	Syllabus Distribution – Department of Zoology	
	Syllabus- 2021-2022	Teachers nam
1 <sup>st</sup> Sem	Dc1 Non Chordates I	Dr. Soumik
Hons	theory- unit 1to 4	Agarwal
	practical Group-A- sl no 3	
1 <sup>st</sup> Sem	DC 1: Animal Diversity and Ecology; Group C: Ecology Unit-1-	
Gen	4	
	Practical SI- i & ii	
2 nd sem	Dc4 Comparative anatomy of vertebrates	
hons	theory- Unit 1 to 4	
	Practical Group A sl no	
2 nd sem	DC4: Group A: Comparative Anatomy Unit 1-4	
gen	Practical- Dev. Bio.Sl. i-vi	
3 <sup>rd</sup> sem	Dc5 Group-B principle of genetics	
hons	Unit 1 to 5	
	practical Group –A sl no 1to 3;5;7	
3 rd sem	DC-7: Group B: Biochemistry Unit 1-5	
gen	Practical Biochemistry Sl. i - iii	
4 th sem	DSE 2A Biostatistics theory unit 1 to 6	
hons	practical	
	sl no 1 & 2	
	SEC1 A Apiculture Unit 1 to 5	
4 th sem	DC-10 Group A: Principles of Genetics Unit 1-4	
gen	Practical Principles of Genetics Sl. i-iv	
5  th sem	DSE 2A Biostatistics theory unit 1 to 6	
hons	practical	
110115	sl no 1 & 2	
	SEC1 A Apiculture Unit 1 to 5	
5 th sem	DSE1A Group A: Cell Biology Unit 1-2	
	Practical Sl i-iii	
gen 6 th sem		
	Dc13 theory Group-B Immunology Unit 1 to 8	
hons	practical sl no 8 to 13 DSF 2B Taviaglagy - Environmental Biglagy & Dublic Health	
	DSE 3B Toxicology ; Environmental Biology & Public Health	
	Unit 1 to 6 Practical sl no 1 to 13	
C 11	SEC 2 Aquarium Fish keeping Unit 1 to 5	_
6 th sem	SEC1 Apiculture Unit 1-2	
gen	the second se	_
1 at O		N. O. 1.4
1 <sup>st</sup> Sem		Ms. Sanchita
Hons		Chakraborty
1 <sup>st</sup> Sem	DC-1 Group B: Biology of Chordates Unot 5-8	Name of Concerns
Gen	Practical Biology of Chordates SI. C,d, e	
2 nd sem	Dc3 Diversity of chordates	
hons	theory unit 1 to 3	
	practical group A sl no 1i to 1 ii	
2 nd sem		
gen	and the second	
3 <sup>rd</sup> sem	Dc 5 Group –A cell Biology Theory	
hons	unit 5 to 8	
	practical	
	sl no 3;8 to 10;12	

Gen	DC7: Group A: Physiology unit 5-8	
	practical Physiology sl. Iv-v	
4 th sem	DC10	
Hons	Group-A Systematics Unit 1-5	
	Practical SI 1-7	
4 th sem gen		
5 th sem	DC11: Histology and Endocrinology Unit 1-3	
Hons	Pretical SI 1-3	
5 th sem	DSE1A: Gr A Cell Biology, Unit-3	
gen	Practical Sl. iv	
6 th sem	DC13: Parasitology and Immunology Unit 1-5	
Hons	Practical Sl. 1-7	
6 th sem	DSE 4A: Aquatic Biology Unit-1-2	
gen	Practical Sl. i-iii	
8011		
1 <sup>st</sup> Sem	DC1:Non-Chordates I (Protists to Pseudo-coelomates) Unit 5-7	Md. Nazir
Hons	Practical Sl. 1-3	Hossain
1 <sup>st</sup> Sem	DC-1: Group A: Biology of Non-Chordates Unit 1-7	
Gen	Practical : Biology of Non-Chordates Sl. i-ii	
2 nd sem	DC3: Diversity of Chordates Unit 4-6	
Hons	Practical Sl. i-vi	
2 nd sem	DC-4: Group B: Developmental Biology of Vertebrates Unit 1-2	
gen	Practical Sl. i-iii	
3 <sup>rd</sup> sem	DC-5: Group A: Cell Biology Unit 1-3	
Hons	Practical SI. 4.6.11.13	
3 rd sem	DC7: Group A: Physiology Unit 1-4	
gen	Practical SI. i-iii	
4 th sem		
hons	DC8: Biochemistry unit 4-6 practical sl. 6-8	
4 th sem		
gen	and the second sec	
5 th sem	DSE: 1 Animal Biotechnology Unit 1-5	
hons	Practical Sl. 1-6	
5 th sem	DC10: Group B: Evolutionary Biology Unit 5-7	
gen	DSE 1A: Group B: Biotechnology Unit 1-3	
0	Practical Sl. iv-vi	
6 th sem	DC14: Molecular Biology Unit 1-5	10 March 10
hons	Practical Sl. 1-5	
6 th sem	DSE 4A: Aquatic Biology Unit 3-4	
gen	Practical Sl. iv-v	the state of the s
1 <sup>st</sup> Sem	DC2: Non-Chordates II (Coelomates) Unit 1-4	Ms. Titu
Hons	Practical Sl. 2-3	Karmakar
1 <sup>st</sup> Sem	DC-1: Biology of Chordates Unit 1-4	
Gen		
2 nd sem	DC3: Diversity of Chordates Unit 7-9	
hons	DC4: Practical Sl. 1-3	
2 nd sem	DC4: Group B: Developmental Biology of Vertebrates Unit 3-4	
gen	Practical Comparative Anatomy Sl. i-iv	
3 <sup>rd</sup> sem	CC7: Developmental Biology and Reproductive Biology Unit 1-	
hons	7 Practical Sl. No 1-7	

3 rd sem	SEC 1: Apiculture Unit 3-4	
gen		
4 th sem	DC9: Animal Physiology: unit-1-9	
hons	Practical Sl. 1-12	
4 th sem		
gen		
5 th sem	DC-11 Histology and Endocrinology Unit 4-7	
Hons	Practical Sl. 4-9 DC12: Economic Zoology and Industrial Zoology Unit 6-9	
5 th sem		
gen		
6 th sem	2010 - D. L. L.	
hons	and the second se	
6 th sem	Charles and the second s	
gen	The second secon	
	WWW HERE LAND	
1 <sup>st</sup> Sem	DC2: Non-Chordates II (Coelomates) Unit 5-7	Ms. Atindriya
Hons	Practical Sl. 1	Sen
1 <sup>st</sup> Sem	Group A: Biology of Non-Chordates Unit 8-13	
Gen	Practical Gr-B Biology of Chordates Sl. i-ii	
2 nd sem	DC4: Comparative Anatomy of Vertebrates Unit 5-7	
hons		
2 nd sem		
gen		
3 <sup>rd</sup> sem	DC6: Ecology and Conservation Biology GrA-1-4 & Gr B- 1-2	
hons	Practical Sl. 1-4	
3 rd sem	100 M	
gen		
4 th sem	DC10: Group B: Evolution Unit 1-9	
Hons	Practical Sl. 8-12	
4 th sem	A Distance in the second se	
gen	and the second se	
5 th sem	DC12: Economic Zoology and Industrial Zoology Unit 1-5	
Hons	Practical Sl. 1,4-9	
5 th sem	DC10: Group B: Evolutionary Biology Unit 1-4	
gen	Practical Sl. i-iv	
	SEC3 Aquarium Fish Keeping Unit 1-2	
6 th sem	DC14: Molecular Biology Unit 7-9	100 C
hons		the second se
6 th sem		
gen		Concerning of the local division of the loca
	The Carlot of Ca	

	Syllabus Distribution – Department of Zoology	
	Syllabus- 2022-2023	Teachers name
1 <sup>st</sup> Sem	Dc1 Non Chordates I	Dr. Soumik
Hons	theory- unit 1to 4	Agarwal
	practical Group-A- sl no 3	
1 <sup>st</sup> Sem	DC 1: Animal Diversity and Ecology; Group C: Ecology Unit-1-	
Gen	4	
	Practical SI- i & ii	
2 nd sem	Dc4 Comparative anatomy of vertebrates	
hons	theory- Unit 1 to 4	
	Practical Group A sl no	
2 nd sem	DC4: Group A: Comparative Anatomy Unit 1-4	
gen	Practical- Dev. Bio.Sl. i-vi	
3 <sup>rd</sup> sem	Dc5 Group-B principle of genetics	
hons	Unit 1 to 5	
110115	practical Group –A sl no 1to 3;5;7	
3 rd sem	DC-7: Group B: Biochemistry Unit 1-5	
	Practical Biochemistry Sl. i - iii	
gen 4 th sem		
	DSE 2A Biostatistics theory unit 1 to 6	
hons	sl no 1 & 2	
41	SEC1 A Apiculture Unit 1 to 5	
4 th sem	DC-10 Group A: Principles of Genetics Unit 1-4	
gen	Practical Principles of Genetics Sl. i-iv	
5 th sem	DSE 2A Biostatistics theory unit 1 to 6	
hons	practical	
	sl no 1 & 2	
	SEC1 A Apiculture Unit 1 to 5	
5 th sem	DSE1A Group A: Cell Biology Unit 1-2	
gen	Practical SI i-iii	
6 th sem	Dc13 theory Group-B Immunology Unit 1 to 8	
hons	practical sl no 8 to 13	
	DSE 3B Toxicology ; Environmental Biology & Public Health	
	Unit 1 to 6	
	Practical sl no 1 to 13	
	SEC 2 Aquarium Fish keeping Unit 1 to 5	
6 th sem	SEC1 Apiculture Unit 1-2	
gen		
1 <sup>st</sup> Sem		Ms. Sanchita
Hons		Chakraborty
1 <sup>st</sup> Sem	DC-1 Group B: Biology of Chordates Unot 5-8	time in the second
Gen	Practical Biology of Chordates SI. C,d, e	
0 1	Dc3 Diversity of chordates	The second se
2 nd sem	theory unit 1 to 3	
hons	practical group A sl no 1i to 1 ii	
hons 2 nd sem		
hons 2 nd sem gen	practical group A sl no 1i to 1 ii	
2 nd sem hons 2 nd sem gen 3 <sup>rd</sup> sem	practical group A sl no 1i to 1 ii Dc 5 Group –A cell Biology Theory	
hons 2 nd sem gen	practical group A sl no 1i to 1 ii Dc 5 Group –A cell Biology Theory unit 5 to 8	
hons 2 nd sem gen 3 <sup>rd</sup> sem	practical group A sl no 1i to 1 ii Dc 5 Group –A cell Biology Theory	

