

# **Veer Narmad South Gujarat University**

## **Second Year B. Sc.**

### **I. D. S. (Marine Science)**

**(In Force From June 2004)**

**(A) Science and Marine Biology**

- (i) The importance of the oceans and Marine organisms.
- (ii) The study of the sea and its inhabitants.
- (iii) Marine Biology :- A History of changing perspectives.
- (iv) Marine Biology and the Human connection - The process of Science.
- (v) Marine Biology Today.

**(B) General Biology**

- (i) Zonation of intertidal organisms.
- (ii) Migration of animals from sea to land.
- (iii) Marine pollution.

**(C) The Seashore**

- (i) Rocky shore
- (ii) Sandy shore
- (iii) Estuaries
- (iv) Swamps
- (v) Coral reefs

**(D) Water ; Waves and Tides**

- (i) The Nature of water
- (ii) Salt water
- (iii) Ocean Heating and cooling
- (iv) Ocean layers and Vertical mixing
- (v) Winds and currents
- (vi) Waves ; Tides

**(E) Marine Microorganisms**

- (i) Bacteria :- Marine adaptation purple Bacteria;  
Ecology and the marine environment.
- (ii) Multicellular algae ; Red algae ; Brown algae ; Marine  
Biology & The Human connection ; Green algae.

**(F) Marine animals**

- (i) The fishes :- The jawless fishes ; cartilaginous fishes ;  
Marine Biology and the human connection shark aid in the  
fight against cancer.
  - Bony fishes:- Marine adaptations - surviving in Near  
freezing water.
  - Marine Reptiles - Marine adaptation :- Voyage of the  
green sea turtle.
  - Sea birds and its adaptations.
  - Marine Mammals – Cetaceans :- whales and  
their relatives.

**Ref.**

- (1) Marine Biology and Ecology - N. K. Pillai.
- (2) Introduction to Marine Biology - Karleskint
- (3) Marine Fisheries Extension - P. N. Ananth
- (4) Marine Biology (Some aspects of marine ecology and Marine  
Fisheries - Anisa Basheer.
- (5) Introduction to marine Biology - McConnaughey

**List of Reference books**

**Paper - VI**

- |      |                                     |   |                          |
|------|-------------------------------------|---|--------------------------|
| (1)  | Invertebrates Zoology               | - | R. W. Hegner.            |
| (2)  | A Text book of Invertebrate Zoology | - | S. N. Prasad.            |
| (3)  | The Invertebrates (only)            | - | Boradale & Potts.        |
| (4)  | Invertebrate                        | - | E. L. Jordan.            |
| (5)  | A manual of Zoology vol. I          | - | E. Ayver.                |
| (6)  | A Text book of Invertebrate Zoology | - | R. C. Kotpal.            |
| (7)  | Invertebrate Zoology                | - | Arumugum.                |
| (8)  | A Text book of Zoology              | - | Arumugum &<br>Narayanan. |
| (9)  | A Text book of Zoology Vol. I       | - | Parker & Haswell.        |
| (10) | Invertebrate Structure & Function   | - | E. J. W. Barington.      |

**Paper - VII**

- |      |                                               |   |                       |
|------|-----------------------------------------------|---|-----------------------|
| (1)  | Phylum Chordata                               | - | By H. H. Newman.      |
| (2)  | Vertebrate body                               | - | Romer.                |
| (3)  | Biology of the Vertebrates                    | - | Walter & Sayles.      |
| (4)  | Zoology of Chordates                          | - | Nigam.                |
| (5)  | Outlines of Comparative Anatomy<br>Vertebrate | - | J. S. Kingsley.       |
| (6)  | Comparative Vertebrate anatomy                | - | Hyman.                |
| (7)  | Comparative Anatomy of Vertebrates            | - | Eaton.                |
| (8)  | Histology                                     | - | Arthur W. Ham.        |
| (9)  | Bailey's Text book of Histology               | - | W. M.<br>Capenchartr. |
| (10) | A Text book of Human Histology                | - | Inderbir Singh.       |
| (11) | A Text book of Histology                      | - | A. K. Berry.          |
| (12) | Histology                                     | - | R. O. Greep.          |

