



**College of Agriculture, Fisheries and Forestry**

**School of Veterinary Science and Animal husbandry**

**Department of Fisheries**

**Trade Diploma in Aquaculture**

*AQC 508 - Hydroponic*

*Trimester 2 - 2017*

## **Final Examination Paper**

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

**DURATION- 3 HRS**

**[TOTAL PAGES – 6]**

### **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

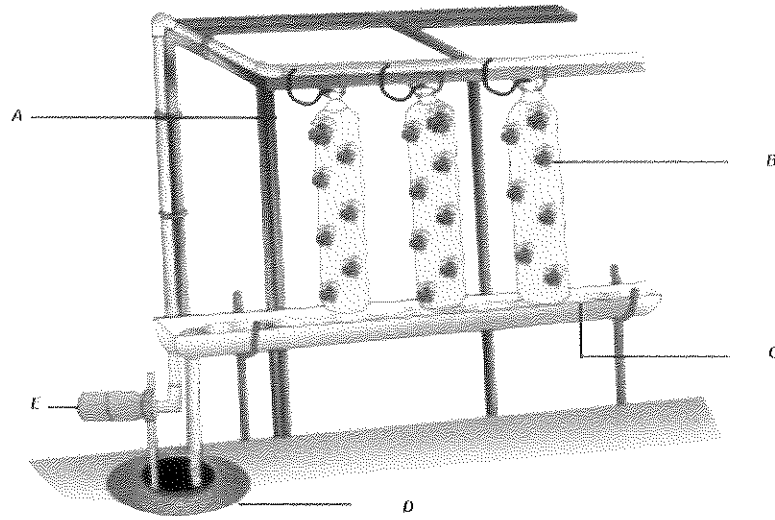
1. Soil is usually the most available growing medium and plants normally grow in it.
2. Hydroponic doesn't offer opportunities to provide optimal conditions for plant growth and therefore, higher yields can be obtained compared to open field agriculture.
3. In a non-circulating method the nutrient solution is pumped through the plant root system and excess solution is collected, replenished and reused in these methods.
4. Floating Technique is similar to box method but shallow containers (10 cm deep) can be used.
5. The media material selected must only be friable and air holding capacity.
6. Organic natural media includes; rockwool, perlite, vermiculite.
7. Organic artificial media includes; polyurethane, polyphenol, polyether, polyvinyl.
8. Tanins and acids present in the newly extracted coir-dust has negligible effect on plants.
9. Black colour tubes will have to be used for nutrient solution delivery to prevent mould growth inside.
10. Floating technique is suitable for ornamental, flower and indoor plants.
11. In Trench or Trough Technique plants are grown in narrow trenches in the ground or above ground troughs constructed with bricks or concrete blocks.
12. Growing medium must provide satisfactory conditions for seed germination and to raise pest and disease free seedlings.
13. Plants require only 10 essential elements for their growth and development.
14. Microelements are required in relatively large quantities.
15. Urea is completely soluble in water, it can be used in hydroponics.
16. In hydroponics, the growing medium does not provide enough anchorage as soils.
17. Tall growing indeterminate type tomatoes are trained to a two stem.
18. Maintain the nutrient solution pH in the range of 7.5 to 8.5.
19. Plants are not the best indicators of the nutrient availability.
20. Some crop varieties are more prone to these conditions than others.

## Section B- Labelling

(5 mark each)

