4. (a) What is western blot hybridization technique? Explain with diagrammatic representation. (7)

(b) What are cloning vectors? Describe any one in detail. (5)

5. (a) How are *Agrobacterium* mediated transgenic plants produced? Explain in detail. (8)

(b) What are edible vaccines? Explain. (4)

6. (a) What are DNA modifying enzymes? Discuss the role of any three enzymes used in gene cloning. (7)

(b) Describe the colony hybridization method of screening of genomic library. (5)

7. Write short note on **any three** of the following :

(i) CRISPR Cas-9

(ii) Calcium chloride method of transformation

(iii) Golden rice

(iv) DNA Microarray (3×4=12)

[This question paper contains 4 printed pages.]

08.01.2024(M)

Your Roll No.....

Sr. No. of Question Paper : 4962 **G**

Unique Paper Code : 42237903

Name of the Paper : DSE: Animal Biotechnology

Name of the Course : **B.Sc. (Prog.) Life Sciences, LOCF**

Semester : V

Duration : 3 Hours Maximum Marks : 75

Instructions for Candidates

1. Write your Roll No. on the top immediately on receipt of this question paper.
2. Attempt **ANY FIVE** questions.
3. Question number **1** is compulsory.
4. Substantiate your answer with diagrams wherever necessary.

1. (a) Define the following terms : (5)

(i) Blocking agent

(ii) Genetically Modified Organisms

(iii) Metagenomics

(iv) Shuttle vector

(v) Transformation

(b) Expand the following terms : (4)

(i) Taq

(ii) ddNTP

(iii) YAC

(iv) IPTG

(c) Distinguish between the followings : (10)

(i) Genomic and cDNA library

(ii) Cohesive and Blunt ends

(iii) Probe and Primer

(iv) Transgenic animal and Cloned animal

(v) Restriction Endonuclease and Exonuclease

(d) What is the contribution of following scientists in the field of Biotechnology : (5)

(i) E.M. Southern

(ii) Frederick Sanger

(iii) Sir Alec Jefferey

(iv) Karl Ereky

(v) Hamilton Smith, D. Nathans & Arber

(e) Write the importance of the following : (3)

(i) EDTA

(ii) Ethidium Bromide

(iii) Agarose

2. (a) Give a brief account of *in-vivo* gene therapy. (4)

(b) Explain the method of production of 'Humulin' by recombinant DNA technology. (8)

3. Describe in detail two methods used for production of transgenic animals. Add a note on the application of transgenic animals. (12)

P.T.O.