FIJI NATIONAL UNIVERSITY

COLLEGE OF AGRICULTURE, FISHERIES & FORESTRY

Bachelor of Science in Forestry Year 1: Trimester III Examination, 2017

PPA 503: Forest Pathology

Allocated Time: 3 hours and 10 Minutes (Reading Time) **Allocated Marks: 60**

Instructions:

1. This paper is consist of **four** sections. All Sections are **compulsory**. Take note of the option given 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.

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

Section	Section Description	Suggested Time	Allocated Marks
A	Multiple Choices	20 Minutes	10
B	Matching	20 Minutes	10
C	True or False	15 Minutes	10
D	Fill in the Blanks	20 Minutes	10
E	Short Answer Questions	60 Minutes	40
F	Essay Questions	45 minutes	20

Section A: Multiple Choice Questions **(10 Marks)**

1. Forest pathology is known as :

a. Study of insects
b. Study of crop diseases
c. Study of forest tree diseases
d. Study of fruit trees

2. Which of the following is **not** classified as a microbe?

a. Lady bug
b. Cytoplasma
c. Protozoa
d. Nematode

3. Which of the following is an energy source of autotroph?
a. Inorganic compound
b. Organic matter
c. Light
d. Water

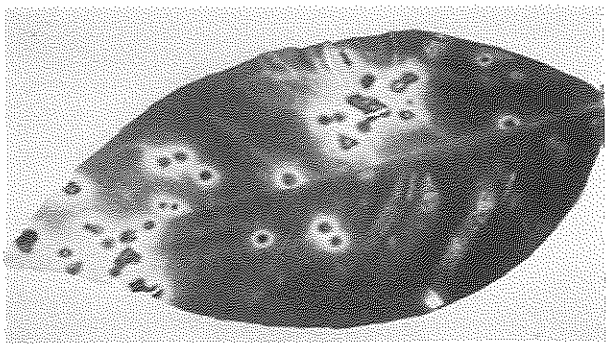
4. Nematodes reproduces through -:

a. Replication
b. Binary Fission
c. Binary Fusion
d. Sexual reproduction

5. An Ectoparasitic nematode usually -:

a. Feeds outside the roots
b. Feeds outside the soil
c. Feeds inside the roots
d. Feeds outside the leaves

6. The diagram given shows the disease of citrus tree known as-:



a. Citrus Canker
b. Eye spots
c. Citrus anthracnose
d. Blackspot

7. Which of the following is the scientific name for Vesi tree?

a. *Santalum album*
b. *Casuarina equisetafolia*
c. *Calophullum vitiensis*
d. *Intsia bijuga*

8. A common disease of nursery seedlings in Fiji -:
a. Necrosis
b. Damping Off
c. Leaf blight
d. Downey mildew

9. Mushroom and toadstool are examples of?

a. Ascomycetes
b. Basidiomycetes
c. Zygomycetes
d. Oomycetes

10. The practical length of time a stand should grow for timber production (rotation age) and influenced by decay is known as -:
a. Pathological rotation
b. Crop rotation
c. Stand Rotation
d. Hydrological rotation

SECTION B: **Matching** **(10 marks)**

Match the following term in the table below to their correct description on the right.

1	Biotrophy	Fix nitrogen to soil (A)
2	Phanerogamic	A control measure of disease (B)
3	Stylet	*Pinus carribaea* (C)
4	Inoculum	The piercing mouthpart of nematodes (D)
5	Exotic tree specie	Fungal reproductive organ (E)
6	Rhizobium	Attaches to host plant to develop a disease.(F)
7	Eradication	Gain nutrients from living host cells by means of haustoria. (G)
8	Sporophyte	Ability to withstand infection (H)
9	Flagella	Seed plants called flowering parasites (I)
10	Resistance	Helps in movement (J)

SECTION C: True OR False. Write 'T' for True or 'F' for False if you think that the statement given is not correct. **(10 marks)**

1. The word pathology is derived from the Greek words "pathos" meaning suffering and "logus" meaning study. _____
2. Ascomycota are classified as lower fungi which lacks 'Septa'. _____
3. Fungi reproduction can be through sexual and asexual means. _____
4. Streaking is a method used to break the colony of fungi. _____
5. Tabtoxin is a substance produced by *Pseudomonas syringae* pv. *Tabaci*. _____
6. Canker disease of Mahogany can spread through mechanical contact. _____
7. Viral diseases of many tropical trees are largely spread by insect vectors. _____

8. Ecto parasitic nematodes usually feed outside the root. _____

9. Nematodes usually reproduced through asexual reproduction. _____

10. A response to chemical concentration gradients is known as Chemotaxis. _____

SECTION D: Fill in the Blanks **(10 Marks)**

Select the correct answer from the given words for each statement below.

