EKLAVYA UNIVERSITY, DAMOH (M.P.)

Scheme of Examination B.Sc III Year

/For batch admitted in Academic Session 2020-21/

Subject wise distribution of marks and corre

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									Maxii	mnm	Marks	Maximum Marks Allotted				Ö	Contact	L	
Š	Subject Name	Subject Code						Theory Slot	y Slo	t			Practical Slot	al Slot	Total	P. P.	Periods Per week		į
Š.			raper Name	Ŧ	Final Yearly	early		Ha	Half Yearly	arly		Quiz/		I ob Work	Marks			Т	Credits
\perp				P1	P2	P3	P4	P1 F	P2 I	P3 1	P4 A	Assignment' Attendence	End Sem	Sessional		L	H	Ъ	
		BPIND20Y301	Summer Project/Industrial Training												150	0	0	0	==
1	Соштоп	BSECC20Y301	Skill Enhancement Course (SEC-3)	09				30				10			100	7	0	0	61
		BSECD20Y302	Skill Enhancement Course (SEC-4)	09				30				10			100	4	0	0	4
		BYOGA20Y301	BYOGA20Y301 Yoga -3 (University Core)	ı	ı	1		1	'	1		Ī	09	40	100	2	0	0	61
		BZ00L20Y301	Genetics Paper - I (DSE - 2A)	30				15		\vdash	-	w			50	3	1-	10	4
		BZ00L20Y302	Ecology and Applied Zoology Paper - II (DSE - 2B)		30			-	15			w			50	3	-	0	4
7	Zoology	BZOOL20Y303	Paper I and Paper II, Practical (Practical 2A & 2B, DSE-2C)								-		30	20	50	0	0	7	7
		BZOOL20Y304	Animal Biotechnology Paper - III (DSE - 2D, for Honors)			30				15		w			50	6	-	0	4
		BZOOL20Y305	Paper III, Practical (Practical 2D for Honours, DSE-2E)										8	20	20	0	0	-	1
e.	Соттоп	BASPR20Y301	Assingment Presentation for 3 Discipline Specific Elective											50	20	0	3	0	۳,
Indi	uction program	ime of three w	Induction programme of three weeks (MC): Physical activity, Craativa		Ilminioned II.				\mathbf{I}	-	ĺ					1	1	+	T

Induction programme of three weeks (MC): Physical activity, Creative Arts, Universal Human Values, Literary, Proficiencey Modules, Lectures by Eminent People, Visits to local Areas, Familiarization to Dep. Branch & Innovations.



Eshi by Mad	thya Pradesh f	iji Vichwaidy	olaya (Sthipma Avam Senchalana) Adhyadesh, 2020	
Clas	SS		E 50	B.Sc. Zoology
Yea	r			III Year
Sub	ject	& Sı	ıbject Code	Zoology - BZOOL20Y301
			English	Genetics Paper - I
F	Pape	r	हिन्दी	अनुवांशिकी
Max	x. M	arks		30 (ETE) + 20(IA) = 50
(Cred	it	Total Credits	
L	Т	P	4	
3	1	0	4	

Course Objectives:

Students will understand the genetic variation through linkage and crossing over, gene frequency, chromosomal aberrations and sex determination. Students will understand the theories of classical genetics and blood group inheritance in man. Understood themolecular structure of genetic materials and understood the mechanism ofgene expression and regulation character formation.

Course Outcome:

At the end of the course, learners will be able to:

- 1. Understand the theories of classical genetics and blood group inheritance in man
- 2. Describe the genetic variation through linkage and crossing over, chromosomal aberrations and sex determination.
- 3. Understood the genetic defects and inborn errors of metabolism and genetic counseling and role of inbreeding and outbreeding.
- 4. Understand the molecular structure of genetic materials and understood the mechanism of gene expression and regulation character formation.
- 5. Illustrate the mechanism of replication, transcription and translation.
- 6. Understand the post transcriptional and post translational modifications.

