FIJI NATIONAL UNIVERSITY

COLLEGE OF AGRICULTURE, FISHRIES AND FORESTRY
SCHOOL OF AGRICULTURAL SCIENCES AND FORESTRY
DEPARTMENT OF SOIL SCIENCE & AGRICULTURAL ENGINEERING

BACHELOR OF EDUCATION (SECONDARY) (AGRICULTURAL SCIENCE)

# SAC 602 MANURES AND FERTILISERS

Trimester 1, 2018 Final Examination

TOTAL MARKS: 100 TIME DURATION: 3 HOURS

## INSTRUCTUCTIONS TO STUDENTS

1. This paper consists for 6 pages. Please check to see that your paper is complete.
2. You are allowed 10 minutes extra reading time in which you are not permitted to write.
3. Attach all the sheets used as your answer paper in their correct sequence and secure with a string.
4. Use both sides of the answer sheet and write your candidate number on each sheet.
5. Write clearly the number(s) of the question(s) attempted on the top of each sheet.

## MOBILE PHONES ARE STRICTLY NOT ALLOWED"

| SECTION | PARTICULARS | TOTAL MARKS | THE ALLOCATIONS |
|---|---|---|---|
| A | Part 1: Multiple Choices<br>Part 2: Fill in the Blanks<br>Part 3: Matching | 40 | 40 minutes |
| B | Short answers | 20 | 50 minutes |
| C | Long answers | 40 | 90 minutes |
| | Total | 100 | |

## SECTION -A

**There are three parts in this section. All the questions are compulsory.**

Part 1: **Multiple choice question** (15X 1=15 Marks)

1. The most quickly available source of nitrogen to plants are_____.
   a. amide fertilisers
   b. ammonia fertilisers
   c. nitrate fertilisers
   d. ammonia nitrate fertiliser
2. Element required in largest quantity by plants is_____.
   a. sulfur
   b. copper
   c. potassium
   d. nitrogen
3. If nitrogen is main element of fertilisers then fertilisers are classified as_____.
   a. structural fertilisers
   b. non-structural fertilisers
   c. nitrogen fertilisers
   d. respiratory fertilisers
4. Organic fertilisers can be derived from _____.
   a. animal materials
   b. carbon materials
   c. plant materials
   d. both a and c
5. _____ of the following nutrient replenish the soil after growing leguminous plants?
   a. Nitrogen
   b. Oxygen
   c. Phosphorus
   d. Potassium
6. Why would you not want to use compost as mulch?
   a. It's unsanitary
   b. It attracts squirrels, ants, and other critters looking for food
   c. The nutrients are too concentrated and will kill the plant

d. The nitrogen evaporates into the air instead of the soil

7. Excess of nitrogen fertilisers leads to_____.
   a. pest problems
   b. growth problems
   c. fruiting problems
   d. flowering problems
8. Organic fertilisers includes_____.
   a. manure and compost
   b. sulfur and gypsum
   c. rock phosphate and compost
   d. magnesium and phosphorus
9. Most famous nitrogen fixing bacterium / biofertililser is _____.
   a. nitrobacter
   b. nitrosomonas
   c. nitrococcus
   d. rhizobium
10. Nitrogen fixation is _____.
   a. nitrogen – ammonia
   b. nitrogen – nitrates
   c. nitrogen - amino acids
   d. both a and b
11. Which of the following is not a nitrogenous fertiliser?
   a. ammonium chloride
   b. anhydrous ammonia
   c. calcium cyanamide
   d. all of the above
12. Which of the following contains highest nutrients?
   a. farm yard manure
   b. compost
   c. droppings of sheep & goat
   d. none of the above

13. Muriate of potash (MOP) is_____.
    a. nitrogen fertiliser
    b. phosphate fertiliser
    c. potash fertilize
    d. all of the above
14. Which of the following is suitable method for application of farm yard manure?
    a. foliar
    b. to mix with seeds
    c. to spread uniformly on the surface of soil
    d. none of the above
15. Which of the following are macro nutrient elements?
    a. N, P, K
    b. O, C, H
    c. Zn, Fe, Cu
    d. Cl, Fe, Mn

**Part 2: Fill in the blanks with appropriate answer.** **(15X1=15 Marks)**

1. _____materials act as binding materials for holding soil particles as aggregates.
2. _____manures may be defined as materials which are un-decomposed green plant tissues susceptible to decomposition in the soil after incorporation.
3. _____ is an example of amide fertiliser.
4. _____ is a mixed fertiliser.
5. The richer the food in proteins, the richer will be the manure in _____.
6. The deficiency symptoms of _____ are interveinal chlorosis on new growth as this nutrient is immobile in plants.
7. Urea (nitrogenous fertiliser) contains _____per cent nitrogen.
8. Farm yard manure (FYM) is having _____ phosphorus percentage.
9. _____ handling and storage leads to losses of plant nutrients from the manures.
10. Increase in soil_____ improves overall soil quality.
11. Broadcasting of fertilisers in the standing crop (after emergence of crop) is known as _____.
12. _____is immobile in plant tissues so its deficiency occurs in older leaves.
13. _____is the nutrient responsible for pungency and flavor in onion, garlic and mustard.
14. The deficiency symptom of _____occurs at high pH, while toxicity occurs at low pH.
15. Concentration of plant nutrient is low in _____.

**Part 3: Match the following** (10 X 1=10 Marks)

| Sl. No. | Column A | Sl. No. | Column B |
|---|---|---|---|
| 1 | Broadcasting | a. | spreading fertilisers uniformly all over the field |
| 2 | Deep placement | b. | placement of ammoniacal nitrogenous fertilisers in the reduction zone of soil |
| 3 | Band placement | c. | potassic fertiliser |
| 4 | FYM | d. | bulky organic manure |
| 5 | Urea | e. | straight nitrogen fertiliser |
| 6 | Diammonium phosphate (DAP) | f. | *Crotalaria juncea* |
| 7 | Oil cakes | g. | concentrated manure |
| 8 | Ammonium chloride | h. | nitrogenous fertiliser |
| 9 | MOP | i. | refers to the placement of fertiliser in bands |
| 10 | Green manure | j. | phosphorus fertiliser |

## Section-B

**Short answers** (5X4=20 Marks)

1) What do the numbers on the fertiliser bags mean?
2) What are the three criteria that plant nutrients must meet to be designated as essential?
3) Compare composting and vermicomposting processes.
4) Judge the deficiency symptoms of nitrogen and potassium in plants.
5) Why is burning animal manures bad for soil fertility?

Section-C

Long answers (4 X10=40 Marks)

**Answer following questions in detail.**

1. Compare different green manures, their advantages and limitations?
2. Organic manure is considered to be better for crop growth. Evaluate the statement in detail.
3. Compare properties of major nitrogenous fertilisers in detail.
4. Compare the use of manure and fertilisers in maintaining soil fertility.

THE END