3 rd sem		
Gen	DC7: Group A: Physiology unit 5-8	
ucii	DC7. Group A. Physiology unit 5-6	
	practical Physiology sl. Iv-v	
4 th sem	DC10	
Hons	Group-A Systematics Unit 1-5	
	Practical SI 1-7	
4 th sem		
gen	10007	
5 th sem	DC11: Histology and Endocrinology Unit 1-3	
Hons	Pretical SI 1-3	
5 th sem	DSE1A: Gr A Cell Biology, Unit-3	
gen	Practical SI. iv	
6 th sem	DC13: Parasitology and Immunology Unit 1-5	
Hons	Practical Sl. 1-7	
6 th sem	DSE 4A: Aquatic Biology Unit-1-2	
gen	Practical SI. i-iii	
	A REPORT OF A R	
1 <sup>st</sup> Sem	DC1:Non-Chordates I (Protists to Pseudo-coelomates) Unit 5-7	Md. Nazir
Hons	Practical Sl. 1-3	Hossain
1 <sup>st</sup> Sem	DC-1: Group A: Biology of Non-Chordates Unit 1-7	
Gen	Practical : Biology of Non-Chordates Sl. i-ii	
2 nd sem	DC3: Diversity of Chordates Unit 4-6	
Hons	Practical Sl. i-vi	
2 nd sem	DC-4: Group B: Developmental Biology of Vertebrates Unit 1-2	
gen	Practical Sl. i-iii	
3 <sup>rd</sup> sem	DC-5: Group A: Cell Biology Unit 1-3	
Hons	Practical Sl. 4.6.11.13	
3 rd sem	DC7: Group A: Physiology Unit 1-4	
gen	Practical SI. i-iii	
4 th sem	DC8: Biochemistry unit 4-6 practical sl. 6-8	
hons		
4 th sem		
gen		
5 th sem	DSE: 1 Animal Biotechnology Unit 1-5	
hons	Practical Sl. 1-6	
5 th sem	DC10: Group B: Evolutionary Biology Unit 5-7	
gen	DSE 1A: Group B: Biotechnology Unit 1-3	
	Practical Sl. iv-vi	
6 th sem	DC14: Molecular Biology Unit 1-5	
hons	Practical Sl. 1-5	
6 th sem	DSE 4A: Aquatic Biology Unit 3-4	
gen	Practical SI. iv-v	
1.1.2		
1 <sup>st</sup> Sem	DC2: Non-Chordates II (Coelomates) Unit 1-4	Ms. Titu
Hons	Practical SI. 2-3	Karmakar
1 <sup>st</sup> Sem	DC-1: Biology of Chordates Unit 1-4	
Gen		
2 nd sem	DC3: Diversity of Chordates Unit 7-9	
hons	DC4: Practical Sl. 1-3	
2 nd sem	DC4: Group B: Developmental Biology of Vertebrates Unit 3-4	
gen	Practical Comparative Anatomy Sl. i-iv	
3 <sup>rd</sup> sem	CC7: Developmental Biology and Reproductive Biology Unit 1-	

hons	7 Practical Sl. No 1-7	
3 rd sem	SEC 1: Apiculture Unit 3-4	
gen		
4 th sem	DC9: Animal Physiology: unit-1-9	
hons	Practical Sl. 1-12	
4 th sem		
gen	100 million	
5 th sem	DC-11 Histology and Endocrinology Unit 4-7	
Hons	Practical Sl. 4-9	
	DC12: Economic Zoology and Industrial Zoology Unit 6-9	
5 th sem		
gen	2010 - 33, 31, 51, 51, 51, 51, 51, 51, 51, 51, 51, 5	
6 th sem	and the second sec	
hons	And a second sec	
6 th sem	and the second s	
gen	CALL REPORT OF A CALL	
<u> </u>	A DECEMBER OF A	
1 <sup>st</sup> Sem	DC2: Non-Chordates II (Coelomates) Unit 5-7	Ms. Atindriya
Hons	Practical Sl. 1	Sen
1 <sup>st</sup> Sem	Group A: Biology of Non-Chordates Unit 8-13	
Gen	Practical Gr-B Biology of Chordates Sl. i-ii	
2 nd sem	DC4: Comparative Anatomy of Vertebrates Unit 5-7	
hons	Det. comparative finatomy of vertebrates on to 1	
2 nd sem		
gen 3 <sup>rd</sup> sem	DC6: Ecology and Concernation Biology CrA 1 4 & Cr D 1 0	
	DC6: Ecology and Conservation Biology GrA-1-4 & Gr B- 1-2 Practical Sl. 1-4	
hons		
3 rd sem		
gen	DO10: Ogener D. Freeheting Hait 1.0	
4 th sem	DC10: Group B: Evolution Unit 1-9	
Hons	Practical Sl. 8-12	
4 th sem		
gen		
5 th sem	DC12: Economic Zoology and Industrial Zoology Unit 1-5	
Hons	Practical Sl. 1,4-9	
5 th sem	DC10: Group B: Evolutionary Biology Unit 1-4	
gen	Practical Sl. i-iv	
	SEC3 Aquarium Fish Keeping Unit 1-2	
6 th sem	DC14: Molecular Biology Unit 7-9	Constant State
hons		
6 th sem		Name of Concession, Name of Street, or other
gen		
		and the second se

	Syllabus Distribution – Department of Zoology				
	Syllabus- 2023-2024	Teachers name			
1 <sup>st</sup> Sem	Dc1 Non Chordates I Unit 1to 4	Dr. Soumik			
Major	practical Group-A- sl no 3	Agarwal			
5	SEC1: Apiculture				
1 <sup>st</sup> Sem					
Minor					
2 nd sem	Dc4 Comparative anatomy of vertebrates				
hons	theory- Unit 1 to 4				
	Practical Group A sl no				
2 nd sem	DC4: Group A: Comparative Anatomy Unit 1-4				
gen	Practical- Dev. Bio.Sl. i-vi				
3 <sup>rd</sup> sem	Dc5 Group-B principle of genetics				
hons	Unit 1 to 5				
10115	practical Group –A sl no 1to 3;5;7				
3 rd sem	DC-7: Group B: Biochemistry Unit 1-5				
gen	Practical Biochemistry Sl. i - iii				
4 th sem	DSE 2A Biostatistics theory unit 1 to 6				
hons	practical				
	sl no 1 & 2				
	SEC1 A Apiculture Unit 1 to 5				
4 th sem	DC-10 Group A: Principles of Genetics Unit 1-4				
gen	Practical Principles of Genetics Sl. i-iv				
5 th sem	DSE 2A Biostatistics theory unit 1 to 6				
hons	practical				
	sl no 1 & 2				
	SEC1 A Apiculture Unit 1 to 5				
5 th sem	DSE1A Group A: Cell Biology Unit 1-2				
gen	Practical SI i-iii				
6 th sem	Dc13 theory Group-B Immunology Unit 1 to 8				
hons	practical sl no 8 to 13				
	DSE 3B Toxicology ; Environmental Biology & Public Health				
	Unit 1 to 6				
	Practical sl no 1 to 13	- Co.			
	SEC 2 Aquarium Fish keeping Unit 1 to 5				
6 th sem	SEC1 Apiculture Unit 1-2				
gen	[1] A.D. M. M. M. M. D. M.				
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1 <sup>st</sup> Sem		Ms. Sanchita			
Major	and the second sec	Chakraborty			
1 <sup>st</sup> Sem	DC-1 Group B: Biology of Chordates Unot 5-8				
Minor					
	Practical Biology of Chordates SI. C,d, e	Contraction of the local division of the loc			
2 nd sem	Dc3 Diversity of chordates	and the second se			
hons	theory unit 1 to 3				
-	practical group A sl no 1i to 1 ii				
2 nd sem					
gen					
3 <sup>rd</sup> sem	Dc 5 Group –A cell Biology Theory				
hons	unit 5 to 8				
	practical				
	sl no 3;8 to 10;12				
3 rd sem					
		1			

