

B.Sc. FISHERIES BIOLOGY SYLLABUS UNDER CBCS

(With effect from 2016-2017)

I - SEMESTER

PAPER I - LIMNOLOGY (Theory)

Max. Marks: **60** **80**

UNIT I – Origin, Types and classification of lakes.

- 1.1. Inland water types: Lentic and lotic habitats – their identities and distribution, ponds and lakes, streams and rivers; Major rivers and lakes of India.
- 1.2. Origin and classification of lakes.
- 1.3. Anomalous properties of water, their influence on biota in inland waters.
- 1.4. Temperature and Light: Thermal stratification and its overall impact, thermal classification of lakes; Factors affecting light penetration in natural waters.

UNIT II - Physicochemical Properties of lake water

- 2.1. Dissolved oxygen: Sources, losses and distribution patterns.
- 2.2. Identification of oxygen depletion problems and control mechanisms in fish ponds.
- 2.3. Carbon dioxide: Sources, losses and distribution patterns; role of carbon dioxide in chemical buffering.
- 2.4. Bio-geochemical cycles: General account of nutrients; Nitrogen and Phosphorus cycles.

UNIT III - Biological properties of lake water

- 3.1 Composition, classification and distribution patterns in lakes and rivers.
Plankton:
- 3.2. Benthos: Composition, classification and distribution of benthos in lakes and rivers.
- 3.3. Nekton and its significance.
- 3.4. Large Aquatic Plants: Classification, distribution and limnological significance.

UNIT IV – Productivity of lake.

- 4.1. Productivity: Concept of productivity, methods for the estimation of primary, secondary and tertiary productivity; Classification of lakes based on productivity; indices of productivity in lakes
- 4.2. Turbidity: Causes, consequences and control.
- 4.3. Eutrophication: Causes, consequences and control mechanisms.
- 4.4. Bio-manipulation Concept: Zooplankton as a tool in lake management.



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REFERENCE BOOKS

1. Allan JD. 1995. *Stream Ecology: Structure and Function of Running Waters*. Chapman & Hall
2. Cole GA. 1983. *Text book of Limnology*, C.V Mosby Company, St. Louis, Missouri, USA
3. Goldman CR. and Horne AJ. 1983. *Limnology*. Mc Graw-Hill International Book Company.
4. Golterman, HL. 1975. *Physiological Limnology*. Elsevier Publishing Co., Amsterdam.
5. Hutchinson, GE. 1957. *A Treatise on Limnology: Vol I. Geography, physics and chemistry*.
John Wiley and Sons, Inc., New York.
6. Hutchinson GE. 1967. *A Treatise on Limnology, Vol II. Introduction to lake Biology and the Limnoplankton*. John Wiley and Sons, Inc., New York.
7. Reid GR. 1961. *Ecology and Inland waters and Estuaries*. Rein Hold Corp., New York.
8. Ruttner F. 1953. *Fundamentals of Limnology*, Uni. of Toronto press, Toronto.
9. Welch PS. 1952. *Limnology*, 2nd Ed. Mc Graw-Hill Book Co., New York.
10. Wetzel RG. 1975. *Limnology*, W.B. Sanders Company, Philadelphia.

PRACTICALS – 40 Marks

1. Physicochemical parameters of water:
pH, Temperature, Dissolved oxygen, Alkalinity, Hardness BOD and COD
2. Collection and identification of fresh water zooplankton
3. Collection and identification of fresh water phytoplankton
4. Collection and identification of benthos from lakes and ponds, streams and canals.
5. Collection and identification of aquatic plants from different fresh water bodies.



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