

UNIVERSITY OF RUHUNA

Bachelor of Science in Fisheries and Marine Sciences Degree Examination  
July 2017

Level I, Semester I (Repeat)

LIM 1112

Origin and Evolution of Freshwater Systems

Time: Two (02) hrs

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Part A

Answer **all** questions of Part A. Underline the most suitable answer for each of the following multiple choice question

Time: Thirty (30) minutes

- (1) The modern study of limnology has
- (i) shifted from experimentation to observation.
  - (ii) paid attention to cultural eutrophication.
  - (iii) neglected the topics like "Acid rain".
  - (iv) considered lotic systems are less important.
  - (v) overlooked exotic Species.
- (2) Potholes in streams are created by
- (i) vertical eddies.
  - (ii) grinders.
  - (iii) attrition
  - (iv) both (i) and (ii).
  - (v) both (ii) and (iii)
- (3) Fens can be differentiated from bogs by
- (i) minerotrophic water.
  - (ii) acidic pH range.
  - (iii) lower ash content in peat.
  - (iv) higher average peat depth.
  - (v) receiving water primarily from rain.
- (4) Rhithron region of lotic systems are characterized by
- (i) potholes.
  - (ii) gorges.
  - (iii) deltas.
  - (iv) levees.
  - (v) floodplains

(5) Select the correct statement

- (i) Freshwater resources are infinite.
- (ii) Freshwater distribution is equitable.
- (iii) Desalination of ocean water is efficient.
- (iv) Demographic growth increases the energy needed to obtain water.
- (v) Difference between global water withdrawal and consumption is low.

(6) Select the false statement.

- (i) Lake Tanganyika exceeds 1000m of depth.
- (ii) Black sea is the largest salt water lake.
- (iii) Lake Superior is the greatest by area among freshwater lakes.
- (iv) Lake Caspian is the largest inland water body.
- (v) Lake Baikal contains most of the world's freshwater.

(7) What is the false statement regarding volcanic Lakes?

- (i) Small volcanic crater lakes might get water from melted ice.
- (ii) Phreatomagmatic eruptions create small volcanic crater lakes.
- (iii) Lots of parasitic cinder cones might lead to form a bigger lake.
- (iv) Large volcanic eruptions can create caldera lakes.
- (v) Found where tectonic plates are diverging or converging.

(8) What is the correct statement regarding the river meanders?

- (i) Erosion is prominent on concave side.
- (ii) Water current is faster on convex side.
- (iii) Deposition is prominent on concave side.
- (iv) Water depth is higher on convex side.
- (v) Slope is steep on convex side.

(9) According to Bradshaw model for rivers, from upstream to downstream

- (i) occupied channel width decreases.
- (ii) average velocity increases.
- (iii) load quantity decreases.
- (iv) load particle size increases.
- (v) Channel bed roughness increases.

- (10) Choose the most correct statement on quaking bogs.
- (i) Usually occur in relatively shallow lakes.
  - (ii) Particulate organic matter creates a loosely compacted “false bottom”
  - (iii) Deposition of organic matter beneath is rapid than littoral development along surface.
  - (iv) Bog biota are dominated with nematodes.
  - (v) Acidic water tolerant blue green algae are in high abundance.
- (11) What could be an indicator of higher productivity in a temperate lake?
- (i) Lake trouts are replaced by carps.
  - (ii) Frequent occurrence of red tides.
  - (iii) Littoral encroachment by reeds.
  - (iv) Shrinking euphotic zone.
  - (v) Any of the above.
- (12) According to Strahler system, a river segment is 5<sup>th</sup> order after the joining of
- (i) 3<sup>rd</sup> and 2<sup>nd</sup> order tributaries
  - (ii) 4<sup>th</sup> and 1<sup>st</sup> order tributaries.
  - (iii) 5<sup>th</sup> and 3<sup>rd</sup> order tributaries.
  - (iv) 5<sup>th</sup> and 5<sup>th</sup> order tributaries.
  - (v) none of the above is correct.
- (13) “Ralapanava” and “Kattakaduwa” of dry zone village tank are useful
- (i) to prevent wildlife entering into the tank.
  - (ii) to prevent sediments entering into the tank.
  - (iii) to minimize erosion of the dam.
  - (iv) to minimize evaporation from the tank surface.
  - (v) to minimize hardness of the tank water.
- (14) Argillotrophic lakes have a low production associated with
- (i) high calcium content.
  - (ii) high iron content.
  - (iii) high humic content.
  - (iv) high clay turbidity.
  - (v) high acid content.
- (15) In the transitional zone of the reservoir,
- (i) basin is channelized.
  - (ii) cells are lost by grazing and sedimentation.

- (iii) advective nutrient supply is prominent.
- (iv) primary production is limited by light.
- (v) allochthonous organic matter supply is prominent.

**Part B**

Answer **any three (03)** questions

Time: 1 ½ hrs

1. Write an essay on tectonic lakes.
2. (i) Explain the eutrophication paradigm  
(ii) What are the adverse effects of eutrophication?
3. Give an introduction to the diversity of littoral community in a lake.
4. Write short notes on the following,
  - (i) Beaver dams
  - (ii) Cave systems associated with solution lakes.

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