

Subject: Biotechnology PIII  
Principles Gene Cloning and Recombined  
DNA Tech.

QP Code : 77158

(2½ Hours)

[ Total Marks :75

- N.B. :
- (1) Attempt all questions.
  - (2) All questions carry equal marks.
  - (3) Draw neat labelled diagrams wherever necessary.

1. (a) Give the importance of (any three):  
(i) Klenow's fragment  
(ii) Target sites of restriction enzymes  
(iii) Star activity  
(iv) Labelling of nucleic acids  
(v) Alkaline phosphatases  
(vi) Ligases  
3
- (b) Given an account of the following:- (any two)  
(i) Types and applications of nucleases  
(ii) Nick translation  
(iii) Terminal deoxy nucleotidyl transferases  
(iv) Importance of PNK in genetic engineering  
12
2. (a) Explain the following terms (any three)  
(i) Nopalines  
(ii) VirE2 protein  
(iii) Cosmid  
(iv) Unique restriction site  
(v) Helper phage  
(vi) Adaptor  
3
- (b) Attempt the following:- (any two)  
(i) Discuss: Ti plasmids as plant gene transfer vectors  
(ii) Elaborate on Phage cloning vectors  
(iii) Explain the role of antisense RNA mechanism in regulation of copy number of plasmid.  
(iv) Describe the process of cloning of foreign DNA in phage M13  
12

[TURN OVER

JD-Con. 3888-16.

3. (a) Do as directed (any three) :-  
(i) What is sequenase?  
(ii) Define : annealing  
(iii) Give the role of primers  
(iv) State one application of DNA typing  
(v) Explain: minisatellite sequence  
(vi) Fill in the blank: Restriction enzyme generated fragments are called .....  
(b) Give an account of the following :- (any two)  
(i) Screening of genomic libraries  
(ii) PCR and its applications  
(iii) Southern hybridisation  
(iv) Any one method used for DNA sequencing.
4. (a) Give the significance of (any three):-  
(i) Proinsulin  
(ii) C peptide  
(iii) DNA vaccines  
(iv) Corrective gene therapy  
(v) Vaccinia virus  
(vi) VP1 protein  
(b) Answer the following:- (any two)  
(i) Discuss the advantages of a live recombinant vaccine over heat killed and attenuated vaccine  
(ii) How would you develop a vaccine against *V. cholerae*?  
(iii) Describe the mode of action and application of peptide vaccines  
(iv) Comment on the ex-vivo and in-vivo approaches to targeting somatic gene therapy
5. Write short notes on (any three):-  
(i) Diagnosis of sickle cell anemia using RFLP  
(ii) Host controlled restriction and modification of restriction enzymes  
(iii) Construction of cDNA library  
(iv) Shuttle vectors  
(v) DNA profiling  
(vi) Mode of action and applications of ligases