	practical Physiology sl. Iv-v			
4 th sem	DC10			
Hons	Group-A Systematics Unit 1-5			
110110	Practical SI 1-7			
4 th sem				
gen				
5 th sem	DC11: Histology and Endocrinology Unit 1-3			
Hons	Pretical SI 1-3			
5 th sem	DSE1A: Gr A Cell Biology, Unit-3			
gen	Practical SI. iv			
6 th sem	DC13: Parasitology and Immunology Unit 1-5			
Hons	Practical SI. 1-7			
6 th sem	DSE 4A: Aquatic Biology Unit-1-2			
gen	Practical SI. i-iii			
8				
1 <sup>st</sup> Sem	DC1:Non-Chordates I (Protists to Pseudo-coelomates) Unit 5-7	Md. Nazir		
Major	Practical Sl. 1-3	Hossain		
1 <sup>st</sup> Sem	DC-1: Group A: Biology of Non-Chordates Unit 1-7			
Minor	Practical : Biology of Non-Chordates Sl. i-ii			
2 nd sem	DC3: Diversity of Chordates Unit 4-6			
Hons	Practical Sl. i-vi			
2 nd sem	DC-4: Group B: Developmental Biology of Vertebrates Unit 1-2			
gen	Practical Sl. i-iii			
3 <sup>rd</sup> sem	DC-5: Group A: Cell Biology Unit 1-3			
Hons	Practical SI. 4.6.11.13			
3 rd sem	DC7: Group A: Physiology Unit 1-4			
gen	Practical Sl. i-iii			
4 th sem	DC8: Biochemistry unit 4-6 practical sl. 6-8			
hons	Deo. Diochemistry unit 4-0 practical si. 0-0			
4 th sem				
gen	the second se			
5 th sem	DSE: 1 Animal Biotechnology Unit 1-5			
hons	Practical Sl. 1-6			
5 th sem	DC10: Group B: Evolutionary Biology Unit 5-7			
gen	DSE 1A: Group B: Biotechnology Unit 1-3			
	Practical Sl. iv-vi			
6 th sem	DC14: Molecular Biology Unit 1-5			
hons	Practical SI. 1-5			
6 th sem	DSE 4A: Aquatic Biology Unit 3-4	1 A 1		
gen	Practical Sl. iv-v	11		
1 <sup>st</sup> Sem	DC2: Non-Chordates II (Coelomates) Unit 1-4	Ms. Titu		
Major	Practical Sl. 2-3	Karmaka		
1 <sup>st</sup> Sem	DC-1: Biology of Chordates Unit 1-4			
Minor				
2 nd sem	DC3: Diversity of Chordates Unit 7-9			
hons	DC4: Practical Sl. 1-3			
2 nd sem	DC4: Group B: Developmental Biology of Vertebrates Unit 3-4			
	Practical Comparative Anatomy Sl. i-iv			
gen	Tractical Comparative Anatomy St. 1-10			
	CC7: Developmental Biology and Reproductive Biology Unit 1-			

3 rd sem	SEC 1: Apiculture Unit 3-4	
gen		
4 th sem	DC9: Animal Physiology: unit-1-9	
hons	Practical SI. 1-12	
4 th sem		
gen		
5 th sem	DC-11 Histology and Endocrinology Unit 4-7	
Hons	Practical SI. 4-9	
	DC12: Economic Zoology and Industrial Zoology Unit 6-9	
5 th sem		
gen	and the second	
6 th sem		
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1 <sup>st</sup> Sem	DC2: Non-Chordates II (Coelomates) Unit 5-7	Ms. Atindriya
Major	Practical Sl. 1	Sen
1 <sup>st</sup> Sem	Group A: Biology of Non-Chordates Unit 8-13	
Minor	Practical Gr-B Biology of Chordates Sl. i-ii	
2 nd sem	DC4: Comparative Anatomy of Vertebrates Unit 5-7	
hons	and a second	
2 nd sem		
gen	1 (171) (191) (197) (197) (197)	
3 <sup>rd</sup> sem	DC6: Ecology and Conservation Biology GrA-1-4 & Gr B- 1-2	
hons	Practical Sl. 1-4	
3 rd sem		
gen		
4 th sem	DC10: Group B: Evolution Unit 1-9	
Hons	Practical Sl. 8-12	
4 th sem	101	
gen	the second se	
5 th sem	DC12: Economic Zoology and Industrial Zoology Unit 1-5	
Hons	Practical Sl. 1,4-9	
5 th sem	DC10: Group B: Evolutionary Biology Unit 1-4	
gen	Practical SI. i-iv	
	SEC3 Aquarium Fish Keeping Unit 1-2	
6 th sem	DC14: Molecular Biology Unit 7-9	
hons		
6 th sem		Concerning of the
o th sem		
gen		

ACADEMIC QUARTER	CLASS	NAME OF THE TEACHER	TOPIC TO BE COVERED	NO OF LECTURES
JULY 21, TO SEPTEMBER 21	1 <sup>ST</sup> SEMESTER (HONS.)	Dr Soumik Agarwal HONS. (THEORY+ PRACTICAL) GENERAL (THEORY+ PRACTICAL) SYLLABUS TOPICS ARE TO BE ALLOTED	<ul> <li>ZOOL DC1:Non-Chordates I (Protists to Pseudo-coelomates)</li> <li>Unit 1: Basics of Animal Classification: Six kingdom concept of classification (Carl Woese)</li> <li>Unit 2: Protista: General characteristics and classification up to phylum; Locomotion in Euglena, Paramoecium and Amoeba; Conjugation in Paramoecium; Life cycle and pathogenicity of Plasmodium vivax and Entamoeba histolytica.</li> <li>Unit 3: Porifera: General characteristics and classification up to classes; Canal system, cell types and spicules in sponges.</li> <li>Unit 7: Nemathelminthes: General characteristics and classification up to classes; Life cycle, pathogenicity, parasitic adaptations and control measures of Ascaris lumbricoides and Wuchereria bancrofti</li> <li>Practical:- Identification; Staining/mounting: Any</li> </ul>	18
j	1 <sup>st</sup> SEMESTER (Gen)		<ul> <li>protozoa/helminth from gut of cockroach.</li> <li>Discipline Core Courses (DC): Zoology for General Studies</li> <li>(A1)DC 1: Animal Diversity and Ecology</li> <li>Theory[(A1)-ZOOL-G-DC 1-T]:</li> <li>Group A: Biology of Non-Chordates(=10 marks)</li> <li>Unit 1: Basics of Animal Classification - Six kingdom concept of classification (Carl Woese).</li> <li>Unit 2: Protista and Metazoa - Protozoa-general characteristics and classification up to phylum, locomotion in <i>Euglena, Paramoecium</i> and <i>Amoeba</i>, conjugation in <i>Paramoecium</i>.</li> <li>Unit 3: Porifera - General characteristics and classification up to classes, canal system in sponges.</li> <li>Unit 4: Cnidaria - General characteristics and classification up to classes, metagenesis in <i>Obelia</i>; corals and coral reef diversity, functions &amp; conservation.</li> <li>Unit 5: Ctenophora - General characteristics and classification up to class.</li> <li>Unit 6: Platyhelminthes - General characteristics and classification up to classes; life cycle and pathogenicity and control measures of <i>Fasciola hepatica</i>, parasitic adaptation of <i>Fasciola</i> sp.</li> </ul>	18
	3 <sup>RD</sup> SEMESTER (HONS.)		ZOOL DC5: Cell Biology and Principles of Genetics Group B: Principles of Genetics Unit 1: Mendelian Genetics and its Extension-(i) Principles of inheritance, incomplete dominance and co-dominance, multiple alleles (with special reference to blood group), lethal alleles, pleiotropy, gene interactions, (ii) Sex-linked, sex-influenced and sex- limited inheritance, polygenic inheritance (brief idea). Unit 2: Linkage, Crossing Over and Chromosomal Mapping-Linkage, somatic crossing over, cytological basis of crossing over, molecular mechanism of crossing over. Group B: Principles of Genetics Unit 1: Mendelian Genetics and its Extension-(i) Principles of inheritance, incomplete dominance and co-dominance, multiple alleles (with special reference	45

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	to blood group), lethal alleles, pleiotropy, gene	
	interactions, (ii) Sex-linked, sex-influenced and sex-	
	limited inheritance, polygenic inheritance (brief idea).	
	Unit 2: Linkage, Crossing Over and Chromosomal	
	Mapping-Linkage, somatic crossing over, cytological	
	basis of crossing over, molecular mechanism of	
	crossing over.	
3 <sup>RD</sup> SEMESTER	(A3)DC7 Physiology and Biochemistry	18
(Gen)	Group A: Physiology (= 12.5 marks)	10
	Unit 1: Digestion and Absorption of Food-	
	Digestion and absorption of carbohydrates, fats and	
	proteins.	
	Unit 2: Functioning of Excitable Tissue (Nerve and	
	Muscle): Structure of neuron, Propagation of nerve	
	impulse (myelinated and non-myelinated nerve fibre);	
	structure of skeletal muscle, Mechanism of muscle	
	contraction, Neuromuscular junction, Synaptic	
	transmission.	
	Practical Group A: Experimentation Physiology	
	i. Preparation of temporary mounts: Blood film.	
1. T. B. C	ii. Preparation of hemin and hemochromogen crystals	
	iii. Estimation of haemoglobin using Sahli's	
th or wramp	haemoglobinometer.	 
5 <sup>th</sup> SEMESTER (Hons)	ZOOL DC11: Histology and Endocrinology	45
(110115)	Unit1: Muscular system-Histology of different types	
the second se	of muscle, Ultra structure of skeletal muscle.	
12 PM 12 1 1 10	Unit:2: Histo-architechture of liver and its function.	
	Unit 3: Introduction to Endocrinology- General idea of	
	endocrine systems, classification, characteristic and	
	transport of hormones, neurosecretions and	
	neurohormones.	
	Unit 4: Epiphysis, Hypothalamo-hypophysial Axis-(i)	
	Structure of pineal gland, secretions and their	
and the second sec	functions in biological rhythms and reproduction, (ii)	
	Structure and functions of hypothalamus and	
	hypothalamic nuclei, regulation of neuro-endocrine	
	glands, feedback mechanisms, (iii) Structure of	
	pituitary gland, hormones and their functions,	
	hypothalamo-hypophysial portal system, disorders of	
the second se	pituitary gland.	
A second seco	Practical (Full marks = 15)	
[1] [1] [2] [2] [2] [3] [3] [3] [3] [3] [3] [3] [3] [3] [3	1. Study of animal house: set up and maintenance of	
A DESCRIPTION OF A D	basic animal house, breeding techniques, care taken	
and the second sec	for normal and experimental animals.	
and the second sec	2. Examination of vaginal smear rats from live	
	animals (Subject to UGC guideline).	
	3. Tissue fixation, embedding in paraffin, microtomy	
The second se	and slide preparation of any endocrine gland (Subject	
	to UGC guideline).	
the second se	4. Examination of sections of mammalian skin,	
	Cartilage, Bone, Spinal cord, Nerve cell, Pituitary,	
	Pancreas, Testis, Ovary, Adrenal, Thyroid and	
	Parathyroid (Subject to UGC guideline).	
	5. Examination of histological sections from	
	photomicrographs/ permanent slides of rat/human:	
	testis, epididymis and accessory glands of male	
	reproductive systems; Sections of ovary, Fallopian	
	tube, Uterus (Subject to UGC guideline).	
5 <sup>TH</sup> SEMESTER		
	DSE1A:CellBiologyandAnimal Biotechnology(=50 marks), Group A: Cell Biology (=12.5 marks)	9
	$m_{1} = (1 + m_{1}) + (1 + m$	1
(Gen)		
(Gen)	Unit 1: Cell types- Prokaryotic and eukaryotic cell Unit 2: Plasma membrane- Structure (Fluid mosaic	

