

COLLEGE OF AGRICULTURE, FISHERIES & FORESTRY

Bachelor of Science in Agriculture Year 3: Trimester 1 Examination, 2018

PPA 601: Plant Diseases & Their Management

Allocated Time: 3 hours and 10 Minutes (Reading Time)

Allocated Marks: 100

**Instructions:**

1. This paper is consist of **four** sections. All Sections are **compulsory**. Note the choices in section D.
2. Ensure to write your names and ID Number on each sheet of paper of the answer sheet.
3. No written or printed materials are allowed into the examination room.
4. No mobile phone and other electronic device is allowed into the examination room.
5. You need to provide your own writing materials for the examination.
6. Write all your answers in the answers sheet provided.

The table below shows the breakdown of the assessment paper and allocated time.

Section	Section Description	Suggested Time	Allocated Marks
A	Multiple Choices	15 Minutes	20
B	Matching/Labelling	15 Minutes	20
C	Short Answer Questions	30 Minutes	30
D	Essay Questions	120 minutes	30

**Section A: Multiple Choices**

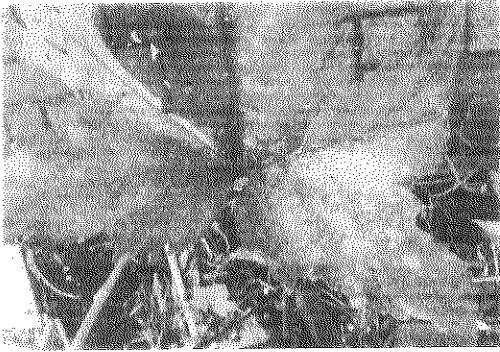
**(20 Marks)**

1. Ratoon stunting disease of sugarcane caused by :
  - a. *Rhizoctonia solani*
  - b. *Pyricularia oryzae*
  - c. *Magnaporthea grisea*
  - d. *Leifsonia xyli*
  
2. Majority of plant diseases are caused by:
  - a. Bacteria
  - b. Virus
  - c. Fungus
  - d. Nematode
  
3. The dissemination of fungi and its successful establishment on other host plants is initiated by the fungal structure known as -:
  - a. Plasma
  - b. Sclerotia
  - c. Root
  - d. Filament
  
4. Tumeric is a common spicy crop grown in Fiji under the family.
  - a. Colocasia
  - b. Curcubits
  - c. Fabaceae
  - d. Zingerberaceae
  
5. Citrus greening disease is also known as
  - a. Huanglongbing disease
  - b. Taenglongbing disease
  - c. Citrus broom disease
  - d. Green dragon disease
  
6. Which of the following varieties of sugarcane is resistant to Ratoon stunted disease?
  - a. Q200A
  - b. Q155
  - c. Q242A
  - d. KQ228A
  
7. Which of the following rice variety is resistant to Rice Blast?
  - a. Jupiter
  - b. Pirogue
  - c. Catahoula
  - d. Bengal

8. Stem rot disease of rice is a fungal disease caused by:

- a. *Magnaporthe grisea*
- b. *Pyricularia oryzae*
- c. *Xanthomonas oryzae*
- d. *Sclerotium oryzae*

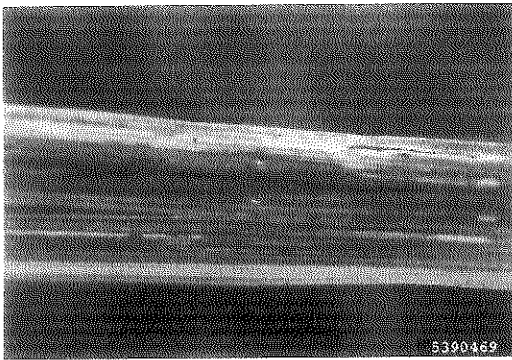
9. Refer to the diagram below to answer question 9.



