



**PARVATHANENI BRAHMAYYA
SIDDHARTHA COLLEGE OF ARTS & SCIENCE**
Autonomous
Siddhartha Nagar, Vijayawada-520010
Re-accredited at 'A+' by the NAAC

SEMESTER -END QUESTION PAPER STRUCTURE

Course Code & Title of the Course:	23BOMAL232 PLANT PATHOLOGY AND PLANT DISEASES
Offered to:	B.Sc. Hons Botany
Category:	SEMESTER: 3
Max. Marks	70
Max.Time	3 Hrs

Section A: Short Answer Questions (20 Marks)

Answer All questions. Each question carries 4 Marks.

- Q1 (a) Describe the scope and objectives of plant pathology. K1
OR
(b) Describe the survival of plant pathology. K1
- Q2 (a) Define and describe the active and passive invaders. K1
OR
(b) Describe role of toxins in plant pathology. K1
- Q3 (a) Explain the human cultural practices on development of epidemics. K2
OR
(b) Explain the quarantine. K2
- Q4 (a) Discuss about downy mildew in bajra. K2
OR
(b) Explain wilt and sterility mosaic in pigeon pea. K2
- Q5 (a) Discuss yellow vein mosaic of okra. K2
OR
(b) Explain anthracnose in punica granatum. K2

Section B: Long Answer Questions (50 Marks)

Answer All questions. Each question carries 10 Marks.

Q6 (a) Explain dispersal of plant pathogens through passive process. K2

OR

(b) Discuss the most important plant pathogenic organisms with examples of diseases caused by them. K2

Q7 (a) What is infection? Explain the role of different factors for success of infection process. K2

OR

(b) Explain the defence mechanisms in plants against pathogens. K2

Q8 (a) Describe remote sensing in plant pathology. K2

OR

(b) Discuss in detail the concept of integrated plant disease management. K2

Q9 (a) Describe bacterial blight of Rice. K1

OR

(b) Describe symptoms, disease cycle and movement of phytophthora blight. K1

Q10 (a) Discuss in detail about the Phomopsis blight. K2

OR

(b) Explain the etiology, symptoms and management practices of the coconut bowl stem rot. K2



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Course Code				23BOMAL232			
Title of the Course				PLANT PATHOLOGY AND PLANT DISEASES			
Offered to: (Programme/s)				B.Sc Hons Botany			
L	4	T	0	P	0	C	3
Year of Introduction:		2024-25		Semester:			3
Course Category:		MAJOR		Course Relates to:		GLOBAL	
Year of Revision:		NA		Percentage:		NA	
Type of the Course:				SKILL DEVELOPMENT			
Crosscutting Issues of the Course :							
Pre-requisites, if any				KNOWLEDGE OF PLANT DISEASES AT +2 LEVEL			

Course Description:

The course introduces the basic concepts of plant disease biology and control, covering disorders caused by fungi, viruses, bacteria, and nematodes, as well as the role of environmental factors (including temperature, moisture, and others) in contributing to the development of epidemics. Upon completion, students will be able to find, interpret, and use scientific literature on plant diseases and discuss a range of control strategies suitable for both traditional and organic growers. Plant diseases are major constraints in the production of food and other crops. The effective control of plant diseases requires understanding the biology of plant diseases and the factors conducive to their development. This course introduces students to basic concepts regarding the biology of plant pathogens, the role of environmental conditions in promoting development of plant diseases, and the development of effective approaches to disease control. At the end of the course, students will be able to find, interpret, and apply scientific information on plant diseases to make management decisions.

Course Aims and Objectives:

S.NO	COURSE OBJECTIVES
1	To study various plant pathogens, their survival and dispersal mechanisms.
2	To understand the process involved in infection and pathogenesis in plants.
3	To study the common diseases of some important field crops.

4	To study the common disease of some horticultural crops.
5	To understand the management practices of plant diseases.

Course Outcomes

At the end of the course, the student will be able to...

CO NO	COURSE OUTCOME	BTL	PO	PSO
CO1	Identify major groups of plant pathogens and classify plant diseases.	K1	2	1
CO2	Explain various stages in infection, plant pathogenesis and responsible factors.	K2	2	1
CO3	Elaborate the preventive and control measures for plant diseases.	K2	2	1
CO4	Discuss about some diseases of field crops and their management.	K2	2	1
CO5	Discuss about some diseases of horticultural crops and their management.	K2	2	1

CO-PO MATRIX									
CO NO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2
CO1		1						1	
CO2		2						2	
CO3		2						2	
CO4		2						2	
CO5		2						2	

Course Structure:

Unit – 1: [Plant pathogens, survival and dispersal]

(12Hrs)

1. Plant pathology: definition, importance of plant diseases, important famines in world; scope and objectives of plant pathology.
2. Important plant pathogenic organisms with examples of diseases caused by them.
3. Classification of plant diseases based on important criteria.
4. A brief account on survival of plant pathogens. Dispersal of plant pathogens – active and

passive processes.