		model) and function of plasma membrane. Practical (=15 marks) i. Genomic DNA isolation from E.coli. ii. Plasmid DNA isolation (pUC 18/19) from E.coli	
2			
Oct21- Dec21	1 <sup>ST</sup> SEMESTER (HONS.)	ZOOL DC2: Non-Chordates II (Coelomates) Unit 4: Onychophora: General characteristics and evolutionary significance. Unit 5: Mollusca: General characteristics and classification up to classes; Nervous system and torsion in Gastropoda; Feeding and respiration in Pila sp.	18
	1 <sup>ST</sup> SEMESTER (Gen)	<ul> <li>Discipline Core (DC): Zoology for General Studies (A1)DC 1: Animal Diversity and Ecology Theory[(A1)-ZOOL-G-DC 1-T]: Unit 7: Aschelminthes - General characteristics and classification up to classes, life cycle, and pathogenicity and control measures of Ascaris lumbricoides; Parasitic adaptation of Ascaris sp. Unit 8: Annelida - General characteristics and classification up to classes, Excretion in Annelida. Unit 9: Arthropoda - General characteristics and classification up to classes, Respiration in arthropoda (gills in prawn and trachea in cockroach). Unit 10: Onychophora- General characteristics, body structure and evolutionary significance. Unit 11: Mollusca: General characteristics and classification up to classes, Nervous system and torsion in gastropod; feeding and respiration in Pila sp. Page 5 of 23</li> <li>Unit 12: Echinodermata: General characteristics and classification up to classes; water-vascular system in Asteroidea. Unit 13: Hemichordata: General characteristics of phylum Hemichordata; relationship with non-chordates and chordates.</li> </ul>	18
	3 <sup>RD</sup> SEMESTER (HONS.)	<ul> <li>ZOOL DC5</li> <li>Unit 3: Mutations- (i) Types of gene mutations (classification), types of chromosomal aberrations (classification with one suitable example of each), (ii) Non-disjunction and variation in chromosome number Unit 4: Sex Determination: (i)Mechanisms of sex determination in Drosophila, (ii) Sex determination in human, (iii) Dosage compensation in Drosophila &amp; human</li> <li>Unit 5: Extra-chromosomal Inheritance and Maternal effect- (i) Criteria for extra chromosomal inheritance, (ii) Kappa particle in Paramoecium, (iii) Shell spiralling in snail.</li> <li>ZOOL-H-DC5-P</li> <li>Identification of chromosomal aberration in Drosophila and human (by photograph).</li> <li>Identification of various mutants of Drosophila. ( by photographs only)</li> <li>Linkage maps based on data from crosses of Drosophila.(based on the three point test crosses)</li> <li>Pedigree analysis of some human inherited trait from the supplied data.</li> <li>Study of human karyotype (Subject to UGC guideline).</li> </ul>	45

-		Test for colour blindness in human from provided	
		diagrams/ charts.	
	3 <sup>RD</sup> SEMESTER	(A3)DC7 Physiology and Biochemistry	18
	(Gen)	Unit 3: Respiratory Physiology: Ventilation, external	10
		and internal respiration, transport of oxygen and	
		carbon dioxide in blood.	
		Unit 4: Renal Physiology: Functional anatomy of	
		kidney, Mechanism of urine formation.	
	$5^{\text{TH}}$ SEMESTER	ZOOL DC11: Histology and Endocrinology	45
	(Hons)	Unit 4: Epiphysis, Hypothalamo-hypophysial Axis-(i)	
		Structure of pineal gland, secretions and their functions in biological rhythms and reproduction, (ii)	
		Structure and functions of hypothalamus and	
		hypothalamic nuclei, regulation of neuro-endocrine	
		glands, feedback mechanisms, (iii) Structure of	
	Contract of the second s	pituitary gland, hormones and their functions,	
		hypothalamo-hypophysial portal system, disorders of	
	1.101-10.000	pituitary gland. Unit 5: Peripheral Endocrine Glands-	
		(i) Structure, hormones, functions and regulation of	
		thyroid gland, parathyroid, adrenal, pancreas, ovary	
		and testis, (ii) Hormones in homeostasis, disorders of	
		endocrine glands	
	Carlo Aller Contra	Practical (=15 marks) 4. Examination of sections of mammalian skin,	
	Contraction of the second	Cartilage, Bone, Spinal cord, Nerve cell, Pituitary,	
	1.1.104 10 11	Pancreas, Testis, Ovary, Adrenal, Thyroid and	
		Parathyroid (Subject to UGC guideline). 5.	
		Examination of histological sections from	
		photomicrographs/ permanent slides of rat/human:	
		testis, epididymis and accessory glands of male	
		reproductive systems; Sections of ovary, Fallopian	
		tube, Uterus (Subject to UGC guideline). 6. Double	
	- 1.20	staining of prepared histological slides (Subject to	
	5 <sup>TH</sup> SEMESTER	UGC guideline)	-
	(Gen)	DSE1A:CellBiologyandAnimal Biotechnology(=50 marks), Group A: Cell Biology (=12.5 marks)	9
	()	Unit 2: Plasma membrane- Structure (Fluid mosaic	
		model) and function of plasma membrane. Unit3: Cell	
	and the second se	organelles- Structure and function of Mitochondria,	
	- 7331157U	Nucleus, Golgi complex, ER, Ribosomes.	
	1. S. C. B. C. P. C. C.	Practical (=15 marks)	
	A CONTRACTOR OF A CONTRACTOR	iv. To study following techniques through	
1.11	and the second se	photographs: (i) Southern Blotting,(ii) Northern	
	and the second se	Blotting, (iii)Western Blotting, (iv) DNA Sequencing	
		(Sanger's Method) Page 14 of 23 PCR, (v) DNA fingerprinting. v. Seminar on tools and techniques of	
	and the second se	Biotechnology. vi. Study/ Identification of different	
	the second s	stages of mitosis and meiosis.	
3			
Jan22-	2 <sup>nd</sup> SEMESTER	DC3	18
	(HONS.)	Unit 7: Reptilia: (i) General characteristics and	10
March22		classification up to living Orders. (Young 1981),(ii)	
		Poison apparatus and biting mechanism in snake,	
		snake venom and method of treatment of snake	
		biting,(ii) Sphenodon- present status	
		Unit 8: Aves: (i) General characteristics and	
		classification up to Sub-Classes. (Young, 1981), (ii)	
		Exoskeleton and migration in birds, (ii) Principles and	
		aerodynamics of flight, (iv) Archaeopteryx-a	
		connecting link.	

	DC4	
2 <sup>nd</sup> SEMESTER	DC4	18
(Gen)	Unit 4: Circulatory System- General plan of	
	circulation, comparative account of heart and aortic	
	arches.	
	Unit 5: Urinogenital System- Succession of kidney,	
	Evolution of urinogenital ducts.	
	DC4P	
	i. Study of placoid, cycloid and ctenoid scales through	
	permanent slides/photographs.	
	ii. Study of disarticulated skeleton of toad, pigeon,	
	fowl, guineapig and rabbit.	
	iii. Demonstration of carapace and plastron of turtle.	
4 <sup>th</sup> SEMESTER	DC9	45
(HONS.)	Unit 7: Physiology of Heart - Structure of mammalian	
	heart, coronary circulation, structure and working of	
	conducting myocardial fibres, origin and conduction	
	of cardiac impulses; ECG, cardiac cycle and cardiac	
	output; blood pressure and its regulation	
	Unit 8: Thermoregulation & Osmoregulation -	
1.10.10.10.1	Physiological classification based on thermal biology;	
	thermoregulation of homeotherms; osmoregulation in	
	aquatic vertebrates; extra renal osmoregulatory organs	
	in vertebrates.	
	Unit 9: Renal Physiology - Histology of kidney and	
	nephrons, mechanism of urine formation, glomerular	
A STATE OF A	filtration, tubular secretion, plasma clearance and	
11 - C - D - C - D	counter current mechanism	
4 <sup>th</sup> SEMESTER		10
(Gen)	DC10 Grp-B	18
(Gen)	Unit 1: Life's Beginnings- Origin of life, Chemogeny	
	Unit 2: Theory and concept of evolution - Historical	
	review of evolutionary concepts, Lamarkism,	
	Darwinism and Neo-Darwinism, Geological time	
	scale, evolution of Horse.	
6 <sup>TH</sup> SEMESTER	ZOOL DC13: Parasitology and Immunology,	45
(Hons)	Group A: Parasitology (=12.5 marks)	
	Unit 1: Introduction to parasitology- Brief	
	introduction of Parasitism, Parasite, Parasitoid and	
	Vectors (mechanical and biological vector) Host	
	parasite relationship.	
and the second se	Unit 2: Parasitic Protists: Study of Morphology, Life	
1. 2 PROVIDE TO BOOK COMPANY	Cycle, Prevalence, Epidemiology, Pathogenicity,	
The second se	Diagnosis, Prophylaxis and Treatment of Giardia	
The second se	intestinalis, Trypanosoma gambiense, Leishmania	
	donovani.	
	Group A : Laboratory Experimentation	
the second se	1. Study of life stages of Giardia intestinalis,	- N
	Trypanosoma gambiense and Leishmania donovani	
Terrent	through permanent slides/micro photographs.	
	2. Study of adult and life stages of Schistosoma	
Sand State	haematobium and Taenia saginata through permanent	
	slides/micro photographs.	
	3. Study of adult and life stages of Ancylostoma	
	duodenale, Brugia malayi and Trichinella spiralis	
	through permanent slides/micro photographs.	
	4. Study of Pediculus humanus, Xenopsylla cheopis	
	and Cimex lectularius	
	ZOOL DSE: 2 Biostatistics (OR) Bioinformatics	
	1. Basic idea on variables, frequency distribution and	
	sampling. 2. Measures of central tendency: mean,	
	median, mode. 3. Measures of distributions: variance,	
	standard deviation and standard error—problems and	
	standard deviation and standard error— problems and application	

