

Lesson Plan. B.Sc. medical 1st yr 2nd semester.

Subject :- Zoology Paper - I.

Life And Diversity of Annelida to Arthropoda & Genetics - I

Session - April 2021-22

1. April -

Dated

06-4-2022

to

07-04-2022

Phylum. Annelida Unit - I

(i) General characters and classification upto order level.

(ii) Biodiversity And Economic Importance of Annelida.

(iii) Type study - Phylum Annelida - e.g. *Pheretima posthuma* - Earthworm.

(a) Body wall, Coelom, locomotion,

(b) Digestive system, Circulatory system

Respiratory system, Excretory system

(c) Nervous system, Reproductive system, Economic Importance.

(d) Metamerism, Trochophore Larva.

UNIT - II

2. April - (i) Phylum - Arthropoda

(ii) General characters and classification upto order level.

MAY

(iii) Biodiversity And Economic Importance of Insects

(iv) Type study - *Ak. Grasshopper*. *Psephenus pictus*

Lesson Plan CLASS - B.Sc medical Ist yr Ist semester

nth. Session - 2021-22;
May. Life & Diversity of Mollusca + Hemichordata
and Ctenochordata - II. Paper - IInd

Subject - Phylum Mollusca.
Zoology. 1. General characters and classification upto order level.
2. Biodiversity and Economic Importance
3. Mollusca (Pila globosa) Type study.
4. Mollusca - Torsion And Detorsion,
5. Mollusca - Respiration and Foot.

Month subject.

June Zoology: Phylum: Echinodermata

1. Character classification & Examples
2. Biodiversity And Economic Importance
3. Echinodermata - Asterias (star fish).
4. Echinodermata - larva.
5. Aristotle lantern.

Subject Phylum Hemichordata
Zoology

Character, classification, Affinities
and Balanoglossus.

B.Sc. Zoology Semester-IIInd.
SYLLABUS
B-ZOO-402
Animal Genetics

Credits: 3

External Marks: 60

Internal Assessment: 15

Time allotted: 3 Hours

Objective: To apprise the students about various concepts of genetics and its importance in human health

Course Outcomes:

- CO402.1. Students will have acquaintance with the basic causes associated with inborn errors and other genetic disorder and will be able to give counseling to general people
- CO402.2. Students will be able to explain the concept of gene interactions, Sex linked inheritance and their role in medical sciences.

Note: Nine questions are to be set in all and the candidates are required to attempt five questions including compulsory question. Question 1 is compulsory consisting of short answer type 6 parts (2.0 marks each) covering the entire syllabus. Out of remaining eight, four questions are to be set from each section A & B, possibly splitting them in parts. Candidate is required to attempt four questions, two from each section. All five questions carry equal marks.

SECTION - A

1. Elements of **Heredity and variations**.
2. The varieties of **gene interactions**
3. **Linkage and recombination:** Coupling and repulsion hypothesis, crossing-over and chiasma formation; gene mapping.
4. **Sex determination and its mechanism:** male and female heterozygous systems, genetic balance system; role of Y-chromosome, male haploidy, cytoplasmic and environmental factors, role of hormones in sex determination.
5. **Sex linked inheritance:** Haemophilia and colour blindness in man, eye colour in Drosophila. Non-disjunction of sex-chromosome in Drosophila, Sex-linked and sex-influenced inheritance
6. **Extra chromosomal and cytoplasmic inheritance:**
 - i) Kappa particles in Paramecium
 - ii) Shell coiling in snails
 - iii) Milk factor in mice

SECTION - B

7. **Multiple allelism:** Eye colour in Drosophila; A, B, O blood group in man.
8. **Human genetics:** Human karyotype, Chromosomal abnormalities involving autosomes and sex chromosomes, monozygotic and dizygotic twins.
9. **Inborn errors of metabolism** (Alcaptonuria, Phenylketonuria, Albinism, sickle-cell anaemia).
10. **Nature and function of genetic material:** Structure and type of nucleic acids; Replication and Protein synthesis.
11. Eugenics, eugenics and eugenics; spontaneous and induced (chemical and radiations) mutations; gene mutations; chemical basis of mutations; transition, transversion, structural chromosomal aberrations (deletion, duplication, inversion and translocation); Numerical aberrations (autopolyploidy, euploidy and polyploidy in animals)
12. **Applied genetics:** genetic counseling, pre-natal diagnosis, DNA-finger printing, transgenic animals.

B.Sc. Zoology Semester-IV
SYLLABUS
B-ZOO-202

Animal Diversity of Chordates from Amphibia to Mammalia

Credits: 3

External Marks: 60

Internal Assessment: 15

Time allotted: 3 Hours

Objective: To make students capable of Identifying (using key features) and differentiate between vertebrate groups including amphibians, reptiles, birds, and mammals.