Examples/Applications/Case Studies:

Case Study 1- Identifying the survival life a pathogen in and around

Case Study 2- Identifying the dispersal of pathogen in and around

Exercises/Projects:

Activity: Field Survey and making a report on various plant pathogens, their survival and dispersal mechanisms.

Evaluation method: Field reports, presentations and visual documentation based on a rubric.

Specific Resources:

<https://youtu.be/W8fBGL3p08c>

Unit – 2: [Infection and pathogenesis in plants] (12Hrs)

1. Infection process – pre-penetration, penetration and post-penetration.
2. Role of enzymes in plant pathogenesis.
3. Role of toxins in plant pathogenesis.
4. Role of growth regulators in plant pathogenesis. Defense mechanisms in plants against pathogens.

Examples/Applications/Case Studies:

Case Study 1- Making report on fairly distinct infection causing stages

Case Study 2- Poster making on epiphytotic factors

Exercises/Projects:

Activity: Case studies on plant infections and factors contributing to disease development.

Evaluation method: Diagnostic evaluation of case study report for problem-solving and critical thinking skills.

Specific Resources:

<https://www.youtube.com/watch?v=xi4Q0AvJha4&pp=ygUkaW5mZWNoaW9uIGFuZCBwYXRob2dlbmVzaXMgaW4gcGxhbnRz>

Unit – 3: [Plant disease management] (12Hrs)

1. Plant disease epidemiology; plant disease forecasting; remote sensing in plant pathology.
2. General principles of plant diseases management.
3. Regulatory methods, cultural methods; biological control and PGPR.
4. Physical methods, chemical methods; host plant resistance.
5. Integrated plant disease management (IDM) – Concept, advantages and importance.

Examples/Applications/Case Studies:

Case Study 2- Assignment on making a goal to reduce the economic and aesthetic damage caused by plant diseases

Activity: A survey report on various preventive and control measures for plant diseases practiced by the farmers in their locality.

Specific Resources:

<https://www.youtube.com/watch?v=rwiKxaCrHGM&pp=ygUYcGxhbnQgZGlzZWZzSBtYW5hZ2VtZW50>

Symptoms, etiology, disease cycle and management of major diseases of following crops:

- Rice: Blast of rice, bacterial blight and Tungro
- Bajra: Downy mildew and Ergot
- Pigeon-pea: Phytophthora blight, wilt and sterility mosaic
- Groundnut: Tikka leaf spot, rust and root rot

Case Study 1- Crop disease impact on fields yield

Case Study 2- Self –study of disease management in selected crops

Activity: Field survey and data collection on diseases of local field crops.

Evaluation method: Assessment of the quality of report bases on a rubric.

Specific Resources:

<https://www.youtube.com/watch?v=8FKMzQAeLzs&pp=ygUeZGZlZWZlZXMgb2YgaG9ydGljdWx0dXJlIGNyb3Bz>

Symptoms, etiology, disease cycle and management of major diseases of following crops:

- Brinjal: Phomopsis blight and Little leaf
- Okra: Powdery mildew and Yellow vein mosaic
- Pomegranate: Alternaria fruit spot and Anthracnose
- Coconut: Bud rot and Basal stem rot

Examples/Applications/Case Studies:

Case Study 1- Sustainable farming practices to avoid diseases of the above said crops

Case Study 2- Increased productivity and quality

Exercises/Projects:

Activity: Microscopic observations and making drawings of diseased samples.

Evaluation method: Formative assessment of presentation of findings through visuals/ drawings.

Specific Resources:

<https://www.youtube.com/watch?v=8FKMzQAeLzs&pp=ygUeZGlzZWZzZXMgb2YgaG9ydGljdWx0dXJlIGNyb3Bz>

Text Books:

1. R.S. Mehrotra (2008) Plant Pathology, Tata McGraw-Hill Education, New Delhi
2. P.D. Sharma (2011) Fundamentals of Plant Pathology, Tata McGraw-Hill Education, New Delhi

References:

1. Singh, R. P., and U. S. Singh (2020). Plant diseases: Identification, management and challenges. Springer, Singapore.
