DAVANGERE UNIVERSITY Department of Studies in Zoology, Shivagangothri, Davanagere

Prof. C. B. Ganesh Chairman, BOS in Zoology

Date: 12.09.2022

Proceedings of BOS (UG) meeting

In response to Registrar's letter dated 06.09.2022, a meeting of Board of Studies in Zoology (UG) was held on 12.09.2022.

Prof. C. B. Ganesh, Chairman, B.O.S. in Zoology welcomed the board members and briefed about the agenda of the meeting regarding the preparation of program structure and syllabus for Zoology (UG), Davangere University, Davangere for the successful implementation of NEP-2020 from the year 2022-23 onwards.

- 1) The BOS discussed thoroughly and finalized the syllabus for Zoology (UG) based on the guidelines of Davangere University as well as the program structure framed by Karnataka state higher education council, Bangalore.
- 2) The board resolved to approve the following program structure for B.Sc.
 - a) B.Sc. Botany major and Zoology as minor subject.
 - b) B.Sc. Zoology major and Botany as minor subject.
 - c) B.Sc. Zoology and Botany, both as major subjects.
- 3) The board prepared the syllabus based on syllabus provided by the state government for III and IV semesters of B.Sc.degree/B.Sc. Honours degree of Davangere University for the Year 2022-23 onwards and resolved to approve the same.
- 4) The BOS has prepared and approved the panel of examiners as per seniority for examination to be held during 2022-23 onwards.

The Chairman thanked all the members for their active participation and kind cooperation.

B O S Chairman PGBOS in 2000gn Davanagere University

MEMBERS PRESENT:

1. Dr. C. B. Ganesh
Professor
Department of Zoology
Karnataka University
Dharwad.

Chairman-BOS

A Book

2. Dr. Dhananjaya S.G. Member Associate Professor, Department of Zoology, Vedavathi Govt. First Grade College Hiriyur-577598

The participals

3. Dr. Ramesh Iyyanahalli Associate Professor, Department of Zoology, Govt. Science College, Chitradurga.

Member

Panul 12/9/22

4. Dr. Ambarisha Chabbi Member Assistant Professor,
Department of Studies in Zoology,
Davangere University,
Davangere.

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MEMBERS ABSENT:

1. Dr. G. Manohar
Associate Professor,
Department of Zoology,
Veerashaiva College,
Ballari Contonment,
Ballari.

Member

Dr. K.L. Naik
 Associate Professor,
 Department of Zoology,
 Sahyadri Science College,
 Shivamogga.

Member

Dated:12.09.2022

DAVANGERE WUNIVERSITY

Subject codes of four years graduate programs in Zoology

for B.Sc.(Hours) as per NEP-2020

Semester	Subject code	Subject	Theory/ Practical
	UGZOODSCT3	Molecular Biology Bioinstrumentation & Techniques in Biology	Theory
III	UGZOODSCP3	Molecular Biology Bioinstrumentation & Techniques in Biology	Practical
	UGZOOOEC3	Endocrinology	Theory
	UGZOOSEC3	Artificial Intelligence	Theory
	UGZOODSCT4	Gene Technology, Immunology and Computational Biology	Theory
IV	UGZOODSCP4	Gene Technology, Immunology and Computational Biology	Practical
	UGZOOOEC4	Animal Behaviour	Theory
	UGZOOSEC4	Constitution of India	Theory

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Registrar
Davangere University
Shivagangotri, Davangere

chairman pgBOS in Zoology Chairman-BOS

Semester III - Zoology

Core Course Content

Course Title: Molecular Biology, Bioinstrumentation & Techniques in Biology	Course Credits: 4
Course Code: DSCC5ZOOT3	L-T-P per week: 4-0-0
Total Contact Hours: 56	Duration of ESA: 2 Hours
Formative Assessment Marks: 40	Summative Assessment Marks:60
Model Syllabus Authors:	

Course Outcomes (COs):

At the end of the course the student should be able to:

- 1. Acquire better understanding and comprehensive knowledge regarding most of the essential aspects of Molecular Biology subject which in turn will provide a fantastic opportunity to develop professional skills related to the field of molecular biology.
- 2. Gain knowledge on principal molecular events of cell incorporating DNA Replication, Transcription and Translation in prokaryotic as well as eukaryotic organisms.
- 3. Acquire skills in instrumentation and techniques in biology.