Course Outcomes:

CO202.1. Students will be able to understand evolutionary lines of vertebrate class including amphibians, reptiles, birds, and mammals.

CO202.2. Students will be able to identify (based on morphological characters) and understand adaptations in vertebrate class including amphibians, reptiles, birds, and mammals.

Note: Nine questions are to be set in all and the candidates are required to attempt five questions including compulsory question. Question 1 is compulsory consisting of short answer type 6 parts (2.0 marks each) covering the entire syllabus. Out of remaining eight, four questions are to be set from each section A & B, possibly splitting them in parts. Candidate is required to attempt four questions, two from each section. All five questions carry equal marks.

SECTION - A

- April
to
May
1. **Amphibia:** General Characters and Classification upto orders; Origin, Evolutionary tree. Type study of frog (*Rana tigrina*), Parental Care and Neoteny in Amphibia
 2. **Reptilia:** General Characters and Classification upto orders, Type study of Lizard (*Hemidactylus*) Structural & Functional morphology, Origin, Evolutionary tree. Extinct reptiles; Poisonous and non-poisonous snakes; Poison apparatus in snakes.

SECTION - B

- June
3. **Aves:** General Characters and Classifications upto orders. Type study of Pigeon (*Columba livia*); Structural & Functional morphology
Aerial adaptation, Principles of aerodynamics in Bird flight, migration in birds.
 4. **Mammals:** General Characters and classification up to orders;
type study of Rat; Adaptive radiations of mammals, dentition.
Affinities of Prototheria, metatheria & eutheria

Note: Type study includes detailed study of various systems of the animal.

B.Sc. Zoology Semester-III
SYLLABUS
B-ZOO-302
Mammalian Physiology and endocrinology

Credits: 3
External Marks: 60
Internal Assessment: 15
Time allotted: 3 Hours

Objective: To impart the fundamental knowledge of physiology and endocrine system of animals

Course Outcomes:

- CO302.1. It will make the students understand the appropriate functioning of each body system in animals and mechanism of working.
- CO302.2. Students will be able to explain the mechanism of action of hormones and related molecules involved in various physiological processes

Note: Nine questions are to be set in all and the candidates are required to attempt five questions including compulsory question. Question 1 is compulsory consisting of short answer type 6 parts (2.0 marks each) covering the entire syllabus. Out of remaining eight, four questions are to be set from each section A & B, possibly splitting them in parts. Candidate is required to attempt four questions, two from each section. All five questions carry equal marks.

SECTION - A

- June
1. **Circulation:** Origin, conduction and regulation of heart beat; cardiac cycle, electrocardiogram, cardiac output, fluid pressure and flow pressure in closed and open circulatory system; Composition and functions of blood & lymph; Mechanism of coagulation of blood, coagulation factors; anticoagulants, haemopoiesis.
 2. **Respiration:** Exchange of respiratory gases, transport of gases, lung air volumes, oxygen dissociation curve of haemoglobin, Bohr's effect, Hamburger's phenomenon (Chloride shift), control / regulation of respiration (**peripheral reflexes, chemical control and Higher centres**), Myoglobin.
 3. **Excretion:** Patterns of excretory products viz. Amonotelic, ureotelic uricotelic, ornithine cycle (Kreb's - Henseleit cycle) for urea formation in liver; Urine formation, **composition of Urine**, counter-current mechanism of urine formation, osmoregulation, micturition.

SECTION - B

- June to July
4. **Neural Integration:** Nature, origin and propagation of nerve impulse along with medullated & non-medullated nerve fibre, conduction of nerve impulse across synapse, **synaptic delay and synaptic fatigue, Neurotransmitter**.
 5. **Chemical integration of Endocrinology:** **Structure, chemical nature** and mechanism of **peptide and steroid hormone** action; physiology of hypothalamus, pituitary, thyroid, parathyroid, adrenal, pancreas and gonads, **Hormonal disorders**.
 6. **Reproduction:** Spermatogenesis, Capacitation of spermatozoa, ovulation, formation of corpus luteum, oestrous-anoestrous cycle, Menstrual cycle in human, fertilization, implantation and gestation, **parturition**

B.Sc. Zoology Semester-VI
SYLLABUS
B-ZOO-601 (i)
Aquaculture

Credits: 2
External Marks: 40
Internal Assessment: 10
Time allotted: 3 Hours

Objective: To apprise the students with the necessary basic information about fishery and aquaculture and to provide the technical and general knowledge necessary for competent fisheries management.

Course Outcomes:

- CO601(i).1. Students will understand concepts of fisheries, fishing tools and site selection for a fishery/aquaculture industry
- CO601(i).2. Students will be capable to undertake the small Aqua culture projects and will be able to explain induced breeding and post harvesting techniques.

Note: Nine questions are to be set in all and the candidates are required to attempt five questions including compulsory question. Question 1 is compulsory consisting of 8 parts (1.0 marks each) covering the entire syllabus. Answer to each part should not exceed 20 words. Out of remaining eight, four questions are to be set from each section A & B, possibly splitting them in parts. Candidate is required to attempt four questions, two from each section. All five questions carry equal marks

SECTION - A

1. **Introduction to world fisheries:** Production, utilization and demand.
2. **Fresh Water fishes of India:** River system, reservoir, pond, tank fisheries; captive and culture fisheries, cold water fisheries.
3. Fishing crafts and gears.
4. Fin fishes, Crustaceans, Molluscs and their culture.

SECTION - B

5. **Seed production:** Natural seed resources – its assessment, collection, Hatchery production
6. **Nutrition:** Sources of food (Natural, Artificial) and feed composition (Calorie and Chemical ingredients).
7. **Field Culture:** Culture, Culture in Pond-running waters; recycled water culture, cage culture; poly culture.
8. **Culture technology:** Induced breeding in fishes, techniques and hormones; Fish Biotechnology (Transgenesis and Cryopreservation of gametes).

April
to
MAY.

May
~~JUNE~~

B.Sc. Zoology Semester-VI
SYLLABUS
B-ZOO-602 (i)
Pest Management

Credits: 2

External Marks: 40

Internal Assessment: 10

Time allotted: 3 Hours

Objective: To impart knowledge for the identification of the different species of insect pests and learning of pest management techniques with the understanding of practical application of pesticides and their proper use.

Course Outcomes:

CO602(i).1. Students will be able to understand ecologically important and harmful insects.

CO602(i).2. Will be able to recognize ecology and morphology of insect pest and the nature of damage done by them.

Note: Nine questions are to be set in all and the candidates are required to attempt five questions including compulsory question. Question 1 is compulsory consisting of 8 parts (1.0 marks each) covering the entire syllabus. Answer to each part should not exceed 20 words. Out of remaining eight, four questions are to be set from each section A & B, possibly splitting them in parts. Candidate is required to attempt four questions, two from each section. All five questions carry equal marks

SECTION - A

Study of important insect pests of crops and vegetables:

- May
to
June
- Sugarcane:** (With their systematic position, habits and nature of damage caused. Life cycle and control of *Pyrilla perpusilla* only).
 - Sugarcane leaf-hopper (*Pyrilla perpusilla*)
 - Sugarcane Whitefly (*Aleurolobus barodensis*)
 - Sugarcane top borer (*Scirpophaga nivella*)
 - Sugarcane root borer (*Emmalocera depresella*)
 - Gurdaspur borer (*Bissetia steniellus*)
 - Cotton:** (With their systematic position, habits and nature of damage caused. Life cycle and control of *Pectinophora gossypiella*)
 - Pink bollworm (*Pectinophora gossypiella*)
 - Red cotton bug (*Dysdercus cingulatus*)
 - Cotton grey weevil (*Mylocherus undecimpustulatus*)
 - Cotton Jassid (*Amrasca devastans*)
 - Wheat:** Wheat stem borer (*Sesamia inferens*) with its systematic position, habits, nature of damage caused. Life cycle and control.
 - Paddy:** (With their systematic position, habits and nature of damage caused. Life cycle and control of *Leptocorisa acuta*)
 - Gundhi bug (*Leptocorisa acuta*)
 - Rice grasshopper (*Hieroglyphus banian*)
 - Rice stem borer (*Scirpophaga incertulus*)
 - Rice Hispa (*Diceladisa armigera*)
 - Vegetables:** (Their systematic position, habits and nature of damage caused. Life cycle and control of *Aulacophora faveicollis*)
 - Raphidopalpa faveicollis* – The Red pumpkin beetle.
 - Dacus cucurbitas* – The pumpkin fruit fly.
 - Tetranychus tecarius* – The vegetable mite.
 - Epilachna* – The Hadda beetle

SECTION - B

6. **Stored grains:** (Their systematic position, habits and nature of damage caused. Life cycle and control of *Trogoderma granarium*)
- June to
July
- (a) Pulse beetle (*Callosobruchus maculatus*)
 - (b) Rice weevil (*Sitophilus oryzae*)
 - (c) Wheat weevil (*Trogoderma granarium*)
 - (d) Rust Red Flour beetles (*Tribolium castaneum*)
 - (e) Lesser grain borer (*Rhizopertha dominica*)
 - (f) Grain & Flour moth (*Sitotroga cerealella*)
7. **Insect control:** Biological control, its history, requirement and precautions and feasibility of biological agents for control.
8. **Chemical control:** History, Categories of pesticides, important pesticides from each category to pests against which they can be used, insect repellants and attractants.
9. Integrated pest management.
10. Important bird and rodent pests of agriculture & their management.