RAJARATA UNIVERSITY OF SRI LANKA
FACULTY OF APPLIED SCIENCES

B.Sc. (Special) Degree in Applied Biology
Fourth Year – Semester II Examination – April/May2016

ZOO 4306 – AQUACULTURE ENGINEERING

Time: Three (03) hours

Answer six (06) questions including question No. 1.

1. Write short notes on any **four (04)** of the following.
   a) Hydraulic self-cleaning
   b) On-site oxygen production at farm level
   c) Degree of re-use (R) in RAS
   d) Biofloc-based aquaculture systems
   e) Use of oxygen cone

2. "*Pond designing is extremely important in aquaculture.*"
   Justify the above statement, using different measurements and designing criteria associated with construction.

3. a) Illustrate the basic design of a typical "in-pond raceway", using a diagram **only**.
   b) Explain briefly the importance of "in-pond raceway construction."
   c) An article appeared in a local newspaper stresses that "*in-pond raceways are not suitable to the North Central Province of Sri Lanka*". Analyse briefly the above statement.

4. a) Compare the centralized re-use system and single tank re-use system.
   b) Comment on the importance of each of the above system.
   c) Elucidate the basic design of above **two** types of re-use systems, with **only** appropriate diagrams.

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5. You are expected to design an aquarium for a private fish farm within a 20 acre land. Main objective of this assignment is to utilize the land optimally with **maximum number of grow out tanks** for the production of male guppy fish. Construction should include all the **necessary components** that are important to maintain grow out tanks. (cost calculation is **not** expected)

   a) List **all** the components that should be included in this construction.

   b) Give reasons for inclusion of each component listed in 5 (a).

   c) Illustrate your design with all the dimensions. (scale is not necessary)

6. Compare and contrast the "different types of intensive methods of hatching available for fish eggs".

7. a) Explain why proper characterization of water before filtration is necessary in fish farms.

   b) Critically analyse the different principles and methods used to remove the particles from the water in fish farms.