* \*\*