



FIJI NATIONAL UNIVERSITY

COLLEGE OF AGRICULTURE, FISHERIES AND FORESTRY

SCHOOL OF AGRICULTURAL SCIENCES & FORESTRY

DEPARTMENT OF CROP PRODUCTION

BACHELOR OF EDUCATION (SECONDARY) (AGRICULTURE SCIENCE)

AGO 701: Farming Systems and Sustainable Agriculture

Trimester- 1, 2018 Final Examination

DURATION: 3 HOURS

INSTRUCTIONS TO STUDENTS

1. You are allowed 10 minutes extra reading time in which you are not permitted to write.
2. This paper consists for 5 pages. Please check to see that your paper is complete.
3. Printed or written material is not allowed in examination hall.
4. Answer all the questions in the answer booklet. Number your answers correctly in the answer booklet.
5. Attach all the sheets used as your answer paper in their correct sequence and secure with a string.
6. Use both sides of the answer sheet and write your candidate number on each sheet.

SECTION	PARTICULARS	TOTAL MARKS	THE ALLOCATIONS
A	Part 1: Multiple choice questions Part 2: Fill in the Blanks Part 3: True and False	40	40 minutes
B	Short answers	30	50 minutes
C	Long answers	30	90 minutes
	Total	100	

## SECTION –A

There are three parts in this section. All the questions are compulsory. In your answer booklet write the question number followed by the answer.

### Part 1: Multiple choice questions

(10×1=10 Marks)

- (1) \_\_\_\_\_ is defined as the production system in which avoids or largely excludes the use of synthetically compounded fertilizers, pesticide, growth regulator and livestock feed additives.
- Organic farming
  - Natural farming
  - Green farming
  - None
- (2) \_\_\_\_\_ is a type of environmental pollution.
- Methane emission
  - Indiscriminate use of agro-chemicals
  - Both a & b
  - None of the above
- (3) \_\_\_\_\_ refers to the cutting, clearing, and removal of rainforest or related ecosystems into less bio-diverse ecosystems such as pasture, cropland, or plantations.
- Deforestation
  - Reforestation
  - Afforestation
  - None of the above
- (4) \_\_\_\_\_ is a complex inter-related matrix of soil, plants, animal, implements, power, labour, capital and other inputs.
- Farming system
  - Cropping system
  - Agriculture system
  - None of the above
- (5) The process of entry of water from soil surface into the soil is called \_\_\_\_\_.
- siltation
  - infiltration
  - seepage
  - none of the above
- (6) Saline soils also known as \_\_\_\_\_.
- solanchalk
  - solonetz
  - solontz
  - none
- (7) Alkali soils have a hard pan of \_\_\_\_\_ in the subsoil.
- $\text{CaCO}_3$
  - $\text{KNO}_3$
  - $\text{MgCO}_3$
  - none

- (8) Scraping of the surface salts and flushing with water to wash away the excess salts is practiced in management of \_\_\_\_\_.
- alkali soils
  - saline soils
  - acidic soils
  - none

- (9) \_\_\_\_\_ is the portion of the Earth's water cycle that flows underground.
- Under ground water
  - Surface water
  - Runoff water
  - None

- (10) REDD stands for \_\_\_\_\_.
- reducing emissions from deforestation and forest destruction
  - reducing emissions from deforestation and forest degradation
  - reducing emissions from forest degradation and deforestation
  - none

**Part 2: Fill in the blanks with appropriate answers.**

**(10×2=20 Marks)**

- Total cropped area and net cultivated area on a farm are 18 ha and 9 ha respectively. Cropping intensity is.....
- .....is used as amendment to correct acid soils.
- Vertical movement of water through soil profile is known as .....
- A ..... system is one that can indefinitely meet demands for food and fiber at socially acceptable, economic and environment cost.
- Using chemical amendments, scraping of the surface salts and flushing with water to wash away the excess salts is a method of reclamation of.....soils.
- ..... refers to decline in the productive capacity of land due to decline in soil quality.
- The process of deposition of soil particles carried by water is called .....
- Presence of excess water in or near the root zone or standing water above the soil surface for any substantial period of time known as .....
- Deposition of sand particles on the agricultural fields due to natural calamities is termed as .....
- ..... is the process of clearing large areas of forest across the earth and involves the cutting down, burning, and damaging of forests.

**Part 3: Mark True or False**

**(10×1 =10 Marks)**

- 1) Paddy fields are source of greenhouse gas emission. (True/False)
- 2) Seepage is the flow of water through soil and porous/fractured rock. (True/False)
- 3) Lining of water courses can reduce seepage losses of water. (True/False)
- 4) The ocean is the natural sink for groundwater flows. (True/False)
- 5) LEISA is a concept of sustainable agriculture. (True/False)
- 6) Surface water recycles readily. (True/False)
- 7) Green manuring is a cheap alternative to the use of fertilizer potassium. (True/False)
- 8) Use of sound crop rotations is a principle of organic farming. (True/False)
- 9) Compost is bulky organic manure. (True/False)
- 10) The source of surface and ground water is rain. (True/False)

**SECTION- B (Short Answers)**

**(30 Marks)**

**A. Answer any four (4) of following questions. (4×5= 20 Marks)**

- 1) Provide a brief note on economic effects of cyclones on agriculture.
- 2) Analyse status of organic farming in Fiji.
- 3) LER of an intercropping system is 1.43. Analyse the statement in brief.
- 4) Provide a brief note on role of methane emission from rice field in global warming.
- 5) Apply concept of LEISA in sustainable agriculture.
- 6) What are adverse effects of modern high- input agriculture?
- 7) Analyse importance of sustainable farming in Fiji.

**B. Provide short notes on any (2) two of following. (5×2= 10 Marks)**

1. Deforestation
2. Seawater inundation
3. Biodiversity
4. Water logging
5. Ecological balance

SECTION-C (Long answers)

(30 Marks)

Answer any three (3) questions from the following. Each question carries 10 marks.

1. What is sustainable agriculture? Provide detail analyses on elements of sustainability in a farming system.
2. Fertilisers and agrochemicals are potential source of pollution. Provide detail analyses of statement.
3. What is the concept of farming system? What are the various objectives of farming system? Analyse these objectives in detail.
4. Yields of tomato and cowpea grown, as pure crops are 1,200 and 1,000 kg/ha, respectively. Yields of these crops when grown as intercrop are 1,000 and 600 kg/ha, respectively. Calculate land equivalent ratio of tomato + cowpea intercropping system.
5. Among the following farms which farm is most specialised? Provide steps of calculations in detail.

Crops	Income (₹) from different farms		
	Farm A	Farm B	Farm C
Sugarcane	30,000	-	10,000
Potato	10,000	20,000	20,000
Cassava	10,000	20,000	10,000
Assorted vegetables	20,000	30,000	30,000
<b>Total</b>	<b>70,000</b>	<b>70,000</b>	<b>70,000</b>

THE END