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**RAJARATA UNIVERSITY OF SRI LANKA
FACULTY OF APPLIED SCIENCES**

**B.Sc. (Special) Degree in Applied Biology
Fourth Year – Semester I Examination – October/November 2015**

ZOO 4306 – AQUACULTURE ENGINEERING

Time: Three (03) hours

Answer six (06) questions only, including question No. 1. Illustrate your answers with labeled diagrams where appropriate.

1. Write short notes on any **four (04)** of the following.
 - a) Packed column aerator
 - b) Hydraulic self-cleaning in RAS
 - c) Mechanical filters used in fish farming
 - d) Nitrogen constraints in aquaculture production systems
 - e) On-site oxygen production
2. Discuss the different measurements and design criteria associated with construction of earthen fish ponds.
3. Write a concise account on in-pond fish raceways.
4.
 - a) State the main purpose of closed aquaculture production units.
 - b) Comment on the water-inlet designs of Recirculating Aquaculture Systems.
 - c) Diagrammatically illustrate the basic design of a typical centralized re-use system.
5.
 - a) Briefly explain the **two** main methods used in aeration of culture water.
 - b) Discuss the different processes used in oxygenation of water with special reference to theory of oxygenation.
 - c) Diagrammatically illustrate the different designs of inlet-water oxygen injecting methods.

6. Propose a suitable design for a freshwater aquaculture farm, explaining the importance of each structure in the proposed design.
7. Compare and contrast the different types of intensive storage and hatching methods available for fish eggs.