

FOURTH SEMESTER B.Sc. DEGREE EXAMINATION, MAY 2012
(CCSS)

Microbiology – Core Course

MB 4 B 06 – MICROBIAL GENETICS AND GENETIC ENGINEERING

Maximum : 30 Weightage

Time : Three Hours

Section I

Answer **all** questions.

1. The titre of a **phage** is represented as _____
2. In **eukaryotes**, there are _____ **RNA polymerases**.
3. **amp^R** encodes _____
4. **Retroviruses** carry a special type of **polymerase** called _____
5. A change occurred in a sequence of DNA from 5' **TATTGAACTCATG** 3' to 5' **TATTGAAACTCATG** 3'. Indicate what kind of change is this?
6. _____ **sequence is recognised** by the sigma factor in *E. coli*.
7. DNA extracted from the **genome** of an organism contained 20% adenine. The % of bases of cytosine is _____
8. An increase in the **OD_{260nm}** upon denaturation of DNA is called _____
9. Proof reading depends on the _____ activity of DNA **polymerase**.
Indicate True or False.
10. All the three enzymes encoded in the **lac operon** are expressed in equivalent amounts in the presence of lactose in the medium and are completely switched off in the absence of lactose.
11. Two proteins with the same charge can be separated by ion exchange chromatography.
12. When glucose and lactose are present in the medium at equal concentrations, glucose is preferentially utilised.

(12 x = 3 weightage)

Section II

Answer **all** questions.

13. What type of restriction **endonuclease** is commonly used and why?
14. Write about DNA **polymerase I**.

Turn over

15. DNA can be visualized by ethidium bromide. What is the principle?
16. What is directional cloning?
17. How do you prepare competent cells?
18. What is the source of energy for protein translation in *E. coli*?
19. What is the contribution by Griffiths?
20. What did Meselson and Stahl by their classical experiment with *E. coli*?
21. What do you understand by relegated vs. recombinant vector?

(9 x 1 = 9 weightage)

Section III

Write about any five of the following.

22. Transformation.
23. Gene therapy.
24. Affinity chromatography.
25. pUC vector.
26. Western blotting.
27. PCR.
28. Electroporation.

(5 x 2 = 10 weightage)

Section IV

Answer any two questions.

29. What are the different types of cell disruption methods?
30. What is a genomic library and is it different from a cDNA library?
31. What is site-directed mutagenesis ? Give example of one method.

(2 x 4 = 8 weightage)