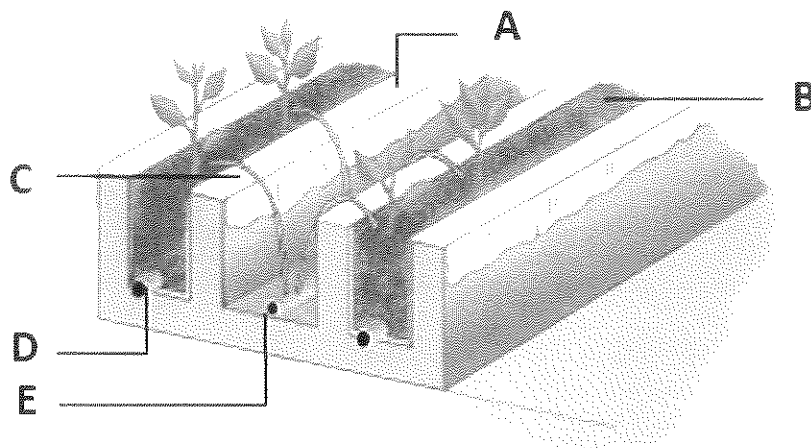
Answer All Questions from this section

1. Label the following diagrams of hanging bag technique



Diagrammatic view of hanging bag technique

2. Label the following diagram of trough and trench technique



### **Section C- Short Answer**

*(2marks each)*

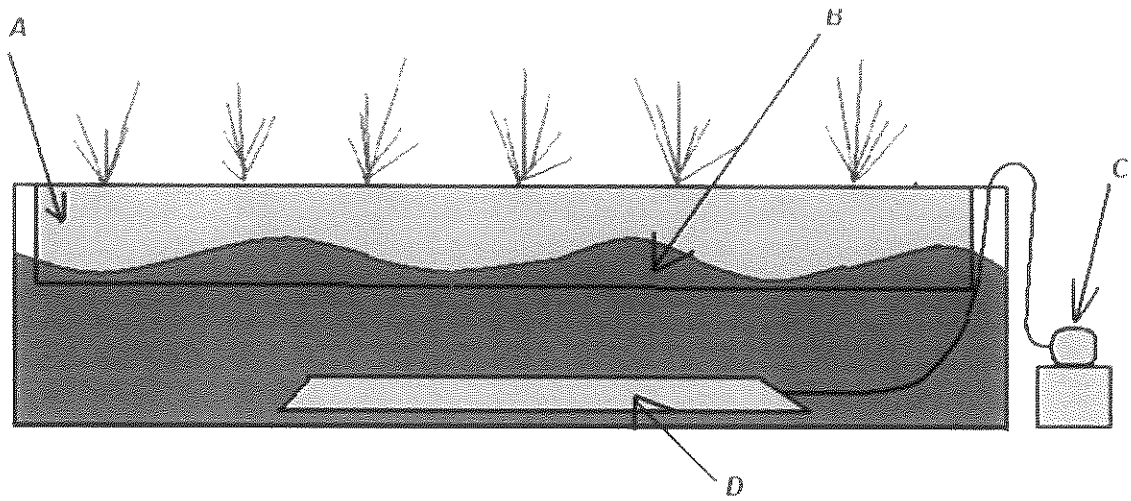
Answer **All Questions** from this section

1. What is the role of soil for plant growth?
2. What are inert solids?
3. What is hydroponic?
4. Why is it essential to use more than 6 month old coir?
5. Give 4 examples of the organic natural media?
6. Give 2 reasons why impurities in nutrient solution bad for hydroponic?
7. State 2 reasons why there is a need for training and pruning?
8. What is nutrient solution?
9. List two effects of lack of oxygen in hydroponic setup?
10. Algae can build up in the system and block the small tubes used for the delivery of nutrient solution. List 2 ways in which this can be managed?

### **Section D- Long Answer**

Answer **All Questions** from this section

1. Discuss five advantages of hydroponic system?  
(5 marks)
2. Explain what is Fruit crooking and its 3 causes?  
(5 marks)
3. Explain what is concentric fruit cracking and its 3 causes?  
(5 marks)
4. Label the following parts of a hydroponic system and explain how this system works?



(5 marks)

5. The success or failure of a hydroponic garden therefore, depends primarily on the strict nutrient management programme.

Complete the table given below:

Test	Importance	Consequences of continuous fluctuations	Testing method	Ideal/ optimum range	Remedy to getting reading within optimum
pH					
Ec					

(10 marks)

### Section E- Essay

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

1. Explain the following in an essay?

In a paragraph write down the requirements for seed germination

List down the various growing medium used for seed germination for hydroponic

List the materials that are required for seed germination

Draw diagrams and explain the steps involved in seed germination

(20 marks)

1. For each of the hydroponic techniques listed below write a paragraph to describe the technique and draw a diagram portraying the technique.

- a. Nutrient Film Technique (NFT)

- b. Deep Flow Technique (DFT)  
Pipe System
- c. Root Dipping Technique
- d. Floating Technique

(20 marks)

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