



College of Agriculture, Fisheries and Forestry

School of Veterinary Science and Animal husbandry

Department of Fisheries

Trade Diploma in Aquaculture

AQC 509 - Aquaponics

Trimester 2 - 2017

Final Examination Paper

Sections	Category	Marks
A	True/False	20
B	Labeling	10
C	Short Answer	20
D	Long Answer	30
E	Essay	20

DURATION- 3 HRS

[TOTAL PAGES – 5]

Instruction to the Students

1. You are allowed 10 minutes reading time during which you are not to write.
2. Begin each section on a fresh page and use both sides of the sheet.
3. Write your candidate number at top of each attaché sheet.
4. For all sheets of paper on which rough/ draft work has been done, cross it through and must attach it to your answer scripts
5. Write clearly the numbers attempted on the top of each sheet.

Section A- True/False

(1 mark each)

Answer **All Questions** from this section

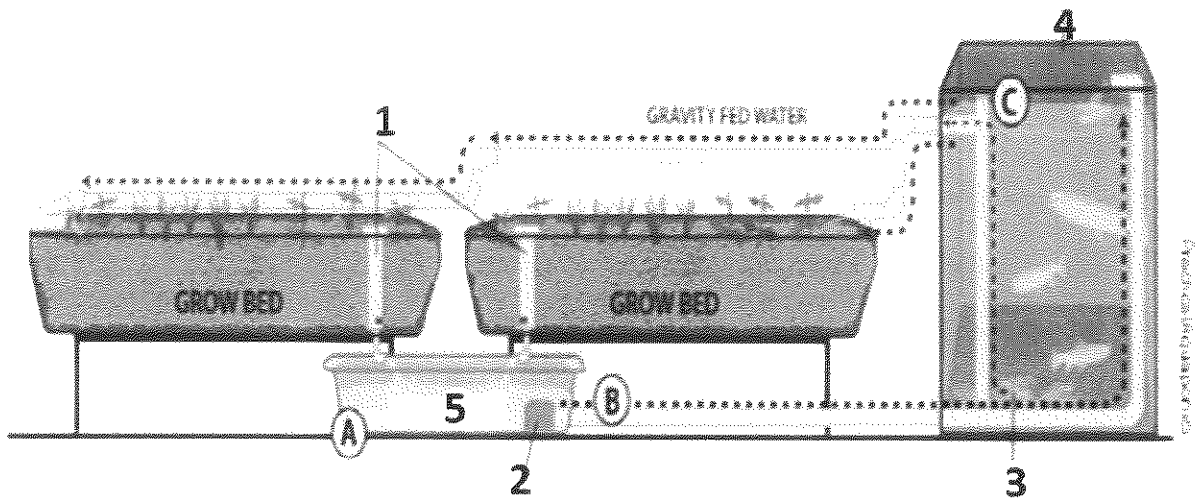
1. Aquaponics has the potential to be an important part of our future global food producing system.
2. An Aquaponics system does not necessarily produce food that is free of chemicals.
3. Under- and over-fertilizing is the only cause of plant death and poor performance.
4. Aquaponics gardens can be grown anywhere there is light, whether natural or artificial.
5. Certain plants can be difficult to establish during short, warm months.
6. How long you run your lights will depend on the day-length requirements of your plants.
7. A mature tomato plant has a very similar canopy depth than a lettuce plant.
8. Basic flood and drain works well for any beginning system using a 1:1 grow bed volume to fish tank volume.
9. Grow beds take up least space in Aquaponics setup.
10. In male-threaded pipe fitting threads are interior, made to receive female threaded pipe fittings.
11. Aquaponics is an ecosystem of plants, fish, bacteria and worms.
12. Aquaponics treats the fish waste as a invaluable input into the plant growing part of the system.
13. Greenhouses give you total control over your growing environment.
14. Spectrum means the light should penetrate deep enough into the plant's "canopy".
15. In a Basic Flood and Drain design, the grow beds are above the fish tank.
16. The total volume of all the grow beds that you connect to a single fish tank should be at least half to the volume of the fish tank, in order to provide adequate filtration for your fish tank.
17. The higher the water needs to go, the more oomph, or gallons per hour (gph) power, your pump will need to have.
18. In media-based Aquaponics, the solid waste from the fish is pumped into the fish tank along with the liquid waste.
19. The water for your fish environment should enter your Aquaponics system as close to pure as possible.
20. Cooler water holds less oxygen than warmer water.

