



FIJI NATIONAL UNIVERSITY

COLLEGE OF AGRICULTURE, FISHERIES AND FORESTRY
SCHOOL OF AGRICULTURAL SCIENCES
Department of Soil Science & Agril. Chemistry

Bachelor of Science in Agriculture IInd year: Trimester IIIrd

FINAL EXAMINATION - 2016

SOIL FERTILITY AND PLANT NUTRITION (SAC 701)

Time Allowed: 3.10 hours

Total Marks: 50

INSTRUCTIONS:

This paper consists of five (5) pages. Please check to see that your paper is complete.

Answer all questions in the answer booklet.

- Number your answers correctly in the provided answer booklet.
- Write your student ID number on all pages that you use including any additional sheet paper.
- Printed or written study materials are not allowed into the examination hall.
- Mark values appear at the end of each question or part thereof.
- Calculators are permitted.

"MOBILE PHONES ARE STRICTLY NOT ALLOWED"

SECTION NO.	TYPE	TOTAL MARKS
I	TRUE OR FALSE	6
II	MULTIPLE CHOICE	6
III	FILL IN BLANK	9
IV	MATCHING	10
V	DEFINITIONS	5
VI	LONG ANSWER	14
TOTAL MARKS		50

Section IV: Matching10 x1 = Total 10 marks

Choose the most suitable alphabet for the questions given below.

A	Theodore de Saussure (1804)	F	Role of phosphorus in plants
B	C Sprengel (1839)	G	Role of boron in plants
C	JS Mc Hargue (1922)	H	Deficiency symptom of sulfur
D	AL Sommer and CP Lipman (1926)	I	Deficiency symptom of potassium
E	DI Arnon and PR Stout (1939)	J	Deficiency symptom of copper

Essentiality of given elements was established by

1. ----- Zinc
2. ----- Molybdenum
3. ----- Phosphorus
4. ----- Nitrogen
5. ----- Sulphur

- 6 ----- Essential for germination of pollen grains, growth of pollen tubes, and seed & cell wall formation.

- 7 ----- Chlorotic light green / yellow appearance similar to N, but develops first on youngest leaves.

- 8 ----- Common symptoms include *dieback in citrus & blasting of onion* and in many vegetable crops.

- 9 ----- In deficiency the tips and edges of oldest leaves being to yellow (chlorosis) and die in advance stages (necrosis), leaves appear burned on the edges.

- 10 ----- It is constituent of nucleoproteins, phytins and phospholipids and essential constituent of number of enzymes important in energy transfer, cell division and development

Section V: Write the Definition or Explain the following**5 x1.0 = Total 5.0 marks**

- 1) Occluded phosphorus
- 2) Growth
- 3) Isomorphous substitution
- 4) Active transport
- 5) Luxury consumption

Section VI: Write the answer for following questions**Total 14 marks**

1. What do you understand by mineralization of soil organic nitrogen? Draw a neat sketch of nitrogen cycle and explain the given steps of nitrogen cycle with appropriate equations:-

- a) Amminization
- b) Ammonification
- c) Nitrification
- d) De-nitrification

5marks

2. What do you understand from photo-periodism? Explain the classification of plants on the basis of their reaction to the photo period. List the environmental factors which influence plant growth focusing any two of them in short.

3 marks

3. What do you understand with cation exchange? Write the definition of cation exchange capacity and explain the classification of important soil colloids.

3 marks

4. Explain the different forms of potassium present in soil? What are the sources of potassium in soil? Give the name of important potassium fertilizers.

3 marks**END OF EXAMINATION PAPER**