

**B.Sc. FISHERIES BIOLOGY SYLLABUS UNDER CBCS**  
(With effect from 2016-2017)  
**III - SEMESTER**  
**PAPER III – FISH PHYSIOLOGY (Theory)**

**Max. Marks: 60**

**UNIT I – Digestion and metabolism in fishes**

- 1.1. Digestion: Digestion of carbohydrates, lipids and proteins;
- 1.2. Digestive enzymes and regulation of their secretions; Absorption and assimilation of nutrients;
- 1.3. Role of hormones in the regulation of digestion; Factors affecting digestion and transport of nutrients.
- 1.4. Metabolism: Pathways of cellular metabolism.

**UNIT II – Neuro endocrine, Respiration and circulation in fishes**

- 2.1. Respiration: Definition of respiration; external respiration and internal respiration.
- 2.2. Mechanism of gaseous exchange, CO<sub>2</sub> transport, countercurrent principle, water flow across the gills, respiratory pumps.
- 2.3. Circulation: Role of blood in transport of gases; composition and function of blood.

**UNIT III – Sensory organs and osmoregulation in fishes**

- 3.1. Sensory organs: Structure and function of chemo-, photo- and phonoreceptor, lateral line sense organs.
- 3.1. Action potential, synapse, neurotransmitters, impulse transmission.
- 3.3. Osmoregulation: Mechanism of osmotic and ionic regulation; endocrine control of Osmoregulation
- 3.4 Fish migration – types of migration and impact on fish resources.

**UNIT IV – Excretion and reproduction in fishes**

- 4.1. Excretion: Mechanism of excretion of nitrogenous waste, water and ion balance.
- 4.2. Reproduction and Endocrinology: Development of gonad, oogenesis, spermatogenesis,
- 4.3. Metabolic changes during oogenesis and spermatogenesis; hormonal control of reproduction in fish.
- 4.4. Neuro-endocrine system in crustacean and its role in the regulation of reproduction.



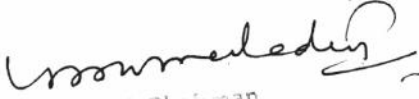
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## REFERENCE BOOKS

1. Adiyodi KG & Adiyodi RG. 1971. *Endocrine Control of Reproduction in Decapod Crustacea*. Biology Reviews.
2. Agarwal NK. 2008. *Fish Reproduction*. APH Publ.
3. Brown ME. 1966. *Physiology of fishes*. Vol. I and II Academic Press. New York.
4. Halver JE. 1972. *Fish nutrition*. Academic Press, New York.
5. Hoar WS. 1984. *General and Comparative physiology*. Printice-Hall of India Pvt. Ltd. New Delhi.
6. Hoar WS, Randall DJ & Donaldson EM. 1983. *Fish Physiology*. Vol. IX. Academic Press, New York
7. Lagler KF, Bardach, JE, Miller, RR, Passino DRM. 1977. *Ichthyology*, 2<sup>nd</sup> Ed. John Wiley & Sons, New York.
8. Matty AJ. 1985. *Fish Endocrinology*. Croom Helm.
9. Mente E. 2003. *Nutrition, Physiology and Metabolism in Crustaceans*. Science Publ.
10. Moyle PB. 1982. *Fishes: An introduction to ichthyology*. Printice-Hall, Englewood cliffs.
11. Patts, GW. 1984. *Fish reproduction. Strategies and tactics*. Academic Press, London.
12. Prosser CL. 1973. *Comparative animal physiology*. W.B. Saunders, Philadelphia.

## Practicals-40 Marks

1. Removal of fish pituitary gland and preparation of pituitary extract.
2. Estimation of primary productivity in fresh water bodies.
3. Enumeration and biomass estimation of fresh water zooplankton.
4. Enumeration and biomass estimation of benthos from lakes, ponds, streams and canals.
5. Study of Inland Capture Fishes:  
Cat fishes – any three  
Clupeids – any three  
Other miscellaneous fishes – any three

  
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