C 21699 (Pages : 3) Name.....

Reg. No.....

SIXTH SEMESTER B.Sc. DEGREE (SUPPLEMENTARY/IMPROVEMENT) EXAMINATION, MARCH/APRIL 2017

(UG—CCSS)

Biotechnology

BT 6B 03—RECOMBINANT DNA TECHNOLOGY

Time : Three Hours Maximum : 30 Weightage

I. Objective type questions. Answer *all* questions :

1. Which of the following enzymes is used to cut DNA in rDNA technology ?
   (a) Phosphotase.
   (b) Ligase.
   (c) Restriction endonuclease.
   (d) Ribonuclease.
2. Who created the first rDNA molecule ?
   (a) Watson, Crick and Wilkins.
   (b) Nathan, Arber and Smith.
   (c) Paul Berg.
   (d) Boyer and Cohen.
3. The first successful transformation of rDNA molecule into a bacterium was carried out by :
   (a) Watson, Crick and Wilkins.
   (b) Nathan, Arber and Smith
   (c) Paul Berg.
   (d) Boyer and Cohen.
4. The first rDNA molecule created was :
   (a) A T4 phage fragment incorporated into SV40 vector.
   (b) A lambda phage fragment incorporated into SV40 vector.
   (c) A T4 phage fragment incorporated into pSC101 vector.
   (d) A lambda phage fragment incorporated into pSC101 vector.
5. Which of these enzymes produce blunt ends in DNA ?
   (a) Sal I.
   (b) EcoRV.
   (c) Xho I.
   (d) Hind III.

Turn over

6. Isoschizomers recognize.
   (a) Same recognition sequence but different recognition site.
   (b) Same recognition site and recognition sequence.
   (c) Same recognition site and different recognition sequence.
   (d) Different recognition site and different recognition sequence.

Say True *or* False :

7. In gel electrophoresis, DNA molecules migrate from the positive to negative ends of the gel.
8. X-rays can cause formation of Thymine dimers.
9. "Golden rice" is so called because gold biolistic particles were used for transformation of rice.
10. Knockout mice are created by transfecting embryonic stem cells with an altered gene sequence.
11. Type II restriction endonucleases generally do not require ATP for action.
12. Recombinant retroviruses have been most successful for the introduction of DNA into humans for the purpose of gene therapy.

(12 × ¼ = 3 weightage)

II. Short answer type questions. Write brief notes on *all* of the following :

13. Humulin.
14. Bt toxins.
15. T-DNA.
16. Hyperchromicity of DNA.
17. Phagemids.
18. Artificial chromosomes.
19. Polymerase Chain Reaction.
20. Electroporation.
21. In situ hybridization.

(9 × 1 = 9 weightage)

III. Short answer *or* paragraph questions. Answer any *five* questions.

22. What is pharming ?
23. Briefly describe the process of Southern Blotting.
24. What are the essential features of an ideal vector for genetic engineering ?
25. Discuss the important applications of transgenic animals.
26. What is DNA fingerprinting ?
27. What are the problems faced in gene therapy ?
28. Give a brief account of sequencing DNA by Sanger's method

(5 × 2 = 10 weightage)

IV. Essay questions. Answer any *two* questions.

29. Give an account of the Human Genome Project and its implications.

30. What are the techniques adopted for generating transgenic plants ?

31. List the different applications of rDNA technology with examples of its successful application.

(2 × 4 = 8 weightage)