



MAR IVANIOS COLLEGE (AUTONOMOUS)
THIRUVANANTHAPURAM

Reg. No. :.....

Name :.....

First Semester Career Related B.Sc. Degree Examination, November 2014

First Degree Programme under CBCSS

Vocational Course – I: (for Botany and Biotechnology)

AUBB151: Microbiology

Time: 3 Hours

Max. Marks: 80

SECTION – A

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

1. Asepsis.
2. Mycoplasma.
3. Bacteriophage.
4. Auxotroph.
5. Antibiotic.
6. Stationary growth phase.
7. Synthetic media.
8. SCP.
9. The phenomenon by which fungi display the two growth forms *viz.*, yeasts and molds is called _____.
10. Serial dilution.

(10 x 1 = 10 Marks)

SECTION – B

Answer any EIGHT questions, not exceeding a paragraph.

11. In what specific way does ultraviolet light destroy microorganisms ?
12. Differentiate between halophile and osmophile.

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13. What specific mechanisms are responsible for inactivation of microbes by heavy metals ?
14. What would be the source of nutrition of chemosynthetic heterotrophs ?
15. What role does microbial antagonism play in nature ?
16. What is the importance of nitrogen fixation ?
17. Explain how turbidometry can be employed to quantitate bacteria in a culture sample.
18. Enumerate reasons why agar is used as a gelling agent in microbial cultures.
19. Give two reasons why it is important to invert petri plates during incubation of bacterial cultures.
20. In what physiological way does penicillin affect penicillin-sensitive bacteria ?
21. Distinguish between a disinfectant and antibiotic.
22. What is difference between the effect of dipping versus swabbing alcohol as disinfectant. Which method is more effective ?

(8 x 2 = 16 Marks)

SECTION – C

Short essay type : Answer any SIX questions.

23. Give reasons why endospores are much more resistant to heat than are vegetative cells.
24. Why are facultative organisms able to grow with or without oxygen while aerobes grow only in its presence ?
25. Differentiate lytic and lysogenic bacteriophages.
26. How is replica plating experiment performed for identification of microbial mutants ?
27. What is the significance of minimum inhibitory concentration (MIC) ? How is it determined ?
28. Define fermentation. What are the two types of fermentation processes ?
29. What are the various agents used for strain improvement of industrial microbes ?

30. Compare and contrast streak plate and pour plate method for separating microbes. Which method is effective for best separation ?
31. List and describe any four physical methods for microbial control.

(6 x 4 = 24 Marks)

SECTION – D

Long essay type : Answer any TWO questions.

32. Explain the mode – of – action of key classes of antibiotics and mechanism of microbial resistance to these antibiotics.
33. Tabulate the problems associated with heterologous protein production in *E. coli* and possible solutions to overcome the same. Enumerate the advantages of *Bacillus subtilis* over *E. coli* for heterologous protein production.
34. What are single cell proteins (SCPs) ? Enumerate the advantages and disadvantages of SCPs.
35. Give a brief account of the role of microorganisms in carbon cycle.

(2 x 15 = 30 Marks)

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