

VEER NARMAD SOUTH GUJARAT UNIVERSITY, SURAT.
SYLLABUS FOR S. Y. B. Sc. SEM-III & IV
ZOOLOGY(Theory)
 (Effective From JUNE-2012)

Sem-III-Theory Paper-III

(Non-chordates, Evolution and Economic Zoology)

- Unit-I Introduction to classification : General study of Non-Chordate Phylas upto Subclass with examples:- Protozoa, Porifera, Coelenterata (Cnidaria), Helminthes, Annelida.
- Unit-II Study of the following animal types with reference to the structure and functions of various organs of all Systems of Leech
- Unit-III Evolution and Adaptations :- Variation, Fossorial, Cursorial
Deepsea & Cave Dwelling Adaptations
- Unit-IV Economic Zoology:
 (i) Sericulture :- Life-History of Indian species of Mulberry silk-worm (Bombyx mori); Management Of Silk industry including rearing, spinning and reeling; Types and Economic importance of silk.
 (ii) Apiculture :- Life-history of Honey-bees, types, castes, structure of honeycomb, economic importance of honey, venom and wax.

Sem-IV-Theory Paper-III

(Non-chordates, Evolution and Economic Zoology)

- Unit-I Introduction to classification: General study of Non-Chordate Phylas upto Subclass with examples:- Arthropoda, Mollusca, Echinodermata and Hemichordata.
- Unit-II Study of the following animal types with reference to the structure and functions of various organs of all systems of Cockroach.
- Unit-III Evolution and adaptations:- Isolation & speciation
Protective coloration and mimicry .
- Unit-IV Economic Zoology: (i) Lacculture (ii) Vermiculture

Sem –III -Theory paper IV
(Chordate Classification, Type study, Histology & Osteology)

- Unit - I: Introduction to classification: General study of the following protochordates and chordates up to subclass with examples: Urochordata, Cephalochordate, Cyclostomes, Pisces.
- Unit - II: Study of the following animal type with reference to their with reference to the structure and functions of various organs of all Systems of- Scoliodon.
- Unit - III: Histology: Study the Ultrastructure following mammalian tissues– stomach, intestine, liver, Salivary gland, pancreas, kidney and gonads.
- Unit - IV: Osteology: Study of girdles in Frog, Scoliodon, varanus, pigeon and rabbit.

Sem –IV -Theory paper IV

(Chordate Classification, Type study, Embryology & Osteology)

- Unit - I Introduction to classification: General study of the following protochordates and chordates up to subclass with examples: Amphibians, Reptilians, Aves and Mammals
- Unit - II Study of the following animal type with reference to their structure and functions of various organs of all Systems of Pigeon.
- Unit - III Embryology: Different types of eggs and cleavage patterns, development in amphioxus (up to tubulation).
- Unit - IV Osteology: Comparative Study of Fore limbs and hind limbs in frog, varanus, pigeon and rabbit.

Sem-III-Theory paper – V

(Physiology)

- Unit-I Respiration: Exchange of gases, Transport of gases, Respiratory pigments, Respiratory quotients ,B.M.R , Control of respiration.
- Unit-II Muscle coordination: Types and structure of muscle fibres; Physiology of muscle contraction and energetic.
- Unit-III Nervous coordination : Synapse and mechanism of nerve impulse conduction. Structure and function of sense organs (human)-eye & ear.
- Unit-IV Excretion and osmoregulation: Structure of uriniferous tubule and physiological process of excretion (including counter current mechanism) and urine formation; hormonal control (rennin angiotensin system and ADH); Osmoregulation in fresh and marine waters; osmosis; diffusion and Donnan's equilibrium.
- Unit-V Haematology: Composition of blood, Haemopoiesis and blood groups.

Sem-IV-Theory paper – V

(Physiology, Cytology, Genetics & Biochemistry)

- Unit-I Thermoregulation: Heat production and heat loss, Temperature regulating mechanism.
- Unit-II Cytology: Tool and techniques used in cytology. Cell cycle and cell division - mitosis and meiosis.
- Unit- III Genetics: Structure and function of genetic material, Types of RNA. Chromosome mapping. Linkage, crossing over, sex determination and dosage compensation (Heteropycnosis), Sex-linked inheritance, Cytoplasmic inheritance: Sigma substance, milk factor in mice kappa particles, coiling of shell in Lymnaea, Modified Mendelian ratio 9:7, 9:3:4, 9:6:1, 12:3:1, 13:3, 15:1, 9:3:3:1 (in cock comb) simple examples based on above types.
- Unit-IV Biochemistry: Introduction and structure of carbohydrates, proteins and lipids.

