BANGALORE UNIVERSITY
DEPARTMENT OF ZOOLOGY/ APPLIED GENETICS/FORENSIC SCIENCE
JNANA BHARATHI, BENGALURU 560 056

P. MAHABOOB BASHA *M.Sc., Ph.D.,*
Professor & Chairman

Chairman BOS for BSc- Zoology(UG)& BSc Genetics(UG) of BCU

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Date: 06.07.2022

To,

The Registrar
Bengaluru City University
Central College
Bengaluru 560 001

Sir,

Sub: Submission of Blowup syllabus in BSc(UG) Zoology (II semester) – reg.

The generalized syllabus proposed (NEP) for II semester BSC Zoology (UG) having ambiguity in certain contents and the same is questioned by the faculty and requested to solve the same. Further having said that several institutions not equipped to handle the practicals of new framework of syllabus proposed in NEP. Resultantly an online BOS meeting (Google meet) was called on 29.06.2002 & 01.07.2022 during 7.00pm to 9.00pm hrs. and formulated the BLOWUP syllabus by bringing modifications (Less than 5%) pertaining to BSc II semester Zoology (UG) to be followed for the current academic year. Since, the move is aimed to benefit both students and faculty, I request you to approve the same and upload in University website so that all institutions affiliated to BCU could follow the same contents of syllabus.

With regards.

Yours faithfully,

Sd/-

CHAIRMAN
BOS(UG) in Zoology

Copy to: BOE Chairman in Zoology (UG)

PROFESSOR AND CHAIRPERSON
Department of Zoology
Bangalore University, Jnanabharathi
Bengaluru - 560 056

Bengaluru City University

PROCEEDINGS OF THE ONLINE MEETING OF THE BOS IN ZOOLOGY (UG)

A meeting of the BOS in Zoology (UG) was held by online mode on 29.06.2002 & 01.07.2022 during 7.00pm to 9.00pm hrs.to deliberate on the notified agenda pertaining to the ambiguity in B.Sc. Zoology II semester syllabus and preparation of BLOWUP syllabus.

Preamble:

The generalized syllabus proposed (NEP) for II semester BSC Zoology (UG) having ambiguity in certain contents and the same is questioned by the faculty and requested to solve the same. Further having said that several institutions not equipped to handle the practicals of new framework of syllabus proposed in NEP.

Resolution:

The committee discussed the ambiguity in syllabus and formulated the BLOWUP syllabus by bringing modifications (Less than 5%) pertaining to BSc II semester Zoology (UG) to be followed for the current academic year.

Since, the move is aimed to benefit both students and faculty, the chairman, BOS(UG) was requested to communicate to University with a request to upload the same in in University website so that all institutions affiliated to BCU could follow the same contents of syllabus.

The online meeting was attended by the following members

1. Dr. P. MAHABOOB BASHA, Chairman Dept of Zoology, Bangalore University , Bangalore-560056
2. Dr. S. SRIVATSA, Asst. Prof of Zoology, Vijaya College, RV Road, Bangalore-560004. 9480585428. 3. Dr. Ganesh U, Asso. Prof. of Zoology MES college of Arts, Science and Commerce, Malleshwaram, Bangalore-560003
3. Mrs. N. DHANALAKSHMI Asst. Prof of Zoology, Vijaya College, RV Road, Bangalore-560004.
4. Dr. C.E. TRIVENI, V.V.Pura College of Science, K.R .Road, Bangalore -560004. 9902452934. thrivenishree@gmail.com
5. Dr. C.H. ASHOKA, Associate Prof. of Zoology, GFGC, Yelahanka, Bengaluru. 8088285777. kashoa73@gmail.com
6. Dr. A. HEMALATHA. Associate Prof. of Zoology, Maharani Cluster University, Bangalore-560001. 12hema25@gmail.com
7. Mr. CHANDRAPPA, Associate Prof. of Zoology, Nrupatunga University, Bangalore- 560001. 9886884996.
8. Dr. M. SHUBHA, Assistant Professor in zoology, BMS College for Women, Bengaluru-560004. shubhabhat21@gmail.com

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BLOWUP SYLLABUS FOR B.SC. ZOOLOGY (UG) II SEMESTER

FRAMED ACCORDING TO THE NATIONAL EDUCATIONAL POLICY (NEP 2020) TO IMPLEMENT FROM THE ACADEMIC YEAR 2021-22

ZOOLOGY- SEMESTER II
CORE COURSE

THEORY CONTENT

CONTENT	HOURS
UNIT-1	14
Chapter 1. Structure and Function of Biomolecules: • Structure and Biological importance of carbohydrates (Monosaccharides, Disaccharides and Polysaccharides. • Lipids: Biological importance and definitions of saturated and unsaturated fatty acids, Tri-acyl glycerols, Phospholipids, Glycolipids and Steroids. • Structure, Classification and General Properties of α-amino acids; structure of two essential (Histidine and Isoleucine) and non-essential amino acids (Glycine and Proline). • Levels of organization in proteins- Simple protein - definition with example and conjugate protein - definition with example.	
Chapter 2. Enzyme Action and Regulation	
• Nomenclature and classification of enzymes; Cofactors - definition with example. • Isozymes and Clinical use of Isozymes. Mechanism of enzyme action with specificity. • Enzyme kinetics; Factors affecting rate of enzyme-catalyzed reactions; Regulation of enzyme action. • Equation of Michaelis-Menten, Concept of Km and Vmax. Enzyme inhibition- definition with two examples. • Allosteric enzymes definition.	
UNIT-2	**14**
Chapter 3. Metabolism of Carbohydrates and Lipids	
• Metabolism of Carbohydrates: glycolysis, citric acid cycle, gluconeogenesis. • Lipids- Biosynthesis of palmitic acid and Ketogenesis. • β-oxidation of saturated fatty acids with even and odd number of carbon atoms.	
Chapter 4. Metabolism of Proteins and Nucleotides • Catabolism of amino acids: Transamination, Deamination, Urea cycle Illustration with explanation, nucleotides and vitamins (Vitamin A). • Peptide linkages- definitions of di, tri and polypeptide linkage with example.	
Unit - 3	**14**
Chapter 5. Digestion and Respiration in humans	
• Structural organization and functions of gastrointestinal tract and associated glands. • Mechanical and chemical digestion of food. Absorptions of carbohydrates, lipids, proteins, and water. • Structure of trachea and Lung. • Mechanism of respiration- Inspiration and expiration, Pulmonary ventilation; Respiratory volumes and capacities; Transport of oxygen and carbon dioxide in blood, Respiratory pigments- haemoglobin and myoglobin . Dissociation curves and the factors influencing it (pH, CO_2 and 2,3-diphosphoglyceride).	
Chapter 6. Circulation and Excretion in humans	

• Components of blood and their functions. • Blood clotting: Blood clotting system (Best and Tylor), Blood groups: Rh-factor, ABO and MN • Structure of mammalian heart Cardiac cycle; Cardiac output, Electrocardiogram, Blood pressure and its regulation • Structure of kidney and its functional unit; Mechanism of urine formation.	
Unit IV	**14**
Chapter 7. Nervous System and Endocrinology in humans	
• Structure of multipolar neuron, resting membrane potential (RMP) • Origin of action potential and its propagation across the myelinated (in detail) and unmyelinated (briefly) nerve fibers. Types of synapse (Mention chemical and electrical synapses with example). • Endocrine glands - pineal, pituitary, thyroid, parathyroid, pancreas and adrenal; hormones secreted by them and three functions of each. • Classification of hormones based on chemical nature; Mechanism of Hormone action (only lipid soluble).	
Chapter 8. Muscular System in humans	
• Histology of different types of muscles; Ultrastructure of skeletal muscle; Molecular and chemical basis of muscle contraction; Characteristics of muscle twitch, Motor unit, summation and tetanus (minimum 3 characters).	

ZOOLOGY SEMESTER II BLOWUP LAB CONTENT

Note: Models to be prepared by the students and should submit during the preparatory exam (for IA marks)

1. Preparation of models of nitrogenous bases- nucleosides and nucleotides.
2. Preparation of models of amino acids and dipeptides.
3. Preparation of models of DNA and RNA.

Experiments to be performed by students

4. Qualitative analysis of Carbohydrates (Molisch's test, Iodine test, Benedict's test, Selwinoff's test), Proteins (Xanthoprotein test, Biuret test, Ninhydrin test) and Lipids (Solubility test, Sudan III test , Salkowski's test).
5. Qualitative analysis of Nitrogenous wastes – Ammonia, Urea and Uric acid.
6. Separation of amino acids by paper chromatography.
7. Determination of the activity of enzyme (Urease)-Effect of [S] and determination of Km and Vmax. (Only demonstration)
8. Determination of the activity of enzyme (Urease) - Effect of temperature and time.
9. Action of salivary amylase under optimum conditions. (Only demonstration)
10. Quantitative estimation of Oxygen consumption by fresh water Crab.
11. Quantitative estimation of salt gain and salt loss by fresh water.
12. Estimation of Hemoglobin in human blood using Sahli's haemoglobino meter.
13. Counting of RBC in blood using Hemocytometer.
14. Counting of WBC in blood using Hemocytometer.
15. Differential staining of human blood corpuscles using Leishman stain.
16. Recording of blood glucose level by using glucometer (only demonstration).