The disease symptom displayed by the diagram is known as -:

- a. Downey mildew
- b. Powdery mildew
- c. Sooty mold
- d. Leaf rust

10. The disease symptom displayed by the diagram below is known as -:



- a. Leaf rust
- b. Leaf spot
- c. Bacterial leaf streak
- d. Chlorosis

11. The two common diseases classified under Abiotic disease are -:
- a. Smut and Wilt
  - b. Stunting and Dieback
  - c. Chlorosis and wilting
  - d. Brown leaf spot and smut.
12. A common disease which results from excess moisture and leaf wetness is known as-:
- a. Canker
  - b. Powdery mildew
  - c. Blight
  - d. Smut
13. Another common name for Fusarium wilt disease on banana is known as -:
- a. Panama Disease
  - b. Black sigatoka disease
  - c. Yellow sigatoka disease
  - d. Banana bunchy top disease
14. *Phytophthora parasitica* is the causal agent for -:
- a. Ginger root-knot
  - b. Payaya ringspot
  - c. Maize red rot
  - d. Pineapple root rot
15. *Meloidogyne spp.* is the scientific name for -:
- a. Root nematode
  - b. Foliage nematode
  - c. Root-knot nematode
  - d. Lesion nematode
16. When testing for bacterial presence on plant tissues, which of the following is the recommend test?
- a. Bacterial streaking Test
  - b. Ooze Test
  - c. Microscopic analysis
  - d. ELIZA test
17. Which of the following is an endemic disease to Fiji?
- a. Sigatoka black Disease
  - b. Taro leaf blight
  - c. Cabbage rot
  - d. Rice blast

18. In order to control viral disease outbreak, which of the following practices is necessary?
- a. Practice cultural control                      c. Control insect vector population.
- b. Applying biological control                  d. Applying viroticide
19. An exotic guava disease which is not present in Fiji is known as-:
- a. Guava gum disease                              c. Fruit Rot
- b. Canker disease                                      d. Bacteriosis disease
20. Which of the following is not an integrated method of controlling plant diseases -:
- a. Protection    c. Resistance
- b. Eradication    d. Genetic engineering

**SECTION B: PART I**

**Matching**

**(10 marks)**

Match the following term in the table below to their correct description on the right by filling the second column to the left.

1		Red Gram	A.	<i>Ananas comosus</i>
2		<i>Guava</i>	B.	<i>Vitis vinifera</i>
3		<i>Fusarium wilt on Banana's</i>	C.	<i>Cajanus cajan</i>
4		White mulberry	D.	<i>Colletotrichum gloeosporioides</i>
5		Grapevine	E.	<i>Achras zapota L.</i>
6		Rust on Bengal gram/ chick pea	F.	<i>Cicer arietinum</i>
7		Anthracnose disease on guava	G.	<i>Panama disease</i>
8		Pineapple	H.	<i>Morus alba L</i>
9		<i>Chickpea (gram pea)</i>	I.	<i>Uromyces ciceris - arietini</i>
10		<i>Sapota</i>	J.	<i>Psidium guajava</i>

**PART II Fill in the Blanks****(10 Marks)**

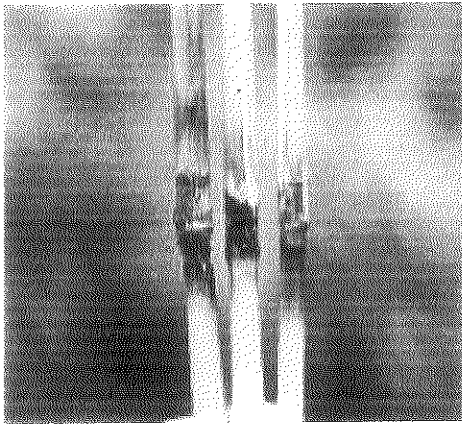
Based on your knowledge on plant diseases, fill in the table below.

Name of Disease	Causal Agent
Sugarcane Smut Disease	
	<i>Leifsonia xyli</i>
Fiji Disease	
	<i>Magnaporthe oryzae</i>
Rice Bacterial Blight	
Ginger bacterial soft rot	
Rhizome rot	
	<i>Phytophthora colocasiae</i>
Kava Dieback	
Cassava bacterial blight	

**SECTION C Short Answer Questions****(30 Marks)**

1. Explain the three common cultural practices used in Fiji to prevent the spread of pathogens in the farm. (3 marks)
2. List three major fungal diseases of rice. (1 ½ marks)
3. State 3 common symptoms displayed by plants showing disease infection. (1 ½ marks)

