



Khulna University

Khulna, Bangladesh

Agrotechnology Discipline

3rd Year, 2nd Term, Examination 2025, Session: 2023-'24

Course No.: 0811 08 AT 3201, Course Title: Principles of Plant Pathology and Diseases of Field Crops

Full Marks: 60.0, Time: 3 hours, Credit: 3.0

- Figures in the margin indicate full marks. Questions are of equal value.
- Use separate sheets for each section.
- Draw and label diagram and/or illustration wherever necessary.

Section A

Marks

There are 4 questions in this section. Answer any 3 questions.

30.0

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| 1. | (a) | Define infection and colonization of pathogenesis. Differentiate their role in disease development. [L1, L2; CLO 1] | 1+2 |
| | (b) | Explain how toxins and enzymes contribute to pathogenicity. [L3; CLO1] | 4 |
| | (c) | "Host-specific toxins play a key role in disease selectivity" -justify with examples. [L4; CLO1] | 3 |
| 2. | (a) | "Epidemiological factors that prevent an epidemic despite the presence of susceptible hosts and virulent pathogens" -analyze the statement. [L4; CLO1] | 4 |
| | (b) | Provide examples of fungal diseases that result in vascular obstruction and explain their effects on plant physiology. [L4; CLO1] | 4 |
| | (c) | What is meant by field sanitation? [L2; CLO4] | 2 |
| 3. | (a) | How does nutrient imbalance influence plant predisposition? [L2; CLO2] | 2 |
| | (b) | What role does time play in the disease tetrahedron development? [L2; CLO3] | 2 |
| | (c) | Discuss a scenario with example where irrigation water contributes to pathogen dissemination. [L3; CLO2] | 3 |
| | (d) | How do dense planting and excessive nitrogen application modify epidemiological factors? Give judgement in favor of your opinion. [L3; CLO3] | 2+1 |
| 4. | (a) | List two advantages and limitations of biological control agents in plant disease control. [L1; CLO4] | 2 |
| | (b) | Why do resistant varieties sometimes breakdown in the field? Provide scientific reasoning. [L3; CLO4] | 3 |
| | (c) | Discuss the importance of host resistance within Integrated Disease Management (IDM). [L3; CLO4] | 2 |
| | (d) | Analyze how cultural measures contribute to climate-smart disease management. [L3; CLO4] | 3 |

Section B

Marks

There are 4 questions in this section. Answer any 3 questions.

30.0

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| 5. | (a) | List six major diseases of rice with causal agents. [L2; CLO1] | 3 |
| | (b) | Draw and describe the symptoms of bacterial leaf blight and brown spot of rice. [L2; CLO2] | 4 |
| | (c) | Illustrate the disease cycle of brown spot of rice. [L3; CLO3] | 3 |



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| 6. | (a) | Describe the symptoms of blast disease at different growth stages of rice. [L2; CLO4] | 4 |
| | (b) | Analyze the favorable conditions of blast disease of rice. [L3; CLO4] | 3 |
| | (c) | Suggest the measures to be taken to grow blast disease free rice crop. [L4; CLO4] | 3 |
| 7. | (a) | Enlist two major diseases each of oilseeds and pulses with causal agents. [L2; CLO1] | 4 |
| | (b) | Describe symptoms of red rot of sugarcane and its effect on yield. [L2; CLO2] | 4 |
| | (c) | Write short notes on mosaic diseases of sugarcane. [L4; CLO3] | 2 |
| 8. | (a) | Describe the symptoms of mungbean mosaic disease. [L2; CLO4] | 2 |
| | (b) | Name the cause of sugarcane smut. Describe the symptoms of sugarcane smut and explain the procedure of hot water treatment for its control. [L3; CLO4] | 1+3 |
| | (c) | Distinguish between symptoms of cercospora leaf spot and rust of groundnut. [L3; CLO4] | 2 |
| | (d) | Suggest control measures for foot and root rot of pulses. [L3; CLO4] | 2 |