



School: School of Science
Program/s: Biomedical Science
Year: 4th **Semester:** VII
Examination: End Semester Examination
Examination year: December - 2021

Course Code: BM404 **Course Name:** Recombinant DNA technology and Genetic Engineering
Date: 06/12/2021 **Total Marks:** 40
Time: 2:30 pm to 4:30 pm **Total Pages:** 2

Instructions:

- All questions are compulsory
- Draw diagram wherever required.
- * COs=Course Outcome mapping. # BTL=Bloom's Taxonomy Level mapping

Q. No.	Details	Marks	COs*	BTL#
Q.1	A) Choose the correct options (5) 1. Restriction fragment length polymorphisms (RFLPs) a. Are used to determine the position of restriction sites in a genome b. Are used in physical mapping c. Are used in genetic mapping d. Usually occur as multiple (more than 2) alleles in a genome 2. Microsatellites a. are tandemly repeated sequences b. can be used in genetic mapping of genomes c. are used in physical mapping d. can be found anywhere in the chromosomes 3. What is a probe? a. Chemically synthesized DNA b. Purified DNA c. Fragmented DNA duplex d. Either purified or synthesized single stranded DNA 4. The PCR procedure where Taq polymerase is added after the rest of the PCR components are heated to the DNA melting temperature, so as to avoid non-specific amplification at low temperature is a. Asymmetric PCR b. Hotstart PCR c. Multiplex PCR d. Nested PCR	10	CO1, CO2, CO3, CO4, CO5	BT1, BT2, BT3

	<p>5. pIII protein is mostly used in phage display because it</p> <ol style="list-style-type: none"> determines the infectivity of the virion allows for monovalent display allows for insertion of larger protein sequences allows for polyvalent expression <p>B) Answer the following. (5)</p> <ol style="list-style-type: none"> SNP stands for _____ while VNTR stands for _____. AFLP is a PCR based method. True or false. Justify. Shuttle vectors are those which can work with two different species. True or False. Justify. Define panning. PVDF binds protein via _____ while nitrocellulose binds through _____. 			
Q.2	<p>Short answer questions (2*5 = 10)</p> <ol style="list-style-type: none"> What is the highlight of touchdown PCR? Discuss the drawbacks of using DNA binding dyes in PCR method. How can you rectify this problem? What are the components of protein loading dye used in western blotting? Explain the direct vs indirect detection system in western blotting. Differentiate between mini and micro satellites. 	10	CO1, CO2, CO3, CO4, CO5	BT1, BT2, BT3
Q.3	<p>Answer any 5 in detail (4*5 = 20)</p> <ol style="list-style-type: none"> Write a short note on the molecular markers used in DNA fingerprinting. How does the M13 phage display system work? What are the criteria for selecting secondary antibody? Enlist the different enzymes used in recombinant DNA technology. Differentiate between radiolabeled and non-radiolabeled probe. Write a short note on RFLP. 	20	CO1, CO2, CO3, CO4, CO5	BT1, BT2, BT3

*****End of Question Paper*****