

# RAMAKRISHNA MISSION VIDYAMANDIRA

(Residential Autonomous College affiliated to University of Calcutta)

B.A./B.Sc. FIFTH SEMESTER EXAMINATION, DECEMBER 2019

THIRD YEAR [BATCH 2017-20]

ZOOLOGY [Honours]

Paper : VII

Date : 19/12/2019

Time : 11 am - 1 pm

Full Marks : 50

Answer **any five** questions:

[5×2]

1. a) What is Isoschizomer?  
b) Mention why VNTR is significant.  
c) Mention two important Ethical issues on Transgenesis.  
d) What is the importance of passaging or splitting or sub-culturing of cells in cell culture setup?  
e) State a bioremediation technique used against ocean oil spill.  
f) Yeast artificial chromosomes must have which three features of normal chromosomes to be maintained in cells?  
g) How do the primers determine the specificity of a PCR?  
h) What does the term PBR stand for?

Answer **any four** questions:

[4 × 10]

2. a) What is DNA fingerprinting?

How Single Nucleotide Polymorphism (SNP) helps in RFLP technique?

What is Plindromic sequence?

What is the significance of multiple cloning sites (MCS) and OriC sites in plasmid cloning vector?

[2+3+2+3]

- b) What is difference between the primary and secondary cell culture?

Mention the significance of cell culture in biotechnology and pharmacology research.

How the competent cells are prepared and used in molecular cloning?

[3+4+3]

- c) What is the role of primers used in Polymerase Chain Reaction (PCR)?

What do you by Replica plating technique.

Describe the microarray technique highlighting its utility in biotechnology research.

[2+4+4]

- d) How the mechanism of chain termination is used in Sanger Sequencing technique?

What is transgenic organism?

Mention the importance of Cosmid and Fosmid in gene cloning.

[4+2+4]

e) What is a 'Patent'?

What type of inventions can be patented?

Does Indian patent give protection worldwide?

Explain the following two acronyms: WIPO & PCT.

What is called 'Biosafety'?

If you are to implement a biosafety measure in an undergraduate zoology practical laboratory, what are the points you should consider for a long-term success?

What is "Cartagena Protocol on Biosafety"?

[1+1+1+2+1+2+2]

f) (i) Genetic mapping techniques require at least two alleles for a given marker, while physical mapping techniques do not rely on the presence of alleles to map genomes. Discuss how the technique of fluorescent *in situ* hybridization can be used to map genome locations even if there is no genetic variation present at a given position.

(ii) 'Blunt end ligation method includes synthetic restriction endonuclease cutsite' – Justify.

(iii) Mention the scope of Bioethics.

[4+4+2]

g) (i) How might you determine the positions of the restriction sites in a DNA molecule, other than by working out the sequence of the molecule?

(ii) What do you mean by Ex-vivo and In-vivo gene therapy?

(iii) How has PCR made the analysis of RFLPs much faster and easier? What was required to map RFLPs prior to the utilization of PCR?

(iv) What is Bioremediation?

[3+4+2+1]

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