Content	Hours
Unit I	14
Chapter 1: Process of Transcription • Fine structure of gene (Cistron, Recon, Muton) • RNA polymerases - types and functions • Transcription in prokaryotes and eukaryotes	8
Chapter 2: Process of Translation	6
Unit II	14
 Chapter 3. Regulation of gene expression-I Regulation of gene expression in prokaryotes- lac operon (inducible) and trp operon (repressible) in <i>E. coli</i> Regulation of gene expression in eukaryotes - Role of chromatin (euchromatin and heterochromatin) in gene expression Post-transcriptional modification: capping, splicing, polyadenylation Concept of RNA editing (mRNA), gene silencing, and RNAi 	
	<u> </u>
 Chapter 4. Regulation of gene expression-II Post-translational modifications: purpose, advantages, and significance; glycosylation, methylation, phosphorylation, and acetylation. Intracellular protein degradation (lysosomal autophagy and ubiquitin proteosome pathway). 	5

	Unit III	14
Chan		14
Спар	ter 5: Microscopy	9
•	Principles and applications of Light microscopy, Dark field microscopy, Phase contrast microscopy, Fluorescence microscopy, Confocal microscopy and Electron microscopy (SEM and TEM).	
Chap	ter 6: Centrifugation and Chromatography	5
•	Centrifugation: Principles, types, and applications (High speed and Ultracentrifugation)	
•	Chromatography: Principle and applications of: TLC, HPLC and GC	
	Unit IV	14
Chapt	ter 7: Biochemical Instrumentation Colorimetry and Spectrophotometry: Beer-Lambert's law, Absorption	6
•	spectrum, UV-VL Spectrophotometer. pH meter, measurement of pH Principle, applications and safety measures of Radio-tracer techniques - Autoradiography.	
Chapt	er 8: Molecular Techniques	8
•	Principle and applications of Agarose gel-electrophoresis, SDS-PAGE, DNA Sequencing (Sanger's Dideoxy method)	
•	PCR, DNA Fingerprinting, ELISA, Southern Blotting and Western Blotting.	

Suggested Readings:

- Bruce Alberts, Alexander Johnson, Julian Lewis, Martin Raff, Keith Roberts, and Peter Walter. Molecular Biology of the Cell, 4th edition. New York: Garland Science (2002).
- 2. Daniel L. Hartl and Maryellen Ruvolo. Genetics: Analysis of Genes and Genomes, 8th Edition. Burlington, Mass.: Jones & Bartlett Learning (2012).
- 3. Gerald Karp. Cell and Molecular Biology: Concepts and Experiments, 5th Edition. Wiley Publication (2008).
- 4. Harvey Lodish, Arnold Berk, Paul Matsudaira, Chris A. Kaiser, Monty Krieger, Freeman. Molecular Cell Biology, 5th edition. W. H. & Company (2003).
- 5. James D. Watson, Tania A. Baker, Stephen P. Bell, Alexander Gann, Michael Levine, Richard Losick. Molecular Biology of the Gene, 5th edition. Cold Spring Harbor Laboratory Press (2003).
- 6. Stryer, Lubert. Biochemistry, 2nd Edition. W. H. Freeman and Company, New York (1981).

Pedagogy: Written Assignment/Presentation/Project / Term Papers/Seminar

Formative Assessment	
Assessment Occasion	Weightage in Marks
House Examination/Test	15
Written Assignment/Presentation/Project / Term	15
Class performance/Participation	. 10
Total	40

Core Course Lab Content

Course Title: Molecular Biology, Bioinstrumentation and Techniques in Biology	Course Credits: 2
Course Code: DSCC5ZOOP3	L-T-P per week: 0-0-4
Total Contact Hours: 56	Duration of ESA: 3 Hours
Formative Assessment Marks: 25	Summative Assessment Marks:25

Course Outcomes (COs):

At the end of the course the student should be able to:

- 1. Understand the applications of biophysics and principle involved in bio-instruments.
- 2. Understand the methodology involved in bio techniques.
- 3. Aquire knowledge and practical skills of using instruments in biology and medical field.
- 4. Perform techniques involved in molecular biology and diagnosis of diseases.