		Practical (=15 marks) 1. Frequency distribution, bar diagram, histogram, Pie diagram, Cumulative frequency curve, Principal Component analysis, Correlation matrix	
	6 <sup>TH</sup> SEMESTER (Gen)	<ul> <li>DSE 4A: Aquatic Biology(=50 marks)</li> <li>Unit 1: Aquatic Biomes- Brief introduction of the aquatic biomes: Freshwater ecosystem (lakes, wetlands, streams and rivers), estuaries, intertidal zones, and coral reefs. Unit 2: Freshwater Biology- (i) Lakes: Origin and classification, Lake as an Ecosystem, Lake morphometry, Physico-chemical Characteristics: Light, Thermal stratification, Dissolved Solids, Carbonate, Bicarbonates, Phosphates and Nitrates, Turbidity; dissolved gases (Oxygen, Carbon dioxide). (ii) Streams: Different stages of stream development, Physico-chemical environment,</li> <li>Practical (=15 marks)</li> <li>i. Determine the area of a lake using graphimetric and gravimetric method. ii. Identify the important macrophytes, phytoplanktons and zooplanktons present in a lake ecosystem.</li> </ul>	9
4			
April22- June22	2 <sup>nd</sup> SEMESTER (HONS.)	DC3: Unit 9: Mammals: (i) General characters and classification up to living Infra class (Young,1981), (ii) Affinities of Prototheria, (iii) Adaptive radiation in mammals with reference to locomotory appendages, (iv) Echolocation in Chiropterans and Cetaceans. DC3P iv. Amphibia: Necturus, Bufo, Rana, Hyla, Alytes, Axoltl, Tylototriton, Ambystoma. v. Reptilia: Chelone, Trionyx, Hemidactylus, Varanus, Uromastix, Chamaeleon, Ophiosaurus, Draco, Bungarus, Vipera, Naja, Hydrophis, Crocodylus; Key for identification of poisonous and non-poisonous snakes. vi. Mammalia: Bat (insectivorous and frugivorous), Funambulus.	18
ſ	2 <sup>nd</sup> SEMESTER (Gen)	DC4 Unit 6: Nervous System- Comparative account of brain, cranial nerves in mammals. Unit 7: Skeletal System- Evolution of visceral arches. DC4P Grp-A iv. Identification of mammalian skulls: Bufo, Rana, Columba, Cavia and Dog.	18
	4 <sup>th</sup> SEMESTER (HONS.)	DC10 Grp-A Unit 1: Definition of taxonomy, micro- and macro taxonomy, systematic, Linnean hierarchy, cladistics, hierarchy, taxonomic types Unit 2: Principles of Binomial nomenclature. Unit 3: Species concept: Types and modes, type concept, primary and secondary types-definition and application.	45
	4 <sup>th</sup> SEMESTER (Gen)	DC10 Grp-B Unit 3: Sources of variations - Types of variations and their role in evolution	18

[]		Unit 4. Denulation constine Units Whitehous loss	
		Unit 4: Population genetics - Hardy-Weinberg law,	
		Natural selection; Genetic drift mechanism (Founder's	
(TH OF) (DOG		effect, Bottleneck phenomenon);	
6 <sup>TH</sup> SEMEST	IER	ZOOL DSE: 2 Biostatistics (OR) Bioinformatics	45
(Hons)		4. Test of significance: t-test, ANOVA, Chi-square	
		test. 5. Correlation and regression analysis. 6.	
		Probability distribution and significance.	
		Practical (=15 marks)	
		2. Chi-square test, t-test, ANOVA, Correlation	
		analysis from data provided.	
		ZOOL DC13: Parasitology and Immunology,	
		Group A: Parasitology (=12.5 marks)	
		Unit 3: Parasitic Platyhelminthes: Study of	
		Morphology, Life Cycle, Prevalence, Epidemiology,	
		Pathogenicity, Diagnosis, Prophylaxis and Treatment	
		of Schistosoma haematobium, Taenia saginata.	
		Unit 4: Parasitic Nematodes: Study of Morphology,	
	Contraction of the second	Life Cycle, Prevalence, Epidemiology, Pathogenicity,	
		Diagnosis, Prophylaxis and Treatment of Ancylostoma	
	10000		
	1.	duodenale, and Trichinella spiralis, Brugia malayi,	
	A DESCRIPTION OF	Meloidogyne incognita, Heterodera rostochiensis-Life-	
		Cycle, symptoms and control.	
		Practical (=15 marks)	
		Unit 5: Parasitic Arthropods: Biology, importance and	
		control of Ticks, Mites, Lice, Flea and Bug	
1.00		Practical (=15 marks)	
	Den 12	5. Study of nematode/cestode parasites from the	
		intestines of Poultry bird (Intestine can be procured	
		from poultry/market as a by-product).	
		6. Submission of a brief report on parasitic vertebrates.	
		7. Study of rectal parasites of Periplaneta sp. / Bufo sp.	
		8. Demonstration of lymphoid organs.	
		9. Histological study of spleen, thymus and lymph	
		nodes through slides/ photographs	
		10. Preparation of stained blood film to study various	
		types of blood cells.	
		11. Antigen antibody reaction by immune-diffusion.	
		12. Demonstration of ELISA.	
	and the second se	13. Determination of human blood group	
6 <sup>TH</sup> SEMEST	FFR		0
(Gen)		DSE 4A: Aquatic Biology (=50 marks)	9
(Gen)	N. 199 N. 199 N. 199	Unit 3: Marine Biology- Salinity and density of Sea	
		water, Continental shelf, Adaptations of deep sea	
		organisms, Unit 4: Management of Aquatic	
the second se	and the second se	Resources- Causes of pollution: Agricultural,	
		Industrial, Sewage, Thermal and Oil spills,	
		Eutrophication, Management and conservation	
		(legislations), Sewage treatment Water quality	
and the second se		assessment- BOD and COD.	
	11 H C	Practical (=15 marks)	
the second se	the second s	iv. Observation on the Instruments used in limnology	
	and the second se	(Secchi disc, Van Dorn Bottle, Conductivity meter,	
		Turbidity meter, PONAR grab sampler) and their	
		significance. v. A Project Report on a visit to a	
	100 March 100 Ma	significance. v. A Project Report on a visit to a Sewage treatment plant/Marine bio-reserve/ Fisheries	

ACADEMIC QUARTER	CLASS	NAME OF THE TEACHER	TOPIC TO BE COVERED	NO OF LECTURES
JULY 21, TO SEPTEMBER 21	1 <sup>ST</sup> SEMESTER (HONS.)	Sanchita Chakraborty	ZOOL DC1:Non-Chordates I (Protists to Pseudo-coelomates)	10
		HONS. (THEORY+ PRACTICAL) GENERAL (THEORY+ PRACTICAL) SYLLABUS TOPICS ARE TO BE ALLOTED	Unit 5: Ctenophora: General characteristics and evolutionary significance. Unit 6: Platyhelminthes: General characteristics and classification up to classes; Life cycle, pathogenicity, parasitic adaptations and control measures of Fasciola hepatica and Taenia solium. Unit 7: Nemathelminthes: General characteristics and classification up to classes; Life cycle, pathogenicity, parasitic adaptations and control measures of Ascaris lumbricoides and Wuchereria Bancrofti	
1	19	छ म	RUT REPORTED	6
	1 <sup>st</sup> SEMESTER (Gen)		(A1)DC 1: Animal Diversity and Ecology (=50 marks) (Theory: 25 marks, Practical: 15 marks, Internal Assessment: 10 marks) Theory (=25 marks)[(A1)-ZOOL-G-DC 1-T]: Group A: Biology of Non-Chordates(=10 marks) Unit 1: Basics of Animal Classification - Six kingdom concept of classification (Carl Woese). Unit 2: Protista and Metazoa - Protozoa- general characteristics and classification up to phylum, locomotion in Euglena,	10

