U.S.N.										

B.M.S. College of Engineering, Bengaluru-560019

Autonomous Institute Affiliated to VTU

August 2024 Supplementary Examinations

Programme: B.E. **Semester: III**
Branch: BIOTECHNOLOGY **Duration: 3 hrs.**
Course Code: 19BT3DCMBG **Max Marks: 100**
Course: Microbiology

Instructions: 1. Answer any FIVE full questions, choosing one full question from each unit.
2. Missing data, if any, may be suitably assumed.

UNIT - I

1 a) Is it possible to establish the link between a particular microorganism and a particular disease? Substantiate your answer with appropriate theories if any. **06**

b) Microorganisms exhibit diverse properties. Justify **05**

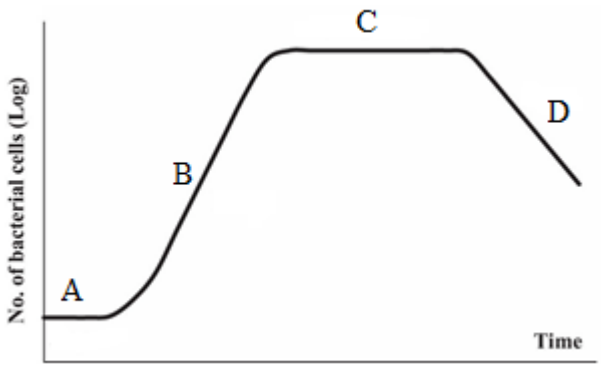
c) Explain with a neat diagram the working principle, construction and uses of a microscope where the the area observed is brightly lighted & the microorganisms appear dark. **09**

UNIT - II

2 a) Discuss the ways in which microorganisms are classified based on their requirements for energy and electrons. **10**

b) "Much of the study of microbiology depends on the ability to grow and maintain microorganisms in the laboratory, and this is possible only if suitable culture media are available". Substantiate your answer with suitable examples. **10**

3 a) The following curve is obtained by plotting the logarithm of the number of viable cells versus the incubation time when a microorganism is grown in a closed system using a liquid medium for 4 days at 37^0C. **10**



i. Name the above plot.

ii. Identify the phases A, B, C & D and discuss factors which determine the beginning and end of each phase with relevant equations.

i) Write the significance of B and C phases.

b) "Gram-positive bacterium could be differentiated from gram-negative bacterium" Substantiate the statement with relevant diagram if any. **10**

UNIT - III

4 a) Name and Illustrate the following bacterial processes with a neat diagram: **12**

i. Genetic recombination in which a DNA fragment from a dead, degraded bacterium enters a competent recipient bacterium and it is exchanged for a piece of the recipient's DNA.

Genetic recombination in which a DNA fragment is transferred from one bacterium to another by a bacteriophage.

b) With a neat diagram describe the four morphological types of bacteriophages. **08**

OR

5 a) Name and describe the stages of the most common pathway for glucose degradation to pyruvate in stage two of catabolism of all major groups of microorganisms and functions in the presence or absence of O_2. **10**

b) Explain type of reproduction in fungi by which offspring arise from a single organism and inherit the genes of that parent. **10**

UNIT - IV

6 a) Recommend and describe the most suitable method for sterilization of heat sensitive biological fluids. **10**

b) Explain the mode of action of ampicillin and streptomycin on microbial cells. **10**

UNIT - V

7 a) "Use of bio fertilizers is one of the important components of integrated nutrient management". Substantiate the statement with suitable examples. **10**

b) What are Biopesticides? Explain any two in detail **10**

****