Lab Course Content

List of experiments	14 units (1unit- 4hrs)
1. To study the principle and applications of simple, compound and binoc microscopes.	cular 1
2. To study the principle and applications of various lab equipments- pH meter, Electronic balance, Vortex mixer, use of glass and micropipettes	2
Laminar air flow, Incubator, shaker, Water bath and centrifuge.	
3. To prepare fixatives, stains and Buffer solutions (Phosphate, Citrate, Tr. HCl buffer)	is- 1
4. To estimate amount of RNA by Orcinol method.	2
5. Demonstration of differential centrifugation to fractionate components i given mixture.	in a 1
6. To estimate amount of protein by Lowry's method.	1
7. To identify different unknown amino acids using ascending paper chromatography.	1
8. Extraction of DNA from the given animal tissue sample.	2
9. To estimate amount of DNA by di-phenyl amine (DPA) method. 10. Micrometry of different cell types	2
	1

Suggested Readings:

- 7. Bruce Alberts, Alexander Johnson, Julian Lewis, Martin Raff, Keith Roberts, and Peter Walter. Molecular Biology of the Cell, 4th edition. New York: Garland Science (2002).
- 8. Daniel L. Hartl and Maryellen Ruvolo. Genetics: Analysis of Genes and Genomes, 8th Edition. Burlington, Mass.: Jones & Bartlett Learning (2012).
- 9. Gerald Karp. Cell and Molecular Biology: Concepts and Experiments, 5th Edition. Wiley Publication (2008).
- 10. Harvey Lodish, Arnold Berk, Paul Matsudaira, Chris A. Kaiser, Monty Krieger, Freeman. Molecular Cell Biology, 5th edition. W. H. & Company (2003).
- James D. Watson, Tania A. Baker, Stephen P. Bell, Alexander Gann, Michael Levine, Richard Losick. Molecular Biology of the Gene, 5th edition. Cold Spring Harbor Laboratory Press (2003).
- 12. Stryer, Lubert. Biochemistry, 2nd Edition. W. H. Freeman and Company, New York (1981).

Pedagogy: Written Assignment/Presentation/Project / Term Papers/Seminar

Formative Assessment	
Assessment Occasion	Weightage in Marks
House Examination/Test	05
Written Assignment/Presentation/Project /Term papers/Seminar	10
Class performance/Participation	10
Total	25

Core Course IV Content

Semester: IV Semester, B. Sc., (Hons) Zoology

Course Title: Core Course Content: Gene Technology Immunology and Computational Biology	Course Code: DSCC5ZOOT4
Course Type: Discipline Core Theory, L-T-P: 4-0-0	Course Credits: 4
Total Contact Hours: 56	Duration of ESA: 2 Hrs.
Formative Assessment Marks: 40	Summative Assessment Marks:60

Course Outcomes (COs):

At the end of the course the student should be able to:

- 1. Acquire knowledge on versatile tools and techniques employed in genetic engineering and recombinant DNA technology.
- 2. Apply knowledge on genetic engineering techniques in basic and applied experimental biology.
- 3. Acquire a fundamental working knowledge of the basic principles of immunology.
- 4. Understand the mechanisms and significance of immune functions.
- 5. Design experiments and perform data interpretation by applying the principal statistical methods and infer the significance of experimental results.
- 6. Learn use of statistical software and its applications in biology.

Course Content	Hrs
Unit I	14
apter 1: Principles of Gene Manipulation	07
 Recombinant DNA Technology: Introduction, steps involved. Restriction Enzymes and Ligases and Nucleic acid modifying enzyme. Gene cloning Vector: Concept of plasmids-pBR322, Lamda phage vectors, cosmids Gene transfer techniques (Direct and indirect). Screening and selection of recombinant colonies 	
 Applications of Genetic Engineering Transgenic animals (Transgenic cow, Transgenic Fish); Transgenic plants (cry protein); Gene silencing (Knock out and Knock in mouse). Production of Human Recombinant insulin and Hybridoma technology: Synthesis and applications of Monoclonal antibodies Gene Therapy (SCID) Biosensors and its applications 	07