	Paramoecium and Amoeba, conjugation in Paramoecium. Unit 3: Porifera - General characteristics and classification up to classes, canal system in sponges. Unit 4: Cnidaria - General characteristics and classification up to classes, metagenesis in Obelia; corals and coral reef diversity, functions & conservation. Unit 5: Ctenophora - General characteristics and classification up to class. Unit 6: Platyhelminthes - General characteristics and classification up to classes; life cycle and pathogenicity and control measures of Fasciola hepatica, parasitic adaptation of Fasciola sp. Practical (=15 marks) [(A1)-ZOOL-G- DC 1-P]: Group A: Experimentation (=10marks) • Biology of Non- Chordates i. Characterization of whole mount of Paramoecium sp. ii. Identification of - a. Amoeba, Euglena, Opalina, Paramecium, (from the prepared slides) b. Sycon,
\$1PT	Neptune's Cup, Obelia, Physalia, Aurelia,
3 <sup>RD</sup> SEMESTER (HONS.)	ZOOL DC5: Cell Biology and Principles of Genetics Group B: Principles of Genetics Unit 1: Mendelian Genetics and its Extension-(i) Principles of inheritance, incomplete dominance and co-dominance, multiple alleles (with special reference to blood group), lethal alleles, pleiotropy, gene interactions, (ii) Sex-linked, sex-influenced and sex-limited inheritance, polygenic inheritance (brief idea). Group B: Principles of Genetics10Unit 1: Mendelian Genetics and its Extension-(i) Principles of inheritance, incomplete dominance and co-dominance, multiple alleles (with special reference to blood group), lethal alleles, pleiotropy, gene inheritance, incomplete dominance and co-dominance, multiple alleles (with special reference to blood group), lethal alleles, pleiotropy, gene interactions,

		Unit 2: Linkage, Crossing Over and Chromosomal Mapping-Linkage, somatic crossing over, cytological basis of crossing over, molecular mechanism of crossing over.	
3 <sup>RD</sup> SEMES (Gen)	TER	<ul> <li>(A3)DC7 Physiology and Biochemistry</li> <li>Group A: Physiology (= 12.5 marks)</li> <li>Unit 1: Digestion and Absorption of Food-Digestion and absorption of carbohydrates, fats and proteins.</li> <li>Unit 2: Functioning of Excitable Tissue (Nerve and Muscle): Structure of neuron, Propagation of nerve impulse (myelinated and non-myelinated nerve fibre); structure of skeletal muscle,</li> <li>Practical Group A: Experimentation Physiology</li> <li>i. Preparation of temporary mounts: Blood film.</li> </ul>	10
5 <sup>th</sup> SEM (Hons)	IESTER	ZOOLDC11:HistologyandEndocrinologyUnit1:Muscularsystem-Histologyofdifferent types of muscle, Ultra structure of skeletal muscle.Unit2:Histo-architechture of liver and its function.function.Unit3:IntroductiontoEndocrinology-General idea of endocrine systems, classification, characteristic and transport of hormones, neurosecretions and neurohormones.	10
G		<ul> <li>Practical (Full marks = 15)</li> <li>1. Study of animal house: set up and maintenance of basic animal house, breeding techniques, care taken for normal and experimental animals.</li> <li>2. Examination of vaginal smear rats from live animals (Subject to UGC guideline).</li> </ul>	9
5 <sup>TH</sup> SEMES (Gen)	TER	DSE1A:CellBiologyandAnimal         Biotechnology(=50 marks), Group A: Cell         Biology (=12.5 marks)         Unit 1: Cell types- Prokaryotic and eukaryotic         cell	18

		Unit 2: Plasma membrane- Structure (Fluid mosaic model) and function of plasma membrane. Practical (=15 marks) i. Genomic DNA isolation from E.coli. ii. Plasmid DNA isolation (pUC 18/19) from E.coli	
2			
Oct21- Dec21	1 <sup>ST</sup> SEMESTER (HONS.)	ZOOL DC2: Non-Chordates II (Coelomates) Unit 4: Onychophora: General characteristics and evolutionary significance.	
	1 <sup>st</sup> SEMESTER (Gen)	Discipline Core (DC): Zoology for General Studies (A1)DC 1: Animal Diversity and Ecology Theory[(A1)-ZOOL-G-DC 1-T]: Unit 7: Aschelminthes - General characteristics and classification up to classes, life cycle, and pathogenicity and control measures of Ascaris lumbricoides; Parasitic adaptation of Ascaris sp. Unit 8: Annelida - General characteristics and classification up to classes, Excretion in Annelida.	
W.	3 <sup>RD</sup> SEMESTER (HONS.)	ZOOL DC5 Unit 3: Mutations- (i) Types of gene mutations (classification), types of chromosomal aberrations (classification with one suitable example of each), (ii) Non-disjunction and variation in chromosome number Unit 4: Sex Determination: (i)Mechanisms of sex determination in Drosophila, (ii) Sex determination in human, (iii) Dosage compensation in Drosophila & human	16
15	3 <sup>RD</sup> SEMESTER (Gen)	(A3)DC7 Physiology and Biochemistry Unit 3: Respiratory Physiology: Ventilation, external and internal respiration, transport of oxygen and carbon dioxide in blood.	
	5 <sup>TH</sup> SEMESTER (Hons)	ZOOLDC11:HistologyandEndocrinologyUnit 4: Epiphysis, Hypothalamo-hypophysial Axis-(i) Structure of pineal gland, secretions and their functions in biological rhythms and reproduction, (ii) Structure and functions of hypothalamus and hypothalamic nuclei, regulation of neuro-endocrine glands, feedback mechanisms, (iii) Structure of pituitary gland, hormones and their functions,	

		<ul> <li>hypothalamo-hypophysial portal system, disorders of pituitary gland. Unit 5: Peripheral Endocrine Glands- (i) Structure, hormones, functions and regulation of thyroid gland, parathyroid, adrenal, pancreas, ovary and testis, (ii) Hormones in homeostasis, disorders of endocrine glands</li> <li>Practical (=15 marks)</li> <li>4. Examination of sections of mammalian skin, Cartilage, Bone, Spinal cord, Nerve cell, Pituitary, Pancreas, Testis, Ovary, Adrenal, Thyroid and Parathyroid (Subject to UGC guideline).</li> </ul>	
	5 <sup>TH</sup> SEMESTER (Gen)	DSE1A:CellBiologyandAnimal Biotechnology(=50 marks), Group A: Cell Biology (=12.5 marks)Unit 2: Plasma membrane- Structure (Fluid mosaic model) and function of plasma membrane. Unit3: Cell organelles- Structure and function of Mitochondria, Nucleus, Golgi complex, ER, Ribosomes.Practical (=15 marks)iv. To study following techniques through photographs: (i) Southern Blotting,(ii) Northern Blotting, (iii)Western Blotting, (iv) DNA Sequencing (Sanger's Method) Page 14 of 23 PCR, (v) DNA fingerprinting. v. Seminar on tools and techniques of Biotechnology. vi. Study/ Identification of different stages of mitosis and meiosis.	10
3 Jan22- March22	2 <sup>nd</sup> SEMESTER (HONS.)	DC3 Unit 7: Reptilia: (i) General characteristics and classification up to living Orders. (Young 1981),(ii) Poison apparatus and biting mechanism in snake, snake venom and method of treatment of snake biting,(ii) Sphenodon- present status	10
	2 <sup>nd</sup> SEMESTER (Gen)	DC4         Unit 4: Circulatory System- General plan of circulation, comparative account of heart and aortic arches.         DC4P         i. Study of placoid, cycloid and ctenoid scales through permanent slides/photographs.	18

		<ul> <li>ii. Study of disarticulated skeleton of toad, pigeon, fowl, guineapig and rabbit.</li> <li>iii. Demonstration of carapace and plastron</li> </ul>	
	4 <sup>th</sup> SEMESTER (HONS.)	of turtle. DC9 Unit 7: Physiology of Heart - Structure of mammalian heart, coronary circulation, structure and working of conducting myocardial fibres, origin and conduction of cardiac impulses; ECG, cardiac cycle and cardiac output; blood pressure and its regulation Unit 8: Thermoregulation & Osmoregulation - Physiological classification based on thermal biology; thermoregulation of homeotherms; osmoregulation in aquatic vertebrates; extra renal osmoregulatory organs in vertebrates.	10
	4 <sup>th</sup> SEMESTER (Gen)	DC10 Grp-B Unit 1: Life's Beginnings- Origin of life, Chemogeny Unit 2: Theory and concept of evolution - Historical review of evolutionary concepts, Lamarkism, Darwinism and Neo-Darwinism, Geological time scale, evolution of Horse.	10
	6 <sup>тн</sup> SEMESTER (Hons)	ZOOLDC13:ParasitologyandImmunology, Group A: Parasitology (=12.5marks)Unit 1:Unit 1:Introduction of Parasitism, Parasite, ParasitoidandVectors (mechanical and biologicalvector)Host parasite relationship.Unit 2:Parasitic Protists:Study ofMorphology,Life Cycle,Prevalence,Epidemiology,Pathogenicity,Diagnosis,ProphylaxisandTrypanosomagambiense,	10
ł	1/	Leishmania donovani. <b>Group A : Laboratory Experimentation</b> 1. Study of life stages of Giardia intestinalis, Trypanosoma gambiense and Leishmania donovani through permanent slides/micro photographs.	5
		<ul> <li>ZOOL DSE: 2 Biostatistics (OR) Bioinformatics</li> <li>1. Basic idea on variables, frequency distribution and sampling. 2. Measures of central tendency: mean, median, mode.</li> <li>Practical (=15 marks)</li> <li>1. Frequency distribution, bar diagram,</li> </ul>	

