



<b>Department of Biotechnology</b>	LP: BT18612 Rev. No: 0 Date: 28.12.2023
B.E/B.Tech/M.E/M.Tech : <b>Biotechnology</b> PG Specialisation : NA Sub. Code / Sub. Name : BT18612/ Genetic Engineering Laboratory	Regulation: 2018A

**OBJECTIVE:**

- Apply the various methodologies to perform DNA extraction.
- Experiment the amplification of DNA using PCR.
- Design a genetic manipulation method for any strain development and improve product production.
- Construct the recombinant microorganism and optimize its protein expression parameters
- Classify the proteins based on molecular mass using SDS PAGE

Session No*	List of Experiments
<b>CYCLE-I</b>	
1	Preparation of plasmid DNA
2	Elution of DNA from agarose gels
3	Ligation of DNA into expression vectors
4	Transformation
5	Optimization of inducer concentration for recombinant protein expression
6	Optimization of time of inducer for recombinant protein expression
<b>CYCLE-II</b>	
7	SDS-PAGE
8	Isoelectric focusing and Two Dimensional Gel Electrophoresis of Proteins
9	Western blotting
10	Hybridization with anti-sera
11	PCR
12	Silver Staining of Polyacrylamide gel
Content beyond syllabus (if any): Demonstration of Real-Time PCR.	

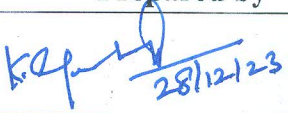

\* Session Duration: 200 minutes



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**TEXTBOOKS:**

1. Old, RW, Primrose, SB, "Principles Of Gene Manipulation, An Introduction to Genetic Engineering", 3rd Edition, Blackwell Science Publications, 1993.
2. Anselm FM, Brent, R, Kingston, RE, Moore, DD, "Current Protocols In Molecular Biology", 2nd Edition, Greene Publishing Associates, NY, 1988.
3. Berger, SI, Kimmer, AR, "Methods In Enzymology", 2nd Edition, Vol 152, Academic Press, 1987.
4. Sambrook, Joseph and David, W. Russell, "The Condensed Protocols: From Molecular Cloning: A Laboratory Manual" 1st Edition, Cold Spring Harbor, 2006.

	Prepared by	Approved by
Signature		
Name	Dr. K. Ganesh Prasath	Prof. E. Nakkeeran
Designation	Assistant Professor, Biotechnology	HOD
Date	28/12/2023	28/12/2023
Remarks : If the same lab plan is followed in the subsequent semester/year it should be mentioned and signed by the Faculty and the HOD		

  
28/12