Unit II	14
Chapter 3: Introduction to the Immune System	07
 Defence against diseases: Introduction, First and second line of defence, Innate and acquired immunity; Antigen presenting cells (APC's), Role of B and T-lymphocytes (Humoral immunity and cell mediated immunity), primary and secondary immune response. Types of Immunity Functional aspects of organs of the Immune system - Thymus and bone marrow, spleen, Lymph Node, Small intestine and Liver (Peyer's patches 	
and Von Kupffer cells).	
Chapter 4: Antigens and Antibodies	07
 Antigens and haptens: Properties (foreignness, molecular size, heterogeneity). B and T cell epitopes. Structure of IgG and functions of different classes of immunoglobulins. Major histocompatibility complex - Structure of MHC I & II. 	
Unit III	14
Chapter 5: Clinical Immunology	07
 Immunity against diseases of viral, bacterial and protozoan infections. Vaccines: Types and Uses - Immunization schedule for children. Transplantation immunology: Transplantation of organ- Types, graft rejection and Immuno-suppressors. 	
Chapter 6: Bioinformatics	07
 Databases: Sequence and structural Sequence analysis (homology): Pairwise and Multiple Sequence alignment-BLAST, CLUSTALW, Sequence alignment-FASTA. Scope and applications of Bioinformatics. 	
Unit IV	14
Chapter 7: Biostatistics I	07
 Measures of central tendency: Mean, Median, Mode. Data summarizing: Frequency distribution, Graphical presentation - bar diagram, pie diagram, histogram. Elementary idea of probability and its applications. 	
Chapter 8: Biostatistics II	
Measures of dispersion: Range, Standard Deviation, Variance.Correlation and Regression.	
 Tests of significance: F-test, ANOVA, t-test and Chi square test. 	07

Topics Suggested for Assignment/ Formative Assessment:

1. Q/A, Short Question, Quiz, MCQ, Assignment etc.

Recommended Books:

- 1. Primrose & Twyman. Principles of Genome Analysis and Genomics. Blackwell (2003).
- 2. Hartl & Jones. Genetics: principles & Analysis of Genes & Genomes. Jones & Bartlett (1998).
- 3. Sambrook et al. Molecular Cloning Vols I, II, III. CSHL (2001).
- 4. Primrose. Molecular Biotechnology. Panima (2001).
- 5. Clark & Switzer. Experimental Biochemistry. Freeman (2000)
- 6. Sudbery. Human Molecular Genetics. Prentice-Hall (2002).

- 7. Wilson. Clinical Genetics-A Short Course, Wiley (2000).
- 8. Pasternak. An Introduction to Molecular Human Genetics. Fritzgerald (2000).
- 9. Biostatistical Analysis (Fourth Edition) by Jerrold H. Zarr, Pearson Education Inc., Delhi.
- 10. Statistical Methods (Eighth Edition) by G. W. Snecdecor and W. G. Cochran, Willey Blackwell
- 11. Biostatistics (Tenth Edition) by W.W. Daniel and C. L. Cross, Wiley
- 12. Introductory Biological Statistics (Fourth Edition) by John E. Havel, Raymond E. Hampton and Scott J. Meiners
- 13. Westhead et al. Bioinformatics: Instant Notes. Viva Books (2003)
- 14. Genetic engineering: Sandhya Mitra BITS, Pilani
- 15. Principles of Biostatistics Khan and Khanam
- 16. Transgenic animals: Ranga

Web Source: Suitable web sources may referred

Pedagogy: Lectures, Presentations, videos, Assignments and Weekly Formative Assessment Tests.

Assessment Occasion	Weightage in Marks
Assignment/Field Report/Project	15 Marks
Test	20 Marks
Participation in class	05 marks
Total	40 Marks

Course Lab Content

Course Title: Gene Technology, Immunology and Computational Biology	Course Credits: 02
Course Type: Minor Discipline Core Practical, L-T-P: 0-0-4	Corse Code: DSCC5ZOOP4
Total Contact Hours: 56	Duration of ESA: 3 Hours
Formative Assessment Marks: 25	Summative Assessment Marks: 25
Model Syllabus Authors:	

Course Outcomes (COs):

At the end of the course the student should be able to:

- 1. Accurately, safely and appropriately use all the equipment regularly used in Molecular Biology (DNA manipulation, including balances, pipettes, electrophoresis and centrifuges).
- 2. Prepare chemical solution and reagents to the precision appropriate to the task.
- 3. Demonstrate knowledge of the biochemical basis underpinning the molecular biology techniques.

