

FOURTH SEMESTER B.Sc. DEGREE EXAMINATION, MAY 2012

(CCSS)

Microbiology – Core Course

MB 4 B 06 – MICROBIAL GENETICS AND GENETIC ENGINEERING

Time : Three Hours

Maximum : 30 Weightage

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)