

PAPUA NEW GUINEA UNIVERSITY OF TECHNOLOGY
DEPARTMENT OF AGRICULTURE
SECOND SEMESTER FINAL EXAMINATION 2020
AG 412: INSECT PESTS AND WEEDS MANAGEMENT
DATE OF EXAMINATION: 28th OCTOBER 2020
TIME: 12:50 PM
TIME ALLOWED: 3 HOURS
TOTAL MARKS: 50

INFORMATION FOR CANDIDATES

1. Sanitize your hands before entering the room and wear face masks during the examination.
2. You have 10 minutes to read the paper. You must not begin writing during this time.
3. Write your name and student number clearly on the front page of your answer booklet.
4. Answer **all** the questions only in the answer booklet provided. No other papers will be accepted.
5. This is a closed book examination. Notes and textbooks are not allowed during the examination.
6. The marks for each question are given within parentheses at the end of each question.
7. All mobile phones must be switched **OFF**.

QUESTION ONE (6 marks)

Define the following terms;

- i. Evolved pesticide resistance
- ii. Primitive yield
- iii. Density-dependent factor
- iv. Non-active ingredient Ecosystem simplification
- v. Economic threshold

QUESTION TWO (2+2+2+3 = 9 marks)

- i. Compare between foliar and residual insecticides.
- ii. Differentiate between these formulations; wettable powder, suspension concentrate, granular.
- iii. Demonstrate how to evaluate effects of insecticides on natural enemies.
- iv. Match the pesticides with correct information.

Pesticide	Mechanism of action	Chemical family
Glyphosate	a...	b...
Chlorpyrifos	c...	d...
Permethrin	e...	f...

QUESTION THREE (3+3 = 6 marks)

- i. Discuss the benefits of using cover cropping.
- ii. Explain why weed management is vital in integrated pest management.

QUESTION FOUR (2+4+2+6 = 14 marks)

- i. Define biological control
- ii. Describe the four strategies of biological control.
- iii. Discuss the risk of introducing exotic natural enemies.
- iv. Match the correct pest host for each of the natural enemies given below.

Hosts: mile-a-minute weed, broomstick weed, *Eurycantha calcarata*, *Hypothenemus hampei*, *Sesamia griseascens*

Natural enemy	Host
<i>Anastatus eurycanthae</i>	a...
<i>Calligrapha pantherina</i>	b...
<i>Celisochis morio</i>	c...
<i>Cotesia flavipes</i>	d...
<i>Phymastichus coffea</i>	e...
<i>Puccinia spegazzini</i>	f...

QUESTION FIVE (10+5 = 15 marks)

- i. Early detection of fall armyworm (FAW) was reported in Morobe province. The Highlands region is a major threat to FAW. Design a monitoring/surveillance of FAW.
- ii. Discuss the non-chemical methods of managing Melanesian thorny stick insect and Sexavae in oil palm.