Ascomycota	Dieback	Necrotrophy
Rootknot	*Pseudomonas*	
Basidiomycota	Hydothodes	
Phytophthora cinnamon	Bacteria	
Aspergillus spp.	Blackleg	

1. A major group of fungi that usually produced a specialized cell known as 'basidia'is known as _____.

2. _____ is a major plant pathogenic bacteria.

3. _____ caused Fruitrot in Mango.

4. Dieback in Avacado is caused by. _____

5. An entry point of pathogen through direct penetration _____

6. When pathogens obtain nutrients from dead host cells by killing host tissues is known as _____.

7. Ooze or exudates signifies the presence of _____.

8. A common disease which results in necrotic of stem tissues causing a darkening and rotting of stem bases is known as _____.

9. Necrosis of stems and young twigs which affects the youngest tissues first and progresses down the stem is known as _____.

10. A common below ground symptom of a nematode attack is _____.

SECTION E Short Answer Questions (40 Marks)

1. With the aid of the diagram, draw a simple structure of fungal penetration on host plant and label your diagram. (2 marks)
2. Briefly explain the isolation procedures of disease specimen done in the laboratory. (3 marks)
3. Briefly describe the functions of the following equipment and glassware. (5 marks)
   a. Autoclave
   b. Laminar Airflow
   c. Petridish
   d. Forceps
   e. Microscope

4. Briefly explain how insect vectors plays a major role in disease spread in a forest. (2 marks)

5. List 3 types of penetration pathogens have in order to enter a host cell of a plant.(3 marks)

6. Differentiate between **Mycoplasma** and **Pharonogames**. (2 marks)

7. Name the causal agents of **pink disease** and **root rot** on forest plantations in Fiji. (2 marks)

8. Briefly explain the differences between **Zygomycetes** and **Oomycetes** with examples. (4 marks)

9. Briefly explain the difference between **resistance** and **susceptible** organism. (2 marks)

10. Briefly explain an advantage and disadvantage of a host for being resistance. (2 marks)

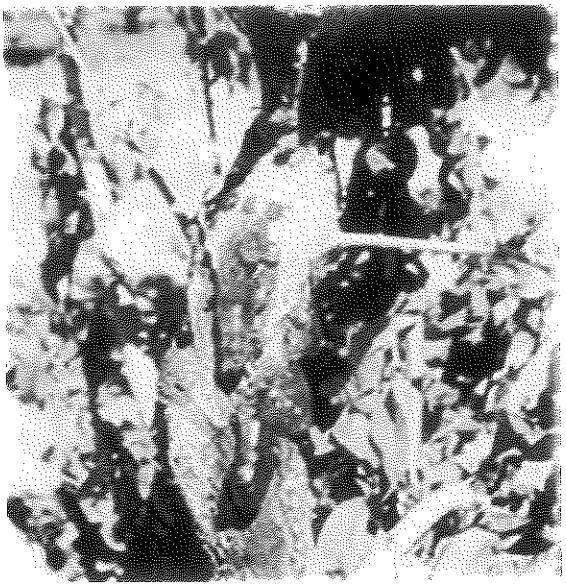
11. List the scientific names for the following trees. (4 marks)

    a. Mahogany
    b. Dakua
    c. Vesi
    d. Yasi

12. Nematodes can be controlled using biological, chemical and cultural approach. Briefly explain the above mentioned controlled measures with given examples. (3 marks)

13. Briefly explain how microbes play a major role in the nutrient cycle which is an essential cycle for all plant growth and development. (2 marks)

14. Name the tree diseases shown on the diagram below. (2 marks)



15. List two common fungal diseases of forest trees. (2 marks)

SECTION F: Essay Questions **(20 Marks)**

Based on the following topics provided, you are to choose **only 2 topics** and write an essay of 500-800 words.

1. Explain the procedures of nematode extraction carried out in the laboratory. You can also use diagrams to draw a structure of a nematode. **(10 marks)**

   or

2. Discuss all the developmental stages that pathogen undergo in order to cause disease infection in forest trees. **(10 marks)**

   or

3. Explain **5 ways** in which humans contribute to the spread of pathogens which will cause disease outbreak. **(10 marks)**

   or

4. Explain the **five principles** of integrated disease management (IDM) that can be carried out to control the spread of diseases. **(10 marks)**

The End