Lab IV Course Content

1	List of labs to be conducted	Hour
1.	Calculate the mean, median, mode and standard deviation (with suitable examples).	2
2.	Measure the height and weight of all students in the class and apply statistical measures.	1
3.	Determination of ABO Blood group and Rh factor.	1
4.	To study Restriction enzyme digestion using teaching kits (Demonstration only).	1
5.	To detect genetic mutations by Polymerase Chain Reaction (PCR) using teaching kits (Demonstration only).	1
6.	Demonstration of agarose gel electrophoresis for detection of DNA.	1
7.	Demonstration of Polyacrylamide Gel Electrophoresis (PAGE) for detection of proteins.	2
8.	To calculate molecular weight of unknown DNA and protein fragments from gel pictures. (https://youtube/mCiCiO0cfbg)	1
9.	To learn nucleotide sequence database.	1
	To learn sequence alignment: Pairwise alignment (Protein/ DNA).	1
11.	Study of immune techniques- ELISA and RIA	1
12.	Study of lymphoid organs- Bone marrow, thymus, spleen, lymph node, tonsils.	1
13.	One day field visit pertaining to practicals	

Pedagogy: Lectures, Presentations, videos, Labs, Assignments, Tests, Individual or group Field oriented Project Report.

Formative Assessment	
Assessment Occasion	Weightage in Marks
Assignment/Monograph	10
Test	10
Participation in class	05
Total	25

Semester: III Zoology

Open Elective Course Content

Course Title: ENDOCRINOLOGY Course Code: OEC5ZOOT3	Course Credits:3		
Total Contact Hours: 42	Duration of ESA: 2 Hours		
Formative Assessment Marks: 40	Summative Assessment Marks:60		
Model Syllabus Authors:			

Course Outcomes (Cos):

At the end of the course the student should be able to:

- 1. Differentiate among endocrine, paracrine and autocrine systems.
- 2. Describe the different classes and chemical structures of hormones.
- 3. Identify the glands, organs, tissues and cells that synthesize and secrete hormones, hormone precursors and associated compounds.
- 4. Identify and discuss the integration of the endocrine system in general with focus on specific interactions.
- 5. Explain the consequences of under- and overproduction of hormones.

Course Content

Content	Hrs.
Unit I	14
Chapter 1. About Endocrine glands • Endocrine glands and classifications of hormones. • Characteristics and Transport of Hormones. • Chapter 2. Hypothalamus-Hyphophysis • Hypothalamus as a neuroendocrine organ	
 Pituitary – Structure and functions Chemical nature, mode of action, and functions. Pituitary disorders 	
 Chapter 3. Pineal gland Structure and functions of Pineal gland. Hypo- and hyperactive states of the gland. 	
Unit II	14
 Chapter 4. Thyroid and parathyroid Histological structure of the glands. Chemical nature, mode of action, and functions of the hormones. Hypo-and hyperactive states of the glands. 	
 Chapter 5. Adrenal cortex and medulla – Histological structure of the gland. Chemical nature, and functions Hypo- and hyperactive states of the gland. 	
Chapter 6. Prostaglandins	

Unit – III	14
Chapter 7: Pancreas:	-
 Pancreatic islets - histological structure. Chemical nature, and function. Hormonal control of blood sugar. Hyperinsulinism and diabetes mellitus. 	
Chapter 8: Gastro-intestinal hormones – • Functions and regulation of secretion of the hormones.	
Chapter 9: Different types of Rhythms –	
 Ultradian, circadian, infradian. Different zeitgebers and their relation with circadian clock 	
 Neural basis of biological clock and role of suprachiasmatic nuclei. Sleep- wakefulness cycle. Time keeping genes. Jet-lag and shift 	

Text Books & Suggested Readings:

work.

- 1. William's Text Book of Endocrinology
- 2. Larsen et al.: An Imprint of Elsevier.
- 3. Endocrinology, Mac E. Hadley, Pearson Education.
- 4. The Kidney-An outline of Normal and Abnormal Functions, by H.E. Dewardener, ELBS.
- 5. Vander's Human Physiology, E.P. Widmaier et al., McGraw-Hill, Higher Education.
- 6. Concise Medical Physiology by S.K. Chaudhuri, New Central Book Agency.
- 7. Endocrinology. Vols. I, II and III by L.O. DeGroot. W.B. Saunders Co.
- 8. The Physiology of Reproduction, Vols. I & II, by E. Knobil and J.D. Neil. Raven Press.
- 9. Guyton and Hall. Textbook of Medical Physiology. 13th Edition.
- 10. Histology: A Text and Atlas. Sixth Edition. Ross & Pawlina. Lippincott Williams & Wilkins.
- 11. Vertebrate Endocrinology by D. O. Norris.

Pedagogy: Chalk and Talk, PPT, Group discussion, Seminar.

Formative Assessment			
Assessment Occasion	Weightage in Marks		
House Examination/Test	15		
Written Assignment / Case Presentation / Project / Seminar	20		
Class performance/Participation	05		
Total	40		

Semester: IV Zoology

Open Elective Course Content

Course Title: Animal Behaviour Course Code: OEC5ZOOT4	Course Credits:3
Total Contact Hours: 42	Duration of ESA: 2 Hours
Formative Assessment Marks: 40	Summative Assessment Marks:60
Model Syllabus Authors:	

Course Outcomes (COs):

At the end of the course the students will be able to:

- 1. Examine and critically to evaluate the emergence of ideas that have shaped how we observe and collect data on animal behaviour.
- 2. Understand the main historical ideas that underpin animal behaviour theory
- 3. Critically review hypotheses to explain animal behaviour
- 4. Understand different methods for collecting data on animal behavior
- 5. Understand the methods and significance of different types of communications.

Course Content

Content	42Hrs
Unit – I	7 62 1-09
Chapter 1.: Introduction to Animal Behaviour	14
 Brief contributions of Karl Von Frish, Ivan Pavlov, Konrad Lorenz, Niko Tinbergen. Proximate and ultimate causes of behaviour. 	
Chapter 2. Patterns of Behaviour	
 Stereotyped Behaviors - Orientation and Reflex. Individual Behavioural patterns: Instinct and Learned Behaviour Associative learning, classical and operant conditioning, Habituation, Imprinting. 	
Unit – II	14
 Social Behaviour: Social organization in termites and honey bees. Social behaviour: Altruism. Conflict behaviour. Chapter 4. Sexual Behaviour Sexual dimorphism, Mate choice in peacock. Intra-sexual selection (male rivalry in red deer). Kinship theory: Relatedness & inclusive fitness. Parental care in fishes (Nest Building & cost benefit) 	

Unit – III	14
Chapter 5. Chronobiology	
 Brief historical developments in chronobiology. Adaptive significance of biological clocks. 	
Biological Rhythms	
Chapter 6: Communications in animals	
Bioluminescence in deep sea fishes and insects	
 Territoriality in Monkeys and Dogs 	
 Role of pheromones in animal communication- Insects and Vertebrates. 	
Communication in Honey bees (Waggle Dance)	

Suggested Readings:

- 1. Animal Behaviour by Drickamar.
- 2. John Alcock, Animal Behaviour, Sinauer Associate Inc., USA.
- 3. Paul W. Sherman and John Alcock, Exploring Animal Behaviour, Sinauer Associate Inc., Massachusetts, USA.
- 4. Chronobiology: Biological Timekeeping Jay. C. Dunlap, Jennifer. J. Loros, Patricia J. DeCoursey (ed). 2004, Sinauer Associates, Inc. Publishers, Sunderland, MA, USA
- 5. Insect Clocks D.S. Saunders, C.G.H. Steel, X., Afopoulou (ed.) R.D. Lewis. (3rdEd) 2002 Barens and Noble Inc. New York, USA
- 6. Biological Rhythms: Vinod Kumar (2002) Narosa Publishing House, Delhi/ Springer-Verlag, Germany.