Student Learning Outcomes (SLO):

- 1. Students will have In-depth understanding on the principles and mechanisms of inheritance.
- 2. Explain the fine structure and molecular aspects of genetic material.
- 3. Learn the mechanism of Inheritance in Man.
- 4. Expose the learners to the emerging field of research and equip them the various research methodologies.
- 5. Students will understand the concept of mutation.
- 6. Students will understand DNA structure.
- 7. Students will Paraphrase the Central dogma of molecular biology.

Unit	Syllabus	Periods

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UNIT - I	Heredity and Genetic Meterial 1. Mendel's laws of heredity. 2. Variations-Sources and types. 3. Stucture, Molecular organization and function of DNA and RNA and types of RNA 4. DNA replication in Prokaryotes. 5. Nucleosome (solenoid Model).	15
	अनुवांशिकता तथा अनुवांशिक पदार्थ 1. मेडल के अनुवांशिकता के नियम 2. विभिन्नतायें:— स्त्रोत तथा प्रकार 3. डी.एन.ए. एवं आर.एन.ए. की संरचना,आणिवक संगठन एवं कार्य तथा आर.एन.ए.के प्रकार 4. प्रोकेरियोटस में डी.एन.ए. का द्विगुणन 5. न्यूक्लियोसोम (सोलीनाइड मॉडल)	
	Gene Expression 1. Genetic Code 2. Transcripation in Prokaryotes. 3. Translation in Prokaryotes. 4. Gene expression: Regulation of protein synthesis and Lac operon model. 5. Split gene ,Overlapping gene,Pseudo gene.	15
UNIT - II	जीन अभिव्यक्ति 1. अनुवांशिक कूट 2. प्रोकेरियोट्स में अनुलेखन 3. प्रोकेरियोट्स में अनुवाद 4. जीन अभिव्यक्तिः प्रोटीन संश्लेषण का नियम तथा ओपेरॉन मॉडल 5. स्पिलट जीन,ओवरलैपिगं जीन,स्यूडोंजीन	13
	Linkage and Chromosomal aberration 1. Linkage and Crossing over -Types and Significance. 2. Sex datermination-Chromosomal and Genetic balance theory. 3. Sex linked inheritance (Haemophilia, Colour blidness). 4. Structural and numerical changes in chromosomes. 5. Mutation types and Mutagens.	1.5
UNIT - III	सहलग्नता तथा गुणसूत्रीय विपथन 1.सहलग्नता तथा कांसिगं ओवर:— प्रकार तथा महत्व 2.लिगं निर्धारण— गुणसूत्रीय तथा अनुवांशिक संतुलन सिद्धांत 3.लिगं सहलग्न अनुवांशिकता— हीमोफिलिया,वर्णान्धता 4.गुणसूत्रो में सरचनात्मक तथा संख्यात्मक परिवर्तन 5.उत्परिवर्तन—प्रकार तथा म्यूटाजेन	15
	Human Genetics 1. Human karyotype. 2. Human Genome project. 3. Maltiple allele and incheritance of blood group. 4. Autosomal and sex Chromosome syndromes in human. 5. Genetic diseases in human -sickle cell anaemia, Albinism and Thalassemia.	

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Class		B.Sc. Zoology
Year		III Year
Subject & S	ubject Code	Zoology - BZOOL20Y302
Danas	English	Ecology and Applied Zoology Paper - II
Paper	हिन्दी	पारिस्थितिकी एवं व्यवहारिक प्राणीशास्त्र
Max. Marks		30 (ETE) + 20(FA) = 50
Credit	Total Credits	
L T P	4	
3 1 0	4	

Course Objectives:

Students will understand Process of ornamental fish breeding which is highly professional and attractive avenue for youth. Areas of responses to Laws of limiting factor, Laws of minimum, Laws of Tolerance and Tragedy of commons. Types of ecosystem – freshwater, marine and terrestrial, Population characteristics and dynamics – conceptual approach Growth curves and pyramids; sigmoid curve, J curve and hyperbola; logistic equation and concepts relating to growth.

Course Outcome:

After successfully completing this course, students will be able to:

- 1. The learners will be able to identify and critically evaluate their own beliefs, values and actions in relation to professional and societal standards of ethics and its impact on ecosystem and biosphere due to the dynamics in population.
- 2. To understand anticipate, analyse and evaluate natural resource issues and act on a lifestyle that conserves nature.
- 3. The Learner understands and appreciates the diversity of ecosystems and applies beyond the syllabi to understand the local lifestyle and problems of the community.
-). The learner will be able to link the intricacies of food chains, food webs and link it with human life for its betterment and for non-exploitation of the biotic and abiotic components.
- 5. The working in nature to save environment will help development of leadership skills to promote betterment of environment.

Student Learning Outcomes (SLO):

Students will

- 1. Have In-depth understanding on the principles and mechanisms of basic theories and principles of ecology.
- 2. Learn current environmental issues based on ecological principles.
- 3. Gain critical understanding on human influence on environment.
- 4. Expose to the basics and advances in ethology.
- 5. Generate an interest in Ethology in order to understand the complexities of both animal and human behavior.
- 6. Have positive attitude towards Biodiversity conservation.

Unit	Syllabus	Periods

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(C)	Concept of Ecology 1. Abiotic and biotic factors, Component of ecosystem. 2. Energy Flow in ecosystem: Food chain, Food web and Pyramids. 3. Biogeochemical cycle: Carbon, Oxyen, Nitrogen, Phosphorus. 4. Population Concept- Characteristics of population. Factors affecting population growth.	15
UNIT - I	पारिथितिकी की अवधारणा 1. अजैविक एवं जैविक घटक, पारिश्यितिकी तंत्र के द्यटक 2. पारिश्यितिकी तंत्र में उर्जा प्रवाह श्रंखला,खाद्य जाल तथा पिरामिड 3. जैवभूरासायिनक चक्र—कार्बन, आक्सीजन, नाइट्रोजन तथा फास्फोरस 4. जनसंख्या अवधारणा, जनसंख्या की विशेषताऐं, जनसंख्या वृद्धि को प्रभावित करने वाले कारक	13
UNIT - II	Habitat Ecology 1. Fresh water.Marine and terrestrial habitat. 2. Ecological division of India. 3. Biodiversity:Natural resouces and their conservation with special reference to forests.	15
OTAT	आवासीय पारस्थितिकी 1. स्वच्छ जलीय,समुद्रीय तथा स्थलीय आवास 2. भारत का पारिस्थितिकीय ,विभाजन 3. जैवविविधता, प्राकृतिक संसाधन तथा उसका संरक्षण (विशेष रूप से वनो के संदर्भ में)	
	 Wild life Environment 1. Wild life Protection Act. National Parks and Sanctuaies of Madhya Pardesh. 2. Endangered Species of India. 3. Types of Pollution: Air, Water, Soil, thermal and noise pollution. 4. Urbanisation and effect of human population on environment. 	
UNIT - III	वन्य जीव एवं पर्यावरण 1. वन्यजीव संरक्षण अधिनियम,मध्य प्रदेश के राष्ट्रीय उद्यान तथा अभ्यारण्य 2. भारत की संकटापन्न प्रजातियाँ 3. प्रदूषण के प्रकारः वायु जल,भूमि,तापीय तथा ध्वनि प्रदूषण 4. नगरीय करण तथा प्यावरण पर मानव जनसंख्या का प्रभाव	15
UNIT - IV	Aqua Culture 1. Prawn culture:Culture of Fresh water prawn ,Methods of Prawn fishing,preservation and processing of prawns. 2. Pearl Culture and Pearl industry. 3. Frog Culture. 4. Major carp Culture:Management of ponds,Preservation and processing of fishes. 5. Maintenance of Aquarium.	15