		frequency curve, Principal Component	
	6 <sup>TH</sup>	analysis, Correlation matrix DSE 4A: Aquatic Biology(=50 marks)	10
	o SEMESTER (Gen)	Unit 1: Aquatic Biology(=50 marks) Unit 1: Aquatic Biomes- Brief introduction of the aquatic biomes: Freshwater ecosystem (lakes, wetlands, streams and rivers), estuaries, intertidal zones, and coral reefs.	10
	0.00	Practical (=15 marks) i. Determine the area of a lake using graphimetric and gravimetric method. ii. Identify the important macrophytes, phytoplanktons and zooplanktons present in a lake ecosystem.	
4	100	Ver Cal	
April22- June22	2 <sup>nd</sup> SEMESTER (HONS.)	DC3: Unit 9: Mammals: (i) General characters and classification up to living Infra class (Young,1981), (ii) Affinities of Prototheria, (iii) Adaptive radiation in mammals with reference to locomotory appendages, (iv) Echolocation in Chiropterans and Cetaceans. DC3P iv. Amphibia: Necturus, Bufo, Rana, Hyla, Alytes, Axoltl, Tylototriton, Ambystoma. DC4	10
12	SEMESTER (Gen)	Unit 6: Nervous System- Comparative account of brain, cranial nerves in mammals. Unit 7: Skeletal System- Evolution of visceral arches. DC4P Grp-A	9
	4 <sup>th</sup> SEMESTER (HONS.)	DC10 Grp-A Unit 1: Definition of taxonomy, micro- and macro taxonomy, systematic, Linnean hierarchy, cladistics, hierarchy, taxonomic types	10
	4 <sup>th</sup> SEMESTER (Gen)	DC10 Grp-B Unit 3: Sources of variations - Types of variations and their role in evolution Unit 4: Population genetics - Hardy-Weinberg law, Natural selection; Genetic drift	18

		mechanism (Founder's effect, Bottleneck phenomenon);	
	6 <sup>TH</sup> SEMESTER	ZOOL DSE: 2 Biostatistics (OR) Bioinformatics	10
	(Hons)	<ul> <li>4. Test of significance: t-test, ANOVA, Chi-square test. 5. Correlation and regression analysis. 6. Probability distribution and significance.</li> <li>Practical (=15 marks)</li> <li>2. Chi-square test, t-test, ANOVA, Correlation analysis from data provided.</li> <li>ZOOL DC13: Parasitology and Immunology, Group A: Parasitology (=12.5 marks)</li> <li>Practical (=15 marks)</li> <li>Unit 5: Parasitic Arthropods: Biology, importance and control of Ticks, Mites, Lice, Flea and Bug</li> <li>Practical (=15 marks)</li> <li>5. Study of nematode/cestode parasites from the intestines of Poultry bird (Intestine can be procured from poultry/market as a by-product).</li> <li>6. Submission of a brief report on parasitic vertebrates.</li> </ul>	
	6 <sup>th</sup> SEMESTER	 DSE 4A: Aquatic Biology(=50 marks)	10
ł	(Gen)	Unit 3: Marine Biology- Salinity and density of Sea water, Continental shelf, Adaptations of deep sea organisms, Unit 4: Management of Aquatic Resources- Causes of pollution: Agricultural, Industrial, Sewage, Thermal and Oil spills, Eutrophication, Management and conservation (legislations), Sewage treatment Water quality assessment- BOD and COD. <b>Practical (=15 marks)</b> iv. Observation on the Instruments used in limnology (Secchi disc, Van Dorn Bottle, Conductivity meter, Turbidity meter, PONAR grab sampler) and their significance	5

ACADEMIC QUARTER	CLASS	NAME OF THE TEACHER	TOPIC TO BE COVERED	NO OF LECTURES
JULY 21, TO SEPTEMBER 21	1 <sup>ST</sup> SEMESTER (HONS.)	HONS. (THEORY+ PRACTICAL) GENERAL (THEORY+ PRACTICAL) SYLLABUS TOPICS ARE TO BE ALLOTED	<ul> <li>ZOOL DC1:Non-Chordates I (Protists to Pseudo-coelomates)</li> <li>Unit 5: Ctenophora: General characteristics and evolutionary significance. Unit 6: Platyhelminthes: General characteristics and classification up to classes; Life cycle, pathogenicity, parasitic adaptations and control measures of Fasciola hepatica and Taenia solium.</li> <li>Unit 7: Nemathelminthes: General characteristics and classification up to classes; Life cycle, pathogenicity, parasitic adaptations up to classes; Life cycle, pathogenicity, parasitic adaptations and control measures of Fasciola hepatica and Taenia solium.</li> <li>Unit 7: Nemathelminthes: General characteristics and classification up to classes; Life cycle, pathogenicity, parasitic adaptations and control measures of Ascaris lumbricoides and Wuchereria Bancrofti</li> <li>Practical [ ZOOL-H-DC1-P] Group A: Laboratory experimentation 1. Study of whole mount of Euglena, Amoeba and Paramoecium</li> <li>2. Identification: <ul> <li>a. Amoeba, Euglena, Entamoeba, Opalina, Paramecium, Plasmodium vivax and Plasmodium falciparum (from the prepared slides).</li> </ul> </li> </ul>	18
	1 <sup>st</sup> SEMESTER (Gen)		(A1)DC 1: Animal Diversity and Ecology (=50 marks) (Theory: 25 marks, Practical: 15 marks, Internal Assessment: 10 marks) Theory (=25 marks)[(A1)-ZOOL-G-DC 1-T]: Group A: Biology of Non-Chordates(=10 marks) Unit 1: Basics of Animal Classification - Six kingdom concept of classification (Carl Woese). Unit 2: Protista and Metazoa - Protozoa-general characteristics and classification up to phylum, locomotion in Euglena, Paramoecium and Amoeba, conjugation in Paramoecium. Unit 3: Porifera - General characteristics and classification up to classes, canal system in sponges. Unit 4: Cnidaria - General characteristics and coral reef diversity, functions & conservation. Unit 5: Ctenophora - General characteristics and	18

	1	classification up to class. Unit 6: Platyhelminthes - General characteristics and classification up to classes; life cycle and pathogenicity and control measures of Fasciola hepatica, parasitic adaptation of Fasciola sp. Unit 7: Aschelminthes - General characteristics and classification up to classes, life cycle, and pathogenicity and control measures of Ascaris lumbricoides; Parasitic adaptation of Ascaris sp. Practical (=15 marks) [(A1)-ZOOL-G-DC 1-P]: Group A: Experimentation (=10marks) • Biology of Non-Chordates i. Characterization of whole mount of Paramoecium sp. ii. Identification of - a. Amoeba, Euglena, Opalina, Paramecium, (from the prepared slides) b. Sycon, Neptune's Cup, Obelia, Physalia, Aurelia, Tubipora, Corallium, Alcyonium,Gorgonia, Metridium, Pennatula, Fungia, Meandrina,	
		Madrepora from museum specimen.	
3 <sup>RD</sup> SEMESTER (HONS.)		ZOOL DC5: Cell Biology and Principles of Genetics Group B: Principles of Genetics Unit 1: Mendelian Genetics and its Extension-(i) Principles of inheritance, incomplete dominance and co-dominance, multiple alleles (with special reference to blood group), lethal alleles, pleiotropy, gene interactions, (ii) Sex-linked, sex-influenced and sex- limited inheritance, polygenic inheritance (brief idea). Unit 2: Linkage, Crossing Over and Chromosomal Mapping-Linkage, somatic crossing over, cytological basis of crossing over, molecular mechanism of crossing over. Group B: Principles of Genetics Unit 1: Mendelian Genetics and its Extension-(i) Principles of inheritance, incomplete dominance and co-dominance, multiple alleles (with special reference to blood group), lethal alleles, pleiotropy, gene interactions, (ii) Sex-linked, sex-influenced and sex- limited inheritance, polygenic inheritance (brief idea). Unit 2: Linkage, Crossing Over and Chromosomal Mapping-Linkage, somatic crossing over, cytological basis of crossing over, molecular mechanism of crossing over.	18
3 <sup>RD</sup> SEMESTER (Gen)		<ul> <li>(A3)DC7 Physiology and Biochemistry</li> <li>Group A: Physiology (= 12.5 marks)</li> <li>Unit 1: Digestion and Absorption of Food- Digestion and absorption of carbohydrates, fats and proteins.</li> <li>Unit 2: Functioning of Excitable Tissue (Nerve and Muscle): Structure of neuron, Propagation of nerve impulse (myelinated and non-myelinated nerve fibre); structure of skeletal muscle, Mechanism of muscle</li> </ul>	18

		contraction, Neuromuscular junction, Synaptic transmission. Practical Group A: Experimentation Physiology i. Preparation of temporary mounts: Blood film. ii. Preparation of hemin and hemochromogen crystals iii. Estimation of haemoglobin using Sahli's haemoglobinometer.	
	5 <sup>th</sup> SEMESTER (Hons)	<ul> <li>ZOOL DC11: Histology and Endocrinology</li> <li>Unit1: Muscular system-Histology of different types of muscle, Ultra structure of skeletal muscle.</li> <li>Unit2: Histo-architechture of liver and its function.</li> <li>Unit3: Introduction to Endocrinology- General idea of endocrine systems, classification, characteristic and transport of hormones, neurosecretions and neurohormones.</li> <li>Practical (Full marks = 15)</li> <li>Study of animal house: set up and maintenance of basic animal house, breeding techniques, care taken for normal and experimental animals.</li> <li>Examination of vaginal smear rats from live animals (Subject to UGC guideline).</li> <li>Tissue fixation, embedding in paraffin, microtomy and slide preparation of any endocrine gland (Subject to UGC guideline).</li> </ul>	18
	5 <sup>TH</sup> SEMESTER (Gen)	DSE1A:CellBiologyandAnimal Biotechnology(=50 marks), Group A: Cell Biology (=12.5 marks) Unit 1: Cell types- Prokaryotic and eukaryotic cell Unit 2: Plasma membrane- Structure (Fluid mosaic model) and function of plasma membrane. Practical (=15 marks) i. Genomic DNA isolation from E.coli. ii. Plasmid DNA isolation (pUC 18/19) from E.coli	18
2 Oct21- Dec21	1 <sup>ST</sup> SEMESTER (HONS.)	ZOOL DC2: Non-Chordates II (Coelomates) Unit 4: Onychophora: General characteristics and evolutionary significance.	18
l	1 <sup>st</sup> SEMESTER (Gen)	Discipline Core (DC): Zoology for General Studies (A1)DC 1: Animal Diversity and Ecology Theory[(A1)-ZOOL-G-DC 1-T]: Unit 7: Aschelminthes - General characteristics and classification up to classes, life cycle, and pathogenicity and control measures of Ascaris lumbricoides; Parasitic adaptation of Ascaris sp. Unit 8: Annelida - General characteristics and classification up to classes, Excretion in Annelida. Unit 13: Hemichordata: General characteristics of phylum Hemichordata; relationship with non- chordates and chordates.	18
	3 <sup>RD</sup> SEMESTER (HONS.)	ZOOL DC5 Unit 3: Mutations- (i) Types of gene mutations (classification), types of chromosomal aberrations (classification with one suitable example of each), (ii) Non-disjunction and variation in chromosome number Unit 4: Sex Determination: (i)Mechanisms of sex determination in Drosophila, (ii) Sex determination in human, (iii) Dosage compensation in Drosophila & human Unit 5: Extra-chromosomal Inheritance and Maternal	18