Scheme of Practical Examination
II Semester BSc. Zoology
Biochemistry and Physiology
Course Code: DSCC5Z00P2

Duration: 4 hours Max. Marks: 25

1. Physiology/Biochemistry Experiment I (Nos 4-6 from syllabus) (10 marks)
2. Physiology/Biochemistry Experiment II (Nos 10-11 from syllabus) (10 marks)
3. Physiology/Biochemistry Experiment III (Nos 12-15 from syllabus) (05 marks)

Total 25 marks

BOS Members

9. Mr. T. Tulasipati Naidu, Asso. Prof. MES college of Arts, Sci. and Commerce, Malleshwaram, Bangalore-03.
10. Dr. Srivatsa S, Asst. Prof of Zoology, Vijaya College, RV Road, Bangalore-560004. 9480585428. 3. Dr. Ganesh U, Asso. Prof. of Zoology MES college of Arts, Science and Commerce, Malleshwaram, Bangalore-560003
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13. Dr. Ashoka CH, Associate Prof. of Zoology, GFGC, Yelahanka, Bengaluru. 8088285777. kashoa73@gmail.com
14. Dr. Hemalatha A. Associate Prof. of Zoology, Maharani Cluster University, Bangalore-560001. 12hema25@gmail.com
15. Mr. Chandrappa, Associate Prof. of Zoology, Nrupatunga University, Bangalore- 560001. 9886884996.
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Chairman
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Open Elective Zoology - Parasitology	42Hrs
Content	
Unit – 1	**14 Hrs**

Chapter 1. General Concepts

- Introduction, Parasites, parasitoids, host, zoonosis
- Origin of parasites (Without any theory)
- Basic concept of Parasitism, Symbiosis, Phoresy, commensalisms and mutualism (Definition with example)
- Host-parasite interactions and adaptations (with reference to leech and tapeworm)
- Occurrence, mode of infection and prophylaxis (General account)

Chapter 2. Parasitic Platyhelminthes

- Study of morphology, pathogenicity, prophylaxis and control measures of *Fasciolopsis buski, Schistosoma haematobium and Hymenolepis nana*
- Study of morphology, Life cycle, pathogenicity, prophylaxis and control measures of *Taenia solium*

Chapter 3. Parasitic Protists

- Study of morphology, pathogenicity, prophylaxis and control measures of *Giardia intestinalis, Trypanosoma gambiense,* Plasmodium *vivax.*
- Study of morphology, life cycle, pathogenicity, prophylaxis and control measures of *Entamoeba histolytica.*

Unit – 2	**14 Hrs**

Chapter 4. Parasitic Nematodes

- Study of morphology, pathogenicity, prophylaxis and control measures of *Ancylostoma duodenale* , *Wuchereria bancrofti* , *Trichinella spiralis*
- Study of morphology, life cycle, pathogenicity, prophylaxis and control *measures* of *Ascaris lumbricoides*
- Nematode plant interaction; Gall formation

Chapter 5. Parasitic Arthropods

- Biology, importance and control of Ticks (Soft tick *Ornithodoros*, Hard tick *Ixodes*), Mites (*Sarcoptes*, Lice (*Pediculus*), Flea (*Xenopsylla*), Bug (*Cimex*), Parasitoid (Wasps)

Chapter 6. Parasitic Vertebrates

- Cookicutter Shark
- Hood Mocking bird and Vampire bat and their parasitic behavior and effect on host

Unit – 3	**14 Hrs**

Chapter 7. Molecular diagnosis & clinical parasitology

- General concept of molecular diagnosis for parasitic infection
- Advantages and disadvantages of molecular diagnosis
- Fundamental techniques used in molecular diagnosis of endoparasites
- Immunoassay or serological techniques for laboratory diagnosis of endoparasites on the basis of marker molecules like *Giardia intestinalis*, B. coli, E. histolytica, L. donovani, Malarial parasite using ELISA, RIA
- Counter Current Immuno electrophoresis (CCI)
- Complement Fixation Test (CFT) PCR, DNA, RNA probe

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