

[This question paper contains 3 printed pages.]

1459

Your Roll No.

B.Sc. (Hons.) / III

A

MICROBIOLOGY – Paper XV

(Recombinant DNA Technology and Biotechnology)

(Admissions of 2004 and onwards)

Time : 3 Hours

Maximum Marks : 60

*(Write your Roll No. on the top immediately
on receipt of this question paper.)*

Attempt Five questions in all.

Q. No. 1 is compulsory.

1. (a) Name the technique/process commonly used for the following :
 - (i) To quantify the amplican
 - (ii) To study protein-protein interaction
 - (iii) To delay fruit ripening
 - (iv) To sequence a large eukaryotic genome
 - (v) To ensure bioethics in the innovations and research work in biological sciences
 - (vi) To transform a plant cell

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- (vii) To treat patients with spinal injury
- (viii) To detect environmental pollutants using microbes or their enzymes (1×8=8)
- (b) Mention the enzymes, templates and primers used to amplify the genome of HIV. (4)
2. (a) What do you understand by an expression vector? Discuss the commonly used promoters employed to construct such vectors. (6)
- (b) Discuss the gene delivery method you would use to transform the following system. Justify your answer :-
- (i) To produce knock out mice
- (ii) For Gene therapy *in vivo*
- (iii) To produce genetically engineered microorganisms (2×3=6)
3. Differentiate the following :-
- (i) Subunit and Peptide Vaccines
- (ii) DNA finger printing and DNA foot printing
- (iii) Adaptor and Linker
- (iv) Sister and helper-vector (3×4=12)

4. (a) Outline the steps involved in isolation and purification of plasmid DNA from a bacterial cell. Also mention the role of each of the chemicals used in the process. (6)
- (b) According to you, which are the **three** most significant discoveries/inventions in recent times, in the field of biotechnology. Name the contributor/s and justify your answer. (3×2=6)
5. Write short notes on the following :
- (i) Site directed mutagenesis
 - (ii) BLAST
 - (iii) Golden Rice
 - (iv) Gel-Shift Assay (3×4=12)
6. (a) Discuss any **one** genetically modified microorganism developed for the release into the environment. (4)
- (b) Mention the host and vector used for the humulin production. Outline its production in the form of a flow chart. (6)
- (c) Write a short note on RAPD technique. (2)