		effect- (i) Criteria for extra chromosomal inheritance, (ii) Kappa particle in Paramoecium, (iii) Shell spiralling in snail. ZOOL-H-DC5-P Identification of chromosomal aberration in Drosophila and human (by photograph). Identification of various mutants of Drosophila. ( by photographs only)	
	3 <sup>RD</sup> SEMESTER (Gen)	(A3)DC7 Physiology and Biochemistry Unit 3: Respiratory Physiology: Ventilation, external and internal respiration, transport of oxygen and carbon dioxide in blood.	18
	5 <sup>TH</sup> SEMESTER (Hons)	<ul> <li>ZOOL DC11: Histology and Endocrinology         <ul> <li>Unit 4: Epiphysis, Hypothalamo-hypophysial Axis-(i)</li> <li>Structure of pineal gland, secretions and their functions in biological rhythms and reproduction, (ii)</li> <li>Structure and functions of hypothalamus and hypothalamic nuclei, regulation of neuro-endocrine glands, feedback mechanisms, (iii)</li> <li>Structure of pituitary gland, hormones and their functions, hypothalamo-hypophysial portal system, disorders of pituitary gland. Unit 5: Peripheral Endocrine Glands-(i)</li> <li>Structure, hormones, functions and regulation of thyroid gland, parathyroid, adrenal, pancreas, ovary and testis, (ii)</li> <li>Hormones in homeostasis, disorders of endocrine glands</li> </ul> </li> <li>Practical (=15 marks)         <ul> <li>Examination of sections of mammalian skin, Cartilage, Bone, Spinal cord, Nerve cell, Pituitary, Pancreas, Testis, Ovary, Adrenal, Thyroid and Parathyroid (Subject to UGC guideline). 5.</li> <li>Examination of histological sections from photomicrographs/ permanent slides of rat/human: testis, epididymis and accessory glands of male reproductive systems; Sections of ovary, Fallopian tube, Uterus (Subject to UGC guideline). 6. Double staining of prepared histological slides (Subject to UGC guideline).</li> </ul> </li> <li>DSE1A:CellBiologyandAnimal Biotechnology(=50 marks), Group A: Cell Biology (=12.5 marks)         <ul> <li>Unit 2: Plasma membrane- Structure (Fluid mosaic model) and function of plasma membrane. Unit3: Cell organelles- Structure and function of Mitochondria, Nucleus, Golgi complex, ER, Ribosomes.</li> </ul> </li> </ul>	18
- 3.2		Practical (=15 marks) iv. To study following techniques through photographs: (i) Southern Blotting,(ii) Northern Blotting, (iii)Western Blotting, (iv) DNA Sequencing (Sanger's Method) Page 14 of 23 PCR, (v) DNA fingerprinting. v. Seminar on tools and techniques of Biotechnology. vi. Study/ Identification of different stages of mitosis and meiosis.	9
3 Jan22- March22	2 <sup>nd</sup> SEMESTER (HONS.)	DC3 Unit 7: Reptilia: (i) General characteristics and classification up to living Orders. (Young 1981),(ii) Poison apparatus and biting mechanism in snake, snake venom and method of treatment of snake	18

	biting,(ii) Sphenodon- present status	
	Unit 8: Aves: (i) General characteristics and	
	classification up to Sub-Classes. (Young, 1981), (ii)	
	Exoskeleton and migration in birds, (ii) Principles and	
	aerodynamics of flight, (iv) Archaeopteryx-a	
	connecting link.	
2 <sup>nd</sup> SEMESTER	DC4	18
(Gen)	Unit 4: Circulatory System- General plan of	10
	circulation, comparative account of heart and aortic	
	arches.	
	Unit 5: Urinogenital System- Succession of kidney,	
	Evolution of urinogenital ducts.	
	DC4P	
	i. Study of placoid, cycloid and ctenoid scales through	
	permanent slides/photographs.	
	ii. <b>Study</b> of disarticulated skeleton of toad, pigeon,	
	fowl, guineapig and rabbit.	
4 <sup>th</sup> SEMESTER	iii. <b>Demonstration</b> of carapace and plastron of turtle.	10
(HONS.)	DC9	18
(110183.)	Unit 7: Physiology of Heart - Structure of mammalian	
	heart, coronary circulation, structure and working of	
	conducting myocardial fibres, origin and conduction	
	of cardiac impulses; ECG, cardiac cycle and cardiac	
	output; blood pressure and its regulation	
	Unit 8: Thermoregulation & Osmoregulation -	
	Physiological classification based on thermal biology;	
	thermoregulation of homeotherms; osmoregulation in	
	aquatic vertebrates; extra renal osmoregulatory organs	
	in vertebrates.	
	Unit 9: Renal Physiology - Histology of kidney and	
	nephrons, mechanism of urine formation, glomerular	
	filtration, tubular secretion, plasma clearance and	
	counter current mechanism	
4 <sup>th</sup> SEMESTER	DC10 Grp-B	18
(Gen)	Unit 1: Life's Beginnings- Origin of life, Chemogeny	10
	Unit 2: Theory and concept of evolution - Historical	
	review of evolutionary concepts, Lamarkism,	
	Darwinism and Neo-Darwinism, Geological time	
	scale, evolution of Horse.	
6 <sup>TH</sup> SEMESTER		10
6 <sup>···</sup> SEMESTER (Hons)	ZOOL DC13: Parasitology and Immunology,	18
(IIOIIS)	Group A: Parasitology (=12.5 marks)	
	Unit 1: Introduction to parasitology- Brief	
	introduction of Parasitism, Parasite, Parasitoid and	
	Vectors (mechanical and biological vector) Host	
and the second sec	parasite relationship.	
	Unit 2: Parasitic Protists: Study of Morphology, Life	
	Cycle, Prevalence, Epidemiology, Pathogenicity,	
The second se	Diagnosis, Prophylaxis and Treatment of Giardia	
	intestinalis, Trypanosoma gambiense, Leishmania	
	donovani.	
	Group A : Laboratory Experimentation	
	1. Study of life stages of Giardia intestinalis,	
	Trypanosoma gambiense and Leishmania donovani	
	through permanent slides/micro photographs.	
	2. Study of adult and life stages of Schistosoma	
	haematobium and Taenia saginata through permanent	
	slides/micro photographs.	
	ZOOL DSE: 2 Biostatistics (OR) Bioinformatics	
	1 Basic idea on variables frequency distribution and	
	1. Basic idea on variables, frequency distribution and sampling 2. Measures of central tendency: mean	
	sampling. 2. Measures of central tendency: mean,	

	6 <sup>TH</sup> SEMESTER (Gen)	<ul> <li>application</li> <li>Practical (=15 marks)</li> <li>1. Frequency distribution, bar diagram, histogram, Pie diagram, Cumulative frequency curve, Principal Component analysis, Correlation matrix</li> <li>DSE 4A: Aquatic Biology(=50 marks)</li> <li>Unit 1: Aquatic Biology(=50 marks)</li> <li>Unit 1: Aquatic Biomes- Brief introduction of the aquatic biomes: Freshwater ecosystem (lakes, wetlands, streams and rivers), estuaries, intertidal zones, and coral reefs. Unit 2: Freshwater Biology- (i) Lakes: Origin and classification, Lake as an Ecosystem, Lake morphometry, Physico-chemical Characteristics: Light, Thermal stratification, Practical (=15 marks)</li> <li>i. Determine the area of a lake using graphimetric and gravimetric method. ii. Identify the important macrophytes, phytoplanktons and zooplanktons present in a lake ecosystem.</li> </ul>	18
4	and GEMESTER	D.Cl	
April22- June22	2 <sup>nd</sup> SEMESTER (HONS.)	<ul> <li>DC3:</li> <li>Unit 9: Mammals: (i) General characters and classification up to living Infra class (Young,1981), (ii) Affinities of Prototheria, (iii) Adaptive radiation in mammals with reference to locomotory appendages, (iv) Echolocation in Chiropterans and Cetaceans.</li> <li>DC3P</li> <li>iv. Amphibia: Necturus, Bufo, Rana, Hyla, Alytes, Axoltl, Tylototriton, Ambystoma.</li> <li>v. Reptilia: Chelone, Trionyx, Hemidactylus, Varanus, Uromastix, Chamaeleon, Ophiosaurus, Draco, Bungarus, Vipera, Naja, Hydrophis, Crocodylus; Key for identification of poