Subject Code : RN4G9C

Paper X : Marine Biology and Oceanography

Unit I

Basic concepts in physical, chemical and biological oceanoghraphy – water movements in the ocean – currents, forces causing surface and deep currents, winds and monsoon; Waves : formation and properties; tides – tide generating forces and theories, types of tides, tidal effects significance, salinity measurements, dissolved and particulate organic matter – their interaction with marine life, eutrophication, marine sediments – texture and chemistry.

Unit II

Origin and classification of marine, brackish and estuarine waters, mangroves, lagoons, coral reefs – their physio – chemical features.

Unit III

Sea as a biological environmental – Plankton – Phyto and zoo plankton, classification, their inter-relationships, methods of collection, primary and secondary production, red-tide phenomenon, seaweeds and seagrass, occurrences, distribution and their economic importance.

Unit IV

Marine pollution – definition, major pollutants – sewage, detergents, heavy metal, pesticides, oil thermal, radio – active elements, plastic and litter sources,; transport path and monitoring methods biological indicators, accumulators and mass balance model.

Unit V

Resource of marine environment – living and non living resources – major finfish, shellfish resources. Current status of marine biodiversity and its conservation, endangered marine animals, marine biosphere reserves and marine parks. Role of international and national agencies and organization in ocean management (IOC, UNESCO, UNEP, FAO, IUCN, WWF, IMO, ICES, IOI, SCAR).

Text Books :

1. Sverdrup, H.V., M.W. Johnson and R.H. Fleming. 1959. The Oceans. Their physics, Chemistry and General Biology. Prentice Hall, Inc., New Jercy.
2. McCormick, J.M. and J.V. Thiruvathaakal 1976. Elements of Oceanograophy. W.B. Saunder Company, Philadelphia
3. Clark, R.B. 1992. Marine Pollution 3rd edition. Clavendon Press, Oxford
4. Naskar, K and R. Mandal 1999. Ecology and Biodiversity of Indian Mangroves. Vol I & II Daya Publishing Home, Delhi.

5. Champman, V.J. and D.J. Chapman 1980. Seaweeds and Their uses. Chapman & Hall, London.
6. Iverson, E.S. 1996. Living Marine Resources, Chapman & Hall, New York.

Reference Books :

1. Gross, G. 1993. Oceanography : A view of the Earth. Sixth edition. McGraw Hill Company.
2. Roonwal, G.D. (Ed) 1986. The Indian Ocean, Exploited Mineral and Petroleum Resources. Springer – Verlag, Belin.
3. Pantin, S.A. 1982. Pollution and the Biological resources of the Oceans. Butterworth Scientific Co., London.
4. Castro, P and M.E. Huber, 1997. Marine Biology. Second Edition. McGraw Hill Company.