



**FIJI NATIONAL UNIVERSITY**  
**College of Agriculture, Fisheries & Forestry**  
**Department of Crop Production**  
**School of Agricultural Sciences**  
**Trade Diploma in Agriculture – Year II**  
**Trimester II Final Examination - 2017**

**AGR: 508 - Hydroponic and Aquaponics**

**Total Marks: 100**

**Time Allowed: Three Hours**

*[An extra ten minutes is allowed for reading this paper]*

**INSTRUCTIONS**

1. This paper consists of 05 pages. Please check your paper is complete.
2. Write your student number on the front page of your **Answer Book**.
3. Write all your answers in the **Answer Booklet** provided.
4. If you use extra sheets of paper be sure to show clearly the number of question being answered and to tie each sheet securely in your **Answer Book** at the appropriate place.
5. There are **three** sections in this paper. Sections A and B are compulsory. Note the choices in Section C.
6. There are **eight** question pages in this paper.

**SUMMARY OF QUESTIONS**

<b>Section</b>	<b>Guidelines</b>	<b>Total Marks</b>	<b>Suggested Time</b>
<b>A</b>	<b>Part 1: Multiple Choice Questions</b>	<b>10</b>	<b>40 minutes</b>
	<b>Part 2: Fill in the Blanks</b>	<b>10</b>	
	<b>Part 3: True and False</b>	<b>10</b>	
	<b>Part 4: Matching</b>	<b>10</b>	
		<b>40 Marks</b>	
<b>B</b>	<b>Short answers</b> Answer all the questions. Each question is worth 3 marks.	<b>30 Marks</b>	<b>50 minutes</b>
<b>C</b>	<b>Long answers</b> Answer only three (3) questions from the following. Answer each question in 300 words. Each question carries 10 marks.	<b>30 Marks</b>	<b>90 minutes</b>

SECTION A

[Compulsory]

[40 marks]

- Answer all four parts in this section.
- Each part is worth 10 marks.

PART 1

MULTIPLE CHOICE

[10 marks]

- A. There are ten multiple-choice questions in this part.
- B. All are compulsory.
- C. Each question is worth 1 mark.
- D. For each question, circle the letter of the best answer on the grid provided in the Answer Booklet.

1. The cultivation of plants by use of seedling root in a liquid nutrient solution rather than in the soil is known as
  - a. aquaculture.
  - b. hydroculture.
  - c. aquaponics.
  - d. aeroponics.
2. Which of the following is the simplest type of hydroponic system?
  - a. wick.
  - b. water culture.
  - c. drip.
  - d. ebb and flow.
3. The floating raft system is an example of
  - a. Mari culture.
  - b. bioponics.
  - c. hydroponics.
  - d. aquaponics.
4. The pH level in an aquaponics system should be kept at
  - a. 10 - 12.0.
  - b. 8.0 - 9.0.
  - c. 5.5 - 6.0.
  - d. 7.0 - 8.0.
5. The persons who developed plant nutrient solution technique in the mid-1800's were
  - a. Knop and Sachs.
  - b. John Woodward and William Frederick.
  - c. Hogland and Arnon.
  - d. Allen cooper and Walt Disney.
6. Growing of vegetables without a growing medium is known as
  - a. aeroponics.
  - b. hydroponics
  - c. tissue culture.
  - d. bioponics.

7. The farming of aquatic organisms such as fish, crustaceans, molluscs and aquatic plant is known as
- water culture.
  - aquafarming.
  - mariculture.
  - fishiculture.
8. Which of the following is the simplest type of hydroponic system?
- water culture.
  - ebb and flow.
  - wick system.
  - flood and drain.
9. The optional part of a hydroponic system is the
- delivery system.
  - simple timer.
  - air pumps.
  - grow lights.
10. The meter used to check the concentration level of nutrient solution in the hydroponic system is known as
- hydrosylate.
  - pH buffer.
  - biofilter.
  - electrical conductivity.

**PART .2**

**Matching**

**[10 marks]**

- Match the descriptions in List B with the words in List A.
- Write the letter of the description from List B in the space beside the matching word.

**List A**

**List B**

- |                         |  |
|-------------------------|--|
| ___ 1. Gericke          | a. conducted without a growing medium.                               |
| ___ 2. Aeroponics       | b. a species of fish used in aquaponics system.                      |
| ___ 3. Perlite          | c. hydroponic nutrients are obtained from this synthetic fertilizer. |
| ___ 4. Silver perch     | d. an example of a growing medium.                                   |
| ___ 5. Calcium Nitrate  | e. he was the first person to define the term hydroponics.           |
| ___ 6. French Bean      | f. originated from Europe.   |
| ___ 7. Long Bean        | g. originated from Africa.   |
| ___ 8. Tomatoes         | h. originated from China.  |
| ___ 9. Chinese Cabbage  | i. originated from Africa.   |
| ___ 10. English Cabbage | j. originated from Peru.   |
|                         | k. originated from India.  |

**Part.3**

**True and False**

**[10 marks]**

- Write 'T' if you think that the statement is correct and 'F' if you think it is incorrect.
- Write your answers in the Answer Booklet provided on the right hand side beside each question number.

- \_\_\_\_\_ 1. Solution culture does not use a solid medium for the roots.
- \_\_\_\_\_ 2. Drip systems are probably the most widely used type of hydroponic system.
- \_\_\_\_\_ 3. Most hydroponic system does not use the submersible pumps.
- \_\_\_\_\_ 4. The electrical conductivity meter checks the pit level of the nutrient solution in hydroponic system.
- \_\_\_\_\_ 5. The flood and drain system is also known as ebb and flow style of growing hydroponic vegetables.
- \_\_\_\_\_ 6. Contender is a variety of French beans.
- \_\_\_\_\_ 7. Snake yard long is a variety of Chinese cabbage.
- \_\_\_\_\_ 8. Sugar baby is a variety of tomatoes.
- \_\_\_\_\_ 9. KK Cross is a variety of English cabbage.
- \_\_\_\_\_ 10. Alton is a variety of Tomatoes.

**Part.4**

**Fill in the blanks**

**[10 marks]**

- Fill in the blanks with the appropriate word from the list given below to complete the following statements.
- Do NOT use a word more than once.
- Write your answers in the space provided in the Answer Booklet.

Mari culture	pest	insulation
reservoir	aquaculture	root zone
root	wick	perishable
rearing	Styrofoam	root zone
water		

1. Hydroponic plants are more \_\_\_\_\_ resistant.
2. \_\_\_\_\_ is the farming of aquatic organisms such as fish, crustacean's mollusks and aquatic plants.
3. The cultivation of marine organisms in seawater is known as \_\_\_\_\_.
4. The \_\_\_\_\_ of plants dry out very quickly when the flow of nutrient solution is interrupted.
5. The \_\_\_\_\_ is the part of the hydroponic system that holds the nutrient solution.
6. Hydroponics uses \_\_\_\_\_ as growing medium and essential minerals to sustain plant growth.
7. The \_\_\_\_\_ System is a passing system, meaning it has no moving parts.
8. In a floating raft system, the plants sit on a \_\_\_\_\_ board that floats on water.
9. In general vegetable crops are \_\_\_\_\_ and their shelf life and quality depend on number of actions.
10. The \_\_\_\_\_ tanks in the aquaponics system are used for raising and feeding the fish.

## **SECTION. B**

**[Compulsory]**

**(30 Marks)**

### **SHORT ANSWERS**

- **Answer the following questions.**
  - **Each question is worth 3 marks.**
  - **There are 10 questions only.**
  - **Discussing a point is very important to gain full marks.**
1. List 3 advantages of hydroponic systems.
  2. List the 3 components of a wick growing system of hydroponics.
  3. List the 3 components of aquaponics system.
  4. List 3 daily maintenance tasks of a hydroponic system.
  5. Give 3 advantages of integrating aquaponics with aquaculture.
  6. List 3 disadvantages of hydroponic systems
  7. List the 3 components of a water culture growing system of hydroponics.
  8. Discuss the Floating raft system or Deep water system of aquaponics system.
  9. List the three sources of liquid fertilizers for hydroponically grown plants in aquaponics system.
  10. List and explain the 3 types of aquaponics system.

## **Section C**

**Long Answers**

**[30 marks]**

- **Answer any three (3) questions only.**
  - **Each question is worth 10 marks.**
  - **There are 4 questions given.**
  - **Answer each question in approximately 250-300 words in the Answer Booklet provided.**
1. Briefly discuss the basic operation system of aquaponics system.
  2. Differentiate between hydroponic vegetable production and soil production. List at least 5 factors each to differentiate between the two methods of vegetable production.
  3. Discuss either cauliflower or French bean under the following headings for hydroponic production.
    - a. Origin,
    - b. Scientific Name,
    - c. Hydroponic production system,
    - d. Varieties,
    - e. Harvesting
  4. Discuss nutrient film technique of hydroponic system with the help of a diagram.

**THE END**



**FIJI NATIONAL UNIVERSITY**  
**College of Agriculture, Fisheries & Forestry**

Department of Animal Science  
 Bachelor of Agricultural Science Year 1  
**Trimester 2- Final Examination - 2017**  
**[ASC 503] –Livestock Production Management**

**Time Allowed: 3.00 hours plus (10 minutes reading time)      Total Marks: 100**

**INSTRUCTIONS:**

1. This paper consists of five (5) pages. Please check to see that all your paper is complete.
2. Answer all the Objective Type Questions and Descriptive Type Question in the Answer Booklet.
3. **Part I consists of the Objective Type Questions which is having four Sections – A, B, C and D.** All questions of this part are compulsory.
4. Part II is Descriptive Type which is having Ten (10) questions. Attempt only any six questions from this part.