Section B- Labeling

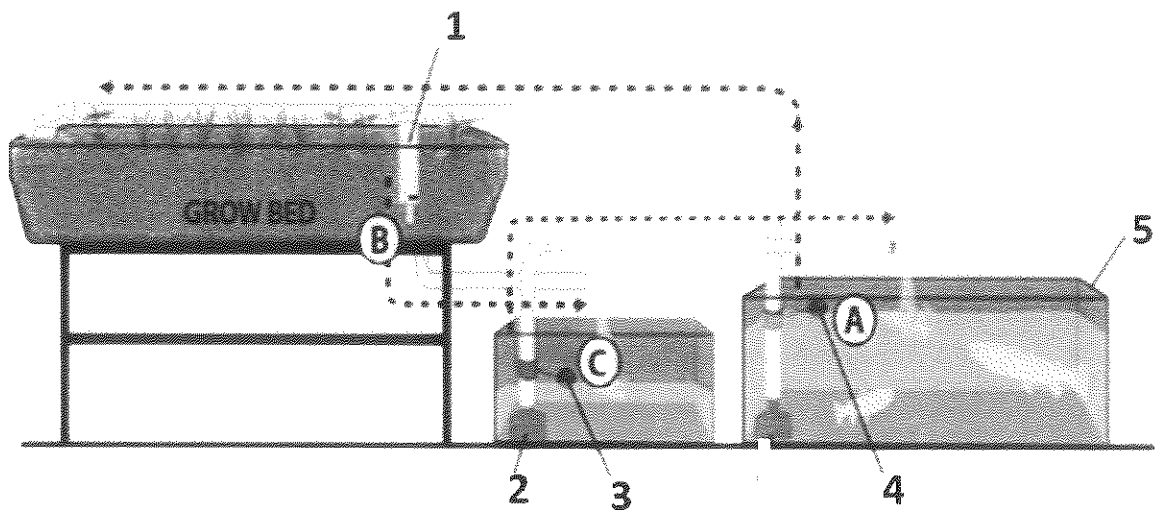
(5 mark each)

Answer All Questions from this section

1. Label the following diagrams CHIFT PIST or CHOP system



2. Label the following diagram of 2 - pump system



Section C- Short Answer

(2marks each)

Answer **All Questions** from this section

1. Discuss the difference between hydroponic and aquaponics?
2. Define ecosystem?
3. What is a recirculating ecosystem?
4. If you are from a tropical country like Fiji what type of aquaponics will be best suited for you?
5. What is Aquaponics?
6. Discuss one advantage and one disadvantage of the basic flood and drain systems?
7. Why is it always wise to plan your growbeds before fish tanks?
8. Why are submersible pump ideal of aquaponics setup?
9. List 2 properties of water which should maintained in aquaponics?
10. Give two reason for washing grow media?

Section D- Long Answer

Answer **All Questions** from this section

1. Enlist 5 commonly used product or material for fish tank and growbeds?
(5 marks)
2. Discuss the 5 purposes served by growing media in an aquaponics system?
(5 marks)
3. Discuss using diagram the bacterial cycle in an aquaponics system?
(5 marks)
4. How is aquaponics convenient gardening? State five reasons.
(5marks)
5. State five reasons for referring to aquaponics as earth smart gardening?
(5 marks)
6. State the five benefits of having a greenhouse?
(5 marks)

Section E- Essay

Choose only **ONE** question out of the **TWO** below.

1. Write a 250 word essay discussing the three lighting option currently available for Aquaponics.
Discuss two pros and cons of each of those lighting options?
Fluorescent lighting using T5 bulbs
HID (high-intensity discharge) lighting
LED lighting

(20 marks)

2. Discuss the following product and material used for the grow bed and fish tank?

Stock tanks
55-gallon (210-liter) storage barrels or drums
IBC totes

Draw diagram of each of the products.

Discuss the advantages and disadvantages of each product.

(20 marks)

.....The End.....

