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Total No. of Pages : 02

Total No. of Questions : 18

**B.Sc. (Agriculture) (2014 to 2018) (Sem.-7)**  
**INTRODUCTION TO MOLECULAR BIOTECHNOLOGY**  
Subject Code : BSAG-702  
M.Code : 74825

Time : 3 Hrs.

Max. Marks : 60

**INSTRUCTIONS TO CANDIDATES :**

1. SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.
2. SECTION-B contains FIVE questions carrying FIVE marks each and students have to attempt any FOUR questions.
3. SECTION-C contains THREE questions carrying TEN marks each and students have to attempt any TWO questions.

**SECTION-A**

**Write short notes on :**

1. C- value paradox
2. NextGen Sequencing
3. Foreground and Background Selection
4. Difference between RAPDs and RFLPs
5. Gene mapping
6. Isoschizomers
7. Difference between Co-dominant and dominant markers
8. Non-coding DNA
9. RT - PCR
10. Cloning vectors

## SECTION-B

11. Define restriction endonucleases. Compare the characteristics of 3 types of restriction enzymes. Which types of restriction enzyme are most suitable for cloning purpose?
12. Explain the principle of AFLP technology. What are advantages and limitations of AFLP markers?
13. Name and write the restriction site of any 2 enzymes that produce sticky and blunt ends, respectively. Ligation with sticky end fragments is more efficient than blunt end fragments. Explain.
14. What is the difference between gene and marker? Discuss the principle behind Marker assisted selection and its utility.
15. a) What criteria should be kept in mind for designing PCR primers?  
b) Using the following information, prepare 5 $\mu$ M of 50 $\mu$ l of working primer. Also calculate the annealing temperature for the primer pair.

Primer	Sequence	Stock Conc.	O.D. (nanomoles)
Forward	GGACTACCATTAGCTTGTAG	100 $\mu$ M	54.0
Reverse	CATTGCTTCTGAATGATGACG	100 $\mu$ M	60.0

## SECTION-C

16. Write in details about construction of cDNA libraries. What are the advantages of cDNA library over genomic libraries?
17. Describe in details the steps for construction of linkage maps. What are the various applications of molecular markers?
18. Describe the principle of Western hybridization. Compare and contrast southern, northern and western hybridization.

**NOTE : Disclosure of Identity by writing Mobile No. or Making of passing request on any page of Answer Sheet will lead to UMC against the Student.**