SECTION I	QUESTION TYPE	INSTRUCTIONS	TOTAL MARKS
A	Multiple choice questions	Write your answers in the Answer Booklet	10
B	Matching questions	Write your answers in the Answer Booklet	10
C	Fill in the blank question	Write your answers in the Answer Booklet	10
D	True or False	Write your answers in the Answer Booklet	10
E	Short Answer questions	Write your answers in the Answer Booklet	60
<b>TOTAL</b>			<b>100</b>

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## PART I. OBJECTIVE TYPE QUESTIONS

Total Marks: 40

**A. Multiple Choices:**

(10X1=10 Marks)

**Question 1**

A distinction among animal species transmitted as common characteristics to the descendants is called:

A.	gene	B.	strain
C.	breed	D.	hybrid

**Question 2**

The cultural significance of livestock means:

A.	observation of religious custom	B.	livestock ownership
C.	establishing the status of the farmer	D.	All of the above

**Question 3**

Which one of the following is not a beef breed of cattle?

A.	(a) Santa Gertrudis	B.	Ayrshire
C.	(a) Devon	D.	Brahmin

**Question 4**

Freemartin is also called:

A.	Fertile cows	B.	Sterile heifers
C.	Meat heifers	D.	All of the above

**Question 5**

The high nutritional program given to ewes six weeks before the mating season is called:

A.	Fattening	B.	Steaming up
C.	Flushing	D.	Force feeding

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**Question 6**

Manipulating the estrous cycle of breeding cows so they can be bred at approximately the same time is called:

A.	Estrus manipulation	B.	Breeding efficiency
C.	Hand mating	D.	Synchronization of estrus

**Question 7**

A heat mount detector that is glued to the tail head of each cow is called

A.	Sticker	B.	Glue
C.	KaMaR	D.	Artificial detector

**Question 8**

One of these breed of pigs has characteristic golden red coat colour is called:

A.	Large White	B.	Duroc
C.	Hampshire	D.	Yorkshire

**Question 9**

The presence of large number of bacteria forming (lactic acid) in the milk is an indication of?

A.	Mastitis	B.	Pregnancy in the cow
C.	Brucellosis	D.	Poor nutrition in the cow

**Question 10**

Time period between the birth of two calves by the same mother is the:

A.	freshening period	B.	weaning period
C.	lactation period	D.	calving interval



**B. Match the following:****(10x1=10 Marks)**

Terms	Definition	Answer
1. Management of chicks	a. Young female sheep	
2. Un-castrated ram	b. Shedding feathers	
3. Age to use ram for service	c. Corriedale	
3. Age to mate ewes	d. Stocking density	
4. Milk factory	e. Tup	
6. Freemartin	f. Alveoli	
7. Gimmer	g. Sterile heifer	
8. Sheep breed	h. 12 months	
9. Number of birds per area	i. 15 months	
10. Moulting	j. 15 months	
11.	k. Brooding	

**C. Write 'True' or 'False'.****(10x1=10 Marks)**

1.	Wiltshire horn is one of breeds of goats available in the South Pacific	
2.	Boars should be brought to the sows to be served in her pen	
3.	Billy's should not be allowed more than 80 services per annum	
4.	Estrus period in sheep is obvious like other type of farm animals	
5.	It is recommended to turn the eggs throughout incubation period	
6.	In most tropical countries sheep are selected for both meat and milk production	
7.	The decreasing daylight hours stimulate hens and mares to cycle	
8.	Common soaps or detergents can be used to clean dairy equipment	
9.	Flat flavour in milk is caused by poor barn ventilation	
10.	Low humidity causes chicks to be too small and desiccated with poor survival	

**D. Fill in the blanks.****(10x1=10 Marks)**

1. The \_\_\_\_\_ period is the time during which the animal is pregnant
2. \_\_\_\_\_ is the process of giving birth to a new animal.
3. Two female sex hormones produced by ovaries of farm mammals are called Estrogen and \_\_\_\_\_
4. The oviduct of the chicken has five parts namely \_\_\_\_\_ uterus and vagina
5. When antibodies pass from the body of the mother into the unborn young, the latter experience natural \_\_\_\_\_ immunity.
6. The superiority of the parents above their contemporaries that is passed on to the offspring is \_\_\_\_\_.
7. The interior surface of the \_\_\_\_\_ forms numerous papillae that vary in shape and size.
8. The \_\_\_\_\_ cord connects from the navel of the fetus to the placenta of the mother.

**Section II.****Descriptive type Questions****(60 Marks)****Note: Attempt Any Six (6) Questions Only. All carries equal TEN (10) marks.**

1.	Discuss the features of small holder dairy cattle farms in Fiji	(10)
2.	Describe the process of milk let-down in dairy cows	(10)
3.	List and describe the signs indicating a cows health.	(10)
4.	Explain why mastitis is an important economic disease by clearly describing the different forms and their impact.	(10)
5.	Explain why livestock officers treating brucellosis cases should be careful.	(10)
6.	Discuss the factors that affect milk composition	(10)
7.	Discuss the importance of good calf rearing.	(10)
8.	Discuss the relationship between feeding and reproduction in heifers.	(10)
9.	Discuss what is colostrum and its importance	(10)

**The End**

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