



FIJI NATIONAL UNIVERSITY

COLLEGE OF AGRICULTURE, FISHERIES AND FORESTRY  
SCHOOL OF AGRICULTURE  
DEPARTMENT OF SOIL SCIENCE & AGRIL CHEMISTRY

FINAL EXAMINATION: 2017

Trade Diploma in Forestry ,Trade Diploma in Agroforestry, Trade Diploma in wood processing & value adding, Year 1, Trimester 1

AGRICULTURAL CHEMISTRY  
(SAC 401)

TOTAL MARKS: 100

TIME ALLOWED: 3:10 HOURS

---

This paper consists of six (6) pages, please check to see that your paper is complete.

Instructions

Answer all questions in the answer booklet

- Number your answers correctly in the provided answer booklet.
- Write your student ID number on all pages including additional sheets.
- Write your student ID number on question paper.
- Don't write answers on question paper; write answers only in answer booklet.

“MOBILE PHONES ARE STRICTLY PROHIBITED IN THE EXAMINATION HALL”

PART	TYPE		TOTAL MARKS
I	MULTIPLE CHOICE ANSWERS	10 x 1	10
II	TRUE OR FALSE	11 x 1	11
III	FILL IN THE BLANKS	11 x 1	11
IV	DEFINITIONS/SHORT ANSWERS	6 x 3	18
V	DESCRIPTIVE QUESTIONS	5 x 7	35
VI	ESSAY QUESTION	1 x 15	15
<b>TOTAL MARKS</b>			<b>100</b>

**PART I: MULTIPLE CHOICE ANSWER**

**10 x 1 = 10 marks**

---

1. One of the mechanism that allow nutrients to reach root surfaces is:
  - a) Mass flower
  - b) Diffusion
  - c) Intercontinental
  - d) None of the above
  
2. One reasons large amounts of Nitrogen lost in the soil is:
  - a) Lack of adequate free O in the soil
  - b) Energy source of organic matter for the bacteria
  - c) Warm, slightly acidic soils
  - d) All of the above
  
3. Roles of K in the plant:
  - a) Cell division
  - b) Formation of CHO's
  - c) Movement of sugars
  - d) All of the above
  
4. One function of cytokinins in the growth hormones is:
  - a) Promotes cell formation.
  - b) Morphogenesis.
  - c) Lateral bud removing.
  - d) Movements of sugar

5. One function of abscisic acid is:
- a) General growth inhibitor.
  - b) Causes stomatal closure.
  - c) Produced in response to stress.
  - d) All of the above
6. One functions of ethylene is:
- a) Gaseous in form and rapidly diffusing.
  - b) Gas produced by one plant will affect nearby plants.
  - c) Fruit ripening.
  - d) All of the above
7. One of the plant growth regulator is :
- a) Auxins
  - b) Cytokinins
  - c) Gibberellins
  - d) All of the above
8. One of the Nitrogen fertilizer is:
- a) Ammonium nitrate.
  - b) Bone meal
  - c) Ammonium phosphate.
  - d) Potassium nitrate.
9. One of the crystalline solids is :
- a) Gypsum
  - b) Sulphur
  - c) Sulphuric acid
  - d) salt

10. One of the primary macronutrient is:

- a) .Calcium
- b) .Magnesium
- c) .Sulfur
- d) Nitrogen

## **PART 11: TRUE OR FALSE**

*11x 1 = 11 marks*

1. The word Chemistry comes from the word ALCHEMY.
2. N is the key nutrient in plant growth management.
3. A deficiency of an essential nutrient makes it possible for the plant to complete the vegetative or reproductive stage of its life cycle.
4. Oxygen, carbon and hydrogen make up 25 percent of plant biomass.
5. N, P, and K are often referred to as primary nutrients and are the most common elements found in commercial fertilizers.
6. In most plants, photosynthesis occurs primarily in the leaves, in the chloroplasts.
7. Chlorophyll is the blue pigment that captures light for photosynthesis.
8. Gibberellins are named after the fungus *Gibberella fujikuroi* which causes rice plants to grow abnormally shortl.
9. Energy cannot be transformed from one form to another.
10. Ca, Mg, and S are referred to as secondary nutrients and are also found in fertilizers and soil amendments.
11. 4 elements are called mineral nutrients because they are taken up in mineral (inorganic) forms.

**PART III: FILL IN THE BLANKS**

*11 x 1 = 11 marks*

1. Matter whose composition does not change from one sample to another is called a \_\_\_\_\_.
2. Matter whose composition may vary from one sample to another is called a \_\_\_\_\_.
3. Substances that can be decomposed are called \_\_\_\_\_.
4. mixture that has uniform composition throughout is called \_\_\_\_\_.
5. mixture that does not have uniform composition throughout is called \_\_\_\_\_.
6. Changes that alter the composition of the matter are called \_\_\_\_\_.
7. \_\_\_\_\_ properties are the characteristics of matter that can be changed without changing its composition.
8. \_\_\_\_\_ properties are the characteristics that determine how the composition of matter changes as a result of contact with other matter or the influence of energy.
9. \_\_\_\_\_ is the central part of an atom.
10. \_\_\_\_\_ is a positively charged particle.
11. \_\_\_\_\_ is a uncharged particle

**PART IV: ANSWER ANY 6 FROM THE FOLLOWING**

**6x3 = 18**

**marks**

1. Define what is chemistry
2. Define what is Agricultural chemistry
3. Define what is matter
4. Define what is organic
5. Define what is inorganic
6. Define what is soil fertility
7. Define what is Photosynthesis
8. Define what is growth regulator
9. Define what is filtration
10. Define what is distillation

**PART V: ANSWER ANY 5 FROM THE FOLLOWING**

**5 x 7 = 35**

1. Briefly discuss the effect of porosity in a well-drained moist soil.
2. Briefly discuss the effect of porosity in a dry soil
3. Briefly discuss the effect of porosity in a flooded soil
4. Briefly discuss what is soil organic matter
5. Briefly discuss what is organic agriculture
6. Briefly discuss what conservation agriculture is.

**PART VI: ANSWER ANY 1 FROM THE FOLLOWING**

**1x15 = 15 marks**

1. In most plants, photosynthesis occurs primarily in the leaves :
  - a) Briefly discuss the basic of Photosynthesis
  - b) Why are plants green?
  - c) The role of Chloroplasts in the photosynthesis process

OR

2. Briefly discuss the following about Nitrogen :
  - a) Function. b) Deficiency symptoms. c) Lists four nitrogen fertilizers

**END OF THE PAPER**