**Paper – VIII & (Physiology & Biochemistry)**

- |      |                                           |   |                                       |
|------|-------------------------------------------|---|---------------------------------------|
| (1)  | A Text book of Biochemistry               | - | A. K. Berry.                          |
| (2)  | Fundamentals of Biochemistry              | - | Dr. A. C. Deb.                        |
| (3)  | Fundamentals of Biochemistry              | - | David T. Plummer.                     |
| (4)  | Biochemistry                              | - | N. Arumugum &<br>L. M. Narayanan.     |
| (5)  | Text book of medical Physiology           | - | Guyton.                               |
| (6)  | A Text of Animal Physiology               | - | Nagabhushanam.                        |
| (7)  | A Text of Animal Physiology               | - | A. K. Berry.                          |
| (8)  | Principles of Biochemistry                | - | Lehninger.                            |
| (9)  | A Text book of Physiology & Biochemistry- | - | R. A. Agarwal.                        |
| (10) | Physiology & Biochemistry                 | - | R. A. Agarwal &<br>A. K. Shrivastava. |
| (11) | Harper's Review of Biochemistry           | - | D. W. Martin,<br>Mayer, Rudwell.      |
| (12) | Comparative animal Physiology             | - | Proser & Brown.                       |
| (13) | Fundamentals of Biochemistry              | - | B. P. Pandey.                         |
| (14) | Hawk's Physiological Chemistry            | - | Victor A. Mukusick.                   |
| (15) | Animal Physiology                         | - | M. P. Arora.                          |

**Paper – IX**

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|-----|---------------------------------|---|--------------------------------------|
| (1) | Concepts of Genetics            | - | R. L. Kotpal.                        |
| (2) | A Text book of Genetics         | - | Veer Bala Rastogi.                   |
| (3) | Genetics                        | - | P. K. Gupta                          |
| (4) | Introductory Cytology           | - | Veer Bala Rastogi.                   |
| (5) | Genetics                        | - | Gardner                              |
| (6) | Principles of Genetics          | - | Sinnott & Dunn.                      |
| (7) | Theory and Problems of Genetics | - | William D.<br>Stansfield.            |
| (8) | Genetics                        | - | Edgar Altenberg.                     |
| (9) | A Text book of Genetics         | - | H. S. Bhamrah &<br>C. M. Chaturvedi. |

### **Environmental Biology & Embryology & Toxicology**

- |     |                                    |   |                  |
|-----|------------------------------------|---|------------------|
| (1) | Ecology and Environment            | - | P. D. Sharma.    |
| (2) | Modern Concepts of Ecology         | - | H. D. Kumar.     |
| (3) | Fundamentals of Ecology            | - | E. P. Odum.      |
| (4) | Environmental Biology & Toxicology | - | P. D. Sharma.    |
| (5) | Aquatic Pollution & Toxicology     | - | R. K. Trivedi.   |
| (6) | A Text book of Embryology          | - | N. Arumugam.     |
| (7) | Early Embryology of the chick      | - | B. M. Pattern.   |
| (8) | Introduction to Embryology         | - | A. K. Berry.     |
| (9) | Elements of Ecology                | - | George & Clarke. |

### **Wild Life (I. D. S)**

- |      |                                                  |   |                               |
|------|--------------------------------------------------|---|-------------------------------|
| (1)  | Wild life of India – Conservation and Management | - | K. C. Agrwal.                 |
| (2)  | Wild animals of India                            | - | Daya Publishing House, Delhi. |
| (3)  | Text book of Biotechnology                       | - | R. C. Dubey.                  |
| (4)  | Modern Concepts of Biotechnology                 | - | H. D. Kumar.                  |
| (5)  | Threatened Animals of India                      | - | K. C. Agrawal.                |
| (6)  | Basic Biotechnology                              | - | Dr. S. Ignacimuthu.           |
| (7)  | Indian wild life Sanctuaries & National Parks    | - | S. K. Tiwari.                 |
| (8)  | Fishes                                           | - | By M. Chandy.                 |
| (9)  | Fish and Fisheries of India                      | - | V. G. Jhingran.               |
| (10) | Biotechnology                                    | - | Bull ; Holt & Lilly.          |
| (11) | The Essentials of Forensic medicine & Toxicology | - | K. S. Narayan & Reddy.        |
| (12) | Toxicology                                       | - | C. A. Franklin.               |
| (13) | Marine Fish-Farming for India                    | - | James Hornell.                |