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Clas	SS			B.Sc. Zoology
Yea	r			III Year
Sub	ject	& Sı	abject Code	Practical Zoology- BZOOL20Y303
Pap	er			Paper I and Paper II, Practical
Max	x. Ma	arks		50= (30+20) (ETE + IA)
	Credi	it	Total Credits	
L	Т	P	2	
0	0	2	2	

PRACTICALS

The practical's work will be as per theory syllabus and the candidates will be required to the show the knowledge of the following:-

- Study of fresh water, marine and terrestrial fauna, major carps, Common stored grain pest and vegetable pest.
- 2 Water analysis Dissolve Oxygen, pH, Hardness, Turbidity.
- 3 Study of Ecosystems and maintenance of Aquarium.
- 4 Study of instrument related to Genetics- Centrifuge, PCR, Gel electrophoresis, DNA finger printing.
- 5 Wild life Endangered species.
- 6 Life cycle of silkworm, Honey Bee, Lac insect.

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Clas	SS			B.Sc. Zoology (Honours)
Yea	r			III Year
Sub	ject	& Sı	ıbject Code	Zoology Honours - BZOOL20Y304
Pap	er			Animal Biotechnology Paper - III
Max	x. M	arks		30 (ETE) + 20(TA) = 50
(Cred	it	Total Credits	
L	Т	P	4	
3	1	0	4	

Course Objectives:

Understanding the principle and application of recombinant DNA in biotechnology. Application of genetic engineering to veterinary and medical sciences for production of high value and industrial products, Biohazard and safety aspects in genetic engineering, Extraction of DNA and RNA.

Course Outcome:

At the end of the course, learners will be able to:

- 1.To describe meristem culture and clonal propagation of plants on a commercial scale.
- 2. To get insight in applications or recombinant DNA technology in agriculture, production of therapeutic proteins.
- 3.To explaine commercial production of fuels, microbial enzymes.
- 4. To explain Transformation techniques.
- 5.To explain Culture Techniques and Applications.

Student Learning Outcomes (SLO):

Students will .Be able to describe:

- 1. The structure of animal genes and genomes.
- 2. How genes are expressed and what regulatory mechanisms contribute to control of gene expression.
- 3. Basic principles and techniques in genetic manipulation and genetic engineering.
- 4. Gene transfer technologies for animals and animal cell lines.
- 5. Applications of transgenic animals.
- 6. Recombinant insulin and human growth hormone.

Unit	Syllabus	Periods
UNIT - I	Introduction Concept and scope of biotechnology.	15
UNIT - II	Molecular Techniques in Gene manipulation Cloning vectors: Plasmids, Cosmids, Phagemids, Lambda Bacteriophage, M13, BAC, YAC, MAC and Expression vectors (characteristics). Restriction enzymes: Nomenclature, detailed study of Type II.	15

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Clas	S	19	3	B.Sc. Zoology (Honours)
Yea	r			III Year
Sub	ject	& Sı	ıbject Code	Practical Zoology Honours- BZOOL20Y305
Pap	er		*	Paper III, Practical
Max	k. Ma	arks		$50 = (30 + 20) \left(\mathcal{E} \mathcal{T} \mathcal{E} + \mathcal{I} \mathcal{A} \right)$
(credi	t	Total Credits	
L	T	P	-	
0	0	1	1	

PRACTICALS

- 1 Genomic DNA isolation from E. coli.
- 2 Plasmid DNA isolation (pUC 18/19) from E. coli.
- 3 Restriction digestion of plasmid DNA.
- 4 Construction of circular and linear restriction map from the data provided.
- 5 Calculation of transformation efficiency from the data provided.
- 6 To study following techniques through photographs.
 - a. Southern Blotting.
 - b. Northern Blotting.
 - c. Western Blotting.
 - d. DNA Sequencing (Sanger's Method).
 - e. PCR.
 - f. DNA Fingerprinting.
- 7 Project report on animal cell culture.

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