4. With the supplied diagrams, write down the name of the disease and causal agents.  
(10 marks)



Disease Name: \_\_\_\_\_

Causal Agent: \_\_\_\_\_



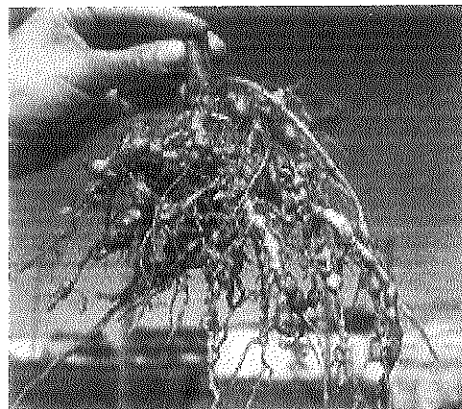
Disease Name: \_\_\_\_\_

Causal Agent: \_\_\_\_\_



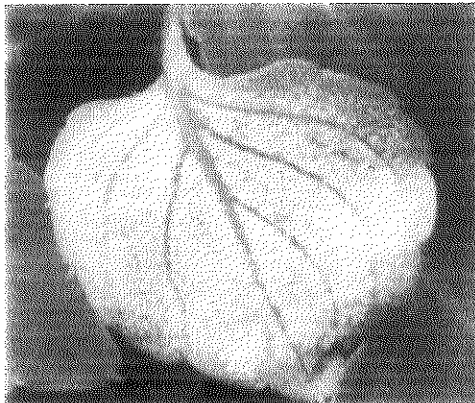
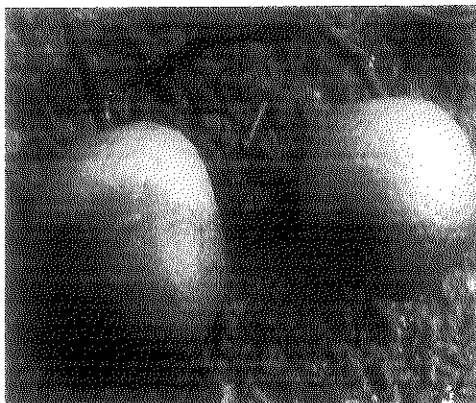
Disease Name: \_\_\_\_\_

Causal Agent: \_\_\_\_\_



Disease Name: \_\_\_\_\_

Causal Agent: \_\_\_\_\_



Disease Name: \_\_\_\_\_

Disease Name: \_\_\_\_\_

Causal Agent: \_\_\_\_\_

Causal Agent: \_\_\_\_\_

5. Briefly explain the importance of genetic resistance in the management of disease outbreak. (2 marks)
  
6. Explain the importance of controlling disease outbreak before it reaches the Economic Injury level. (2 marks)
  
7. With the aid of diagrams, differentiate between the following plant disease symptoms -:
  - a. Vein clearing
  - b. Edema
  - c. Leaf scotch
  - d. Vein enation(4 marks)
  
8. Briefly explain the procedures of collecting disease samples from the field into the laboratory for preservation purposes. (2 marks)
  
9. Based on your field practical, state a common problem faced by our Crop Farm in relation to disease outbreak and a possible solution for the problem. (2 marks)
  
10. Briefly explain how climate change pose a major threat to disease outbreak in Fiji with a given example. (2 marks)



**SECTION D: Essay Questions**

**(30 Marks)**

1. Based on the topics below, you are to select **2 Plant Diseases** and write an essay of 750-800 words. The Essay should address the following: (10 marks)
- i. Name of disease
  - ii. Causal agent
  - iii. Signs and symptoms
  - iv. Favorable conditions
  - v. Disease cycle
  - vi. Management practices.

The following are the some of the selected crops covered in lecture where you have to select **any two** crop diseases. Ensure to include the above mentioned areas of disease development and management.

Crops: **Rice, Sugarcane, Taro, Papaya, Mango, Ginger, Peanuts, Cassava, Banana and kava.**

or

2. Explain the differences between black and yellow Sigatoka diseases based on their morphological characteristics. You may include diagrams to show the differences in sign and symptom occurrence on leaves of banana plants. (10 marks)

or

3. Discuss the importance of using Integrated Disease Management (IDM) on the control of plant diseases and some of the problems faced by farmers in Fiji on the using IDM. (10 marks)

**The End**