



I SEMESTER M.TECH. (INDUSTRIAL BIOTECHNOLOGY)

END SEMESTER EXAMINATIONS, NOV/DEC 2018

SUBJECT: MOLECULAR BIOLOGY AND R-DNA TECHNOLOGY

[BIO 5122]

REVISED CREDIT SYSTEM

Time: 3 Hours

MAX. MARKS: 50

Instructions to Candidates:

- ❖ Answer **ALL** the questions.
- ❖ Missing data may be suitably assumed.

1A.	How are histones distributed in parental and newly synthesized DNA strands?	4M
1B.	What are the advantages of siRNA and miRNA over conventional small therapeutic molecules?	3M
1C.	Why has no spliced mRNAs been reported for vaccinia?	3M
2A.	With a simple diagram show how genes are organized on a human chromosome.	4M
2B.	How does B form of DNA differ from the A form?	3M
2C.	Elaborate on the strand displacement method of replication of adenovirus.	3M
3A.	Describe, with the help of an illustration(s), the steps in transcriptional initiation in eukaryotes. Include in your answer the major parameters that affect these steps to alter promoter output?	4M
3B.	How does the primary components of prokaryotic and eukaryotic translational apparatus differ?	3M
3C.	You have a lambda phage DNA and you want to use it as a cloning vector. What	3M

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	changes will you incorporate to lambda phage DNA to develop it as a cloning vector?	
4A.	Elaborate on the following applications of gene therapy: a) Assisted killing b) Prodrug therapy	4M
4B.	You have developed a plant strain that is insect resistant but it is unable to grow under high-salt concentrations. Which protein would you overexpress in these plants to make them salt-resistant?	3M
4C.	You want to clone a foreign DNA but this DNA has a restriction site for the same enzyme that is used to cut the ends of the linker molecule. What are the ways to clone such DNA sequences?	3M
5A.	Briefly explain how DNA fragments are cloned into a Yeast Artificial Chromosome vector.	4M
5B.	What are the steps involved in creating a genomic DNA library?	3M
5C.	Is it possible to use Restriction Fragment Length Polymorphism assay for DNA fingerprinting? Justify.	3M