List of Reference Books

Invertebrate Zoology	T.C.Majupuria	Pradeep publication
Chordate Zoology	- do -	
A Text book of Zoology vol 1 and 2	P.S. Dhama and J.K. Dhama	R.Chand and co
Invertebrate series and Minor phyla	R.L. Kotpal	Rastogi and co Meerut
Chordate Zoology	N. Arumugam.	
Invertebrate Zoology	N .Arumugam	Saras Publication
Chordate zoology	Ekambar nath Iyyer	
Invertebrate Zoology	E.L.Jordan and P.S. Verma	S Chand and co
Chordate zoology and Animal physiology	E.L. Jordan and P.S.Verma	S Chand and co
A Textbook of Embryology	N.Arumugam	Saras Publication
Developmental Biology	M. P. Arora	Kedarnath Ramnath
A manual of practica	P. S. Verma	S Chand and Co.
Zoology chordates		
Practical Invertebrate Zoology and cytology	V. B. Rastogi	Kedarnath Ramnath
Animal physiology	M.P.Arora	Himalaya publishing house
A Text book of animal physiology	Berry, A.K.	Emkay publication
A text book of animal histology	A.K.Berry	Emkay publication
Essentials of cytology	C.B.Powar	Emkay publication
Genetics	Kotpal, R,L.	Rastogi & co.
A Text book of genetics	V.B.Rastogi	Kedarnath; Ramnath
Genetics	Arora, M.P. and Sandhu	Himalaya publishing house
A Text book of genetics	P.K.Gupta	Rastogi & co.
Biochmistry	Lehninger	
A Book of Biochemistry	Kohn and stumph	
Animal Physiology	Sobti	Narosa Publishers.

VEER NARMAD SOUTH GUJARAT UNIVERSITY, SURAT.
SYLLABUS FOR S. Y. B. Sc. MARINE SCIENCE(EG)

SEM-III

(Effective From JUNE-2012)

Unit-1 Scope of marine science :

- 1) Intoduction to marine science and career.
- 2) Evolution and biological classification
- 3) Prokaryotes,eukaryotes-fungi,Protista,plant,animalia-five kingdoms

Unit- 2 Geology of the ocean :

- 1) Zonations of ocean
- 2) List of Indian oceans-andaman sea,Arabian sea,bay of Bengal,gulf of eden,gulf of oman,mozambic channel,Persian gulf,red sea,timor sea.

Unit-3 Types of seashores and their fauna :

- 1) Sandy shore 2) Rocky shore 3) Estuaries

Unit-4 Marine organisms:

- 1) Microorganisms: - phytoplanktons, zooplanktons, red algae, brown algae, green algae, multicellular algae. Economic importance of algae.
- 2) Macro organisms: - Invertebrates-commercial importance of marine sponges, Molluscs, arthropods (crab and prawns).
Vertebrate: economic importance of Scoliodon (sharks) and marine mammals.

SYLLABUS FOR S.Y. B. Sc. MARINE SCIENCE(EG)

SEM-IV

(Effective From JUNE-2012)

Unit-1 Marine Biology :

- 1) Adaptations- bony fish surviving in near freezing water,sea birds, whales and their relations.
- 2) Voyage of green sea turtle.
- 3) General characters of bony and cartilaginous fishes.
- 4) Coral and coral reefs:types,economic importance and threats.

Unit-2 Marine Pollution -Causative factors and impacts

Unit- 3 Introduction to aqua culture-History,scope and present status.

Unit-4 General idea of different aquaculture practices-mono culture,poly-culture,extensive culture and intensive culture.

REFERENCE BOOKS :

- 1) Fundamentals of Ecology- E.P.Odum
- 2) Marine biology and Ecology-N.K.Pillai
- 3) Fishes-Mary Chandy
- 4) Fish and Fisheries of India-V.G. Jhingran
- 5) Fish and Fisheries-S.S.Khanna.
- 6) Marine Fish Farming for India-James Hornell
- 7) Introduction to Marine Biology-Karleskint
- 8) Marine fisheries Extension-P.N.Ananth
- 9) General and Applied Ichthyology(fish and fisheries)-S.K.Gupta & P.C.Gupta.:S.Chand and Co.NewDelhi.
- 10)Aquaculture Technology & Environment-Ujwala Jadhav.
- 11) Economic Zoology- Dr.G.S.Shukla &Dr.V.B.Upadhyay

