Your Roll No .....

Department of Botany
School of Chemical & Life Sciences
Jamia Hamdard, New Delhi-110062

M.Sc. BOTANY
1st SEMESTER EXAMINATION DECEMBER 2025

Paper Name: **Microbiology and Plant Pathology** Paper Code: **MBOCC104**
Time: **2 ½ hours** Maximum Marks: **60**
Note: This paper has 3 sections A, B, and C.
Section A: Answer all the questions.
Section B: Attempt any **4** out of **6.** Section C: Attempt any **2** out of **3.**

Abbreviations used:
CLO-Course Learning Outcomes
On completing this course, the students should be able to
CLO1: recall history, characteristic features, classification and enumerate the economic importance of plant viruses, phytoplasma, bacteria and fungi (remember/ analyze);
CLO 2: relate disease epidemics and epidemiology with host pathogen interaction (create);
CLO 3: recognize innate and acquired immunity and disease resistance mechanisms of plants (understand); and
CLO 4: explain diseases of plants with reference to the causal agents, symptomatology, disease cycle, transmission and management (evaluate).
BLT-Bloom's Taxonomy Levels
1-Remembering; 2-Understanding; 3-Applying; 4-Analyzing; 5-Evaluating; 6-Creating

SECTION A

Very Short Answer Type Questions (Answer **ALL** questions) (15 x 1 = 15 marks)

Q.No.	Question	Marks	CLO	BTL
	Define the following terms			
1.	Symbiosis	1	2	2
2.	Pure culture	1	2	2
3.	Reverse transcription	1	1	2
4.	SAR	1	3	3
5.	Disease triangle	1	3	3
	Give ONE example for each of the following			
6.	An antibiotic of bacterial origin	1	2	4
7.	Plant DNA virus	1	1	2
8.	PR proteins	1	3	3
9.	Plant disease caused by phytoplasma	1	1 & 4	1
10.	Basidiomycetes	1	2	1
	Give ONE reason for each of the following			
11.	Viruses cannot be grown on artificial laboratory media.	1	1	4
12.	Penicillins cannot act on mycoplasma.	1	2	4
13.	Mycorrhizal fungi enhance plant nutrient uptake.	1	2	4
14.	Crop rotation helps in reducing soil-borne plant diseases.	1	4	4
15.	Environmental conditions determine the severity of plant diseases.	1	3	4

SECTION B

Short Answer Type Questions (Attempt any **FOUR**) (4 x 5 = 20 marks)

Q.No.	Question	Marks	CLO	BTL
1	Enumerate sub-viral agents with examples of each.	5	1	2
2	Briefly describe the symptoms caused by phytoplasma.	5	1	3
3	Differentiate between Gram-positive and Gram-negative bacteria, giving **ONE** example of each.	5	2	3
4	What are the unique features of fungi?	5	2	3
5	What are the events involved in HR?	5	3	3
6	Differentiate between smut and rust diseases of wheat.	5	4	3

SECTION C

Long Answer Type Questions (Attempt any **TWO**) (2 x 12.5 = 25 marks)

Q.No.	Question	Marks	CLO	BTL
1	a. Attempt Baltimore's classification of plant viruses. b. Give a brief account on mosaic disease of tobacco.	6.25 6.25	1 4	2 3
2	Compare and contrast the ultrastructure of bacterial and fungal cells with the help of neat-labelled diagrams.	12.5	2	3
3	a. Describe the structure and functions of PRRs in plant immunity. How do PRRs detect pathogens and activate defense responses? b. Elaborate on the industrial applications of **EITHER** bacteria **OR** fungi.	7.0 5.5	3 2	4 4

*****END OF QUESTION PAPER*****