

B. Sc. DEGREE EXAMINATION, NOVEMBER 2022  
BRANCH V (a) – PLANT BIOLOGY AND PLANT BIOTECHNOLOGY  
FIFTH SEMESTER

COURSE : MAJOR – CORE  
PAPER : MICROBIOLOGY  
TIME : 3 HOURS

MAX.MARKS:100

SECTION – A

ANSWER ALL QUESTIONS

(18x1=18 marks)

I. CHOOSE THE CORRECT ANSWER

(5x1=5)

- The phase in the bacterial growth curve where rapid growth is observed  
a) Lag phase      b) Logarithmic phase      c) Stationary phase      d) Decline phase
- The chemical widely used for flocculation in water treatment  
a) Potassium permanganate      b) Alum      c) Sodium chloride      d) Potassium chloride
- The cell wall of bacteria is composed of  
a) Glycolipids      b) Phospholipids      c) Peptidoglycan      d) Glycogen
- One of the following disease is caused by a Phytoplasma  
a) Little leaf of brinjal      b) Root gall disease  
c) Bunchy top of banana      d) Wilt disease
- Viruses isolated from clinical samples cannot be cultivated in/by one of the following  
a) Tissue culture      b) Embryonated eggs  
c) Animals      d) Chemically defined media

II. FILL IN THE BLANKS

(5x1=5)

- \_\_\_\_\_ are products that produce immunity to a specific disease.
- Many bacteria acquire antibiotic resistance by the transfer of \_\_\_\_\_ from a resistant organism to a sensitive one.
- \_\_\_\_\_ is a device used in the enumeration of air borne bacteria.
- The protein that can cause disease in animals and humans by triggering normal healthy proteins in the brain to fold abnormally are called \_\_\_\_\_
- The symbiotic association between fungi and roots of higher plants is called \_\_\_\_\_

III. TRUE OR FALSE:

(3x1=3)

- Absence of coliforms indicates potable water.
- Small pox vaccine was introduced by Edward Jenner.
- Nitrogen fixation is a process that occurs in all bacteria.

IV. MATCH THE FOLLOWING

(5x1=5)

- |                     |   |                   |
|---------------------|---|-------------------|
| 14. Basal media     | - | A. Saline medium  |
| 15. Enriched media  | - | B. MacConkey agar |
| 16. Selective media | - | C. Blood agar     |
| 17. Transport media | - | D. Nutrient Broth |
| 18. Storage media   | - | E. Cary-Blair     |

**V. ANSWER ANY SIX QUESTIONS,  
(Each answer not exceeding 50 words)**

**(6x3=18)**

19. Differentiate gram positive bacteria from gram negative bacteria.
20. What are oxidation ponds?
21. Can virus be cultivated in enriched media? Explain.
22. Enumerate Koch's postulates.
23. Write the symptoms for Root gall disease.
24. Comment on viroids.
25. What is bacterial conjugation?
26. Outline Carl Woese's three domain concept.
27. What is lytic cycle in virus?

**SECTION - B**

**ANSWER ANY FOUR QUESTIONS EACH ANSWER SHOULD NOT EXCEED  
200 WORDS. DRAW DIAGRAMS WHEREVER NECESSARY (4x6=24)**

28. Explain Whittaker's five kingdom theory.
29. Discuss the various factors affecting bacterial growth.
30. Enumerate the general properties of viruses.
31. Briefly explain the structure of Tobacco Mosaic virus.
32. List the applications of VAM in agriculture.
33. Highlight the role of microbes in wastewater treatment.

**SECTION - C**

**ANSWER ANY TWO QUESTIONS EACH ANSWER SHOULD NOT EXCEED  
1000 WORDS. DRAW DIAGRAMS WHEREVER NECESSARY (2x20=40)**

34. Give an account of the different methods to control microorganisms highlighting their principles with suitable examples.
35. Elaborate on the cultivation and purification of viruses.
36. Describe the role of microorganisms in organic matter decomposition.
37. Explain the various processes involved in the treatment of sewage. Add a note on the significance of microorganisms.

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