Pedagogy: Chalk and Talk, PPT, Group discussion, Seminar, Interaction, virtual lab, Lab visit

Assessment Occasion	Weightage in
House Examination/Test	15
Written Assignment / Case Presentation / Project / Seminar	20
Class performance/Participation	05
Total	40

Course pattern and scheme of examination for B.Sc./ B.Sc. (Hons.) as per NEP (2021-22 onwards)

Subject: ZOOLOGY

Credits	Is	Practica	2	k	2	
Cre	Тheory		4	2	1	
	Total Marks / paper			100	50	
Duration of Exam (hours)	Isoitora		2	1	3	
Duration (ho	A	Тћеогу		2	ı	
ks /Paper		VI	25	1	25	
in. Marl	tical	.niM	6	1	6	
fax. & M	Practical	.xsM	25	1	25	
Pattern N	Theory	VI	40	40	1	
Examination Pattern Max. & Min. Marks /Paper		ory	.niM	21	21	1
Exa		Max.	09	09	1	
ırs / ek	Practical		4	1	4	
Hours week	Треогу		4	3	1	
	ernod gair	ПеясТ	99	42	56	
	Title of the paper		CORE subject	Open elective	Skill Enhancement Course	
	Semester			I / III /	II / I	
SL No.	No.					

Scheme of Internal Assessment Marks: Theory

40	TOTAL Theory IA Marks 40	
	and collection of data etc.,	T
15	Assignments / Seminar / Case Study / Project work / Reports on - Field visits made for observation	U
20	2 A : Illeritat Lests (Milmum of Lwo)	1 1
CO	O Internal Track (Minimum Fr)	5
On	Attendance	
	No.	Z
IA Marks	Sl. Particulars	V.
		2

Practicals:

Problem of the Party of the Par		
25	TOTAL Theory IA Marks 25	
05	Acure participation in practical classes (Attendance)	
10	Active portionation in amotion 1 december 1	در
10	Report / Seminar on practical experiments, etc.	1
	Practical Test	_
LA INIAI NO	0.	No.
IA Marks	Particulars	SI.

Members

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(Dr. Ambanisha

Paramagere Phiversoniesh

Scheme of Practical Examination B.Sc. Zoology III Semester

Core Subject: Molecular Biology, Bioinstrumentation and Techniques in Biology

Du	uration: 3 hours Max.	marks: 25
1.	Extraction of DNA from the given animal tissue	
	OR	
	Estimation of DNA / RNA / Proteins	10
2.	Separate and Identify the given unknown amino acids by using ascending paper	02000
	Chromatography/micrometry/preparation of stain or fixatives or buffers.	07
3.	Identify and give the working principle of the spotters A and B	4X2= 08

Scheme of Practical Examination B.Sc. Zoology IV Semester

Zoology Core Subject: Gene Technology, Immunology and Computational Biology

Duration	Max. marks: 25	
1.	Determine the blood group of the given sample and comment	05
2.	Problem from Chapter 7	06
3.	Problem from Chapter 8	06
4.	Identify and comment on the given spotters A and B	08
(PCR/PAGE/Restriction enzyme kit/FASTA/BLAST/Database/ lymph		mphoid
	organs)	

Model Question Paper BSC III Semester Zoology Open Elective (OE)

ENDOCRINOLOGY

Time: 2.5 hours

Max.Marks:60

Instructions to Candidates:

All Sections/parts are compulsory.
 Draw neat labelled diagrams wherever necessary.

PART A

I. Answer any five of the following

(5X2=10)

- 1. Mention four examples for endocrine glands
- 2. What are the neuroendocrine cells of hypothalamus?
- 3. List out any four functions of melatonin
- 4. What are the different types of biological rhythms?
- 5. Mention the 3 hormones of adrenal cortex.
- 6. What are the types of cells found in parathyroid gland? Mention one function.
- 7. How does jet lag and shift work contribute to sleep deprivation?
- 8. Name any two hormones of pituitary

PART-B

II. Answer any five of the following

(5X4=20)

- 9. Explain the functions and regulations of cholecystokinin.
- 10. What are time keeping genes? How does it influence sleep?
- 11. Explain the histological structure of islets of Langerhans.
- 12. Write a note on prostaglandins...
- 13. Mention the different types of cells of adenohypophysis with its secretions.
- 14. Write a note on hypersecretion of parathyroid gland.
- 15. Write a note on neurohypophysis

PART-C

III. Answer any three of the following

(3X10=30)

- 16. What are hormones? Classify the hormones based on chemical nature.
- 17. Explain the hormonal control of blood sugar.
- 18. Discuss the functions of thyroid gland. Add a note on its hypersecretion.
- 19. Explain how zeitgebers affect time signals and reset sleep.
- 20. Give an account on histomorphology of adrenal gland.

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68/10/22 W Registrar
Davangere University
Shivagangotri, Davangere