VIT

Vellore Institute of Technology

REG.No

SCHOOL OF BIO SCIENCES AND TECHNOLOGY
CONTINUOUS ASSESSMENT TEST - II
FALL SEMESTER 2024-2025

SLOT: D1+TD1

Programme Name & Branch : **M.Sc., Integrated Biotechnology**
Course Code and Course Name : **TBIT203L & Genetic Engineering**
Faculty Name(s) : **Dr. S. Asha Devi & Dr. Kanagavel Deepankumar**
Class Number(s) : **1191 & 4124**
Date of Examination : **16-10-2024**
Exam Duration : **90 minutes** **Maximum Marks: 50**

General instruction(s):
Answer All Questions
Course outcomes
CO 3. Design transformation and screening methods.
CO 4. Evaluate different types of PCR and sequencing techniques

Q. No	Question	M	CO	BL
1	Interpret electroporation and lipofection methods used in gene transfer technique.	10	3	2
2	Examine the key steps involved in constructing a library and screening methods (any two) which contains mature mRNA genomic information of human genome and mention its applications?	10	3	4
3	Identify a widely employed laboratory technique utilized for the precise detection of target DNA through the utilization of electrophoresis and probes Include the key steps and the underlying principles of this method	10	4	3
4	Determine a molecular biology method extensively employed for the dynamic monitoring and quantification of DNA or RNA molecules in real time This technique finds applications in gene expression analysis and pathogen detection Expound upon its fundamental principles, key components, and its significance in research and diagnostics.	10	4	5
5	As part of a genetic engineering project, a student was attempting to construct a recombinant crambin protein into pQE80-L vector using different restriction enzymes and primers Now you help him to design the primer for the construction of recombinant crambin protein into pQE80-L vector with the following combination of restriction enzyme 1 *BamHI* (ggatcc) as forward restriction enzyme and *HindIII* (aagctt) as reverse restriction enzyme 2 *SphI* (gcatgc) as forward restriction enzyme and *PstI* (ctgcag) as reverse restriction enzyme 3 *SacI* (gagctc) as forward restriction enzyme and *SalI* (gtcgac) as reverse restriction enzyme 4 *KpnI* (ggtacc) as forward restriction enzyme and *XmaI* (cccggg) as reverse restriction enzyme 5 *SmaI* (cccggg) as both forward and reverse restriction enzyme The sequence of crambin protein are as follows aaaagctgctgccgcaacaccctggcgcgcaactgctataacgcgtgccgctttaccggcggcagccggc gacctgcggcattctgtgcgattgcattcatgtgaccaccaccacctgcccgagcagccatccgagc	10 (5X 2)	4	6