



MAR IVANIOS COLLEGE (AUTONOMOUS)
THIRUVANANTHAPURAM

Reg. No. :.....

Name :.....

Second Semester Career Related Degree Examination, June 2015

First Degree Programme under CBCSS

Vocational Course – II: (for Botany and Biotechnology)

AUBB251: Microbial Metabolism, Genetics and Diseases

Time: 3 Hours

Max. Marks: 80

SECTION – A

Answer ALL the following in a word or one or two sentences.

1. Chemotaxis
2. Bacterial spores
3. Heterotrophic organisms
4. Plasmid
5. Spontaneous mutation
6. Transposable genetic elements
7. Transformation
8. Botulism
9. Lag phase
10. Nucleoid

(10 x 1 = 10 Marks)

SECTION – B

Answer any EIGHT questions, not exceeding a paragraph.

11. Write short note on bacterial growth curve.
12. Draw the diagram of a bacterial cell and name its parts.
13. What do you understand by anoxygenic photosynthesis ?

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14. Differentiate pili and flagella indicating their functions.
15. Name the vaccines used for poliomyelitis.
16. What is rabies ? Enlist the properties of rabies virus.
17. What is the overall reaction for biological nitrogen fixation ?
18. What is the evolutionary explanation for the existence of transposable elements in prokaryotes ?
19. What is the biological significance of overlapping genes ?
20. What genetic mechanisms lead to the evolution of multiple drug resistance (MDR) ?
21. Compare the energy yield (ATP) of aerobic and anaerobic respiration.
22. Compare and contrast oxidative phosphorylation and photophosphorylation.

(8 x 2 = 16 Marks)

SECTION – C

Short essay type : Answer any SIX questions.

23. Describe the methods followed for the determination of bacterial count.
24. Give a brief account of the various nutritional types of prokaryotes.
25. What is influenza ? Describe the replication of influenza virus.
26. Define methanogenesis. With illustrations explain the process of methane fermentation.
27. Enlist the industrial and agricultural applications of bacterial metabolism.
28. Illustrate the chemical reactions of glycolysis highlighting the ATP generation steps.
29. Discuss the classification of plasmids based on their ability to transfer to other microbes.
30. Discuss the first experiment that provided evidence for DNA as genetic material capable of transferring genetic information.
31. What is transduction ? Mention the two types of transduction events seen in prokaryotic cells.

(6 x 4 = 24 Marks)

SECTION – D

Long essay type : Answer any TWO questions.

32. What are the factors that influence the growth of the microorganisms in food ? Differentiate between food intoxication and food infection. Give brief account of a disease due to food intoxication and a disease due to food infection.
33. What are transposons ? Describe the classes of prokaryotic transposons.
34. Define conjugation. What is the role of F – factor in conjugation ? Define the following bacterial states with respect to F – episomes: Hfr, F⁺, F' and F⁻.
35. Discuss in detail the two life cycles of a virus.

(2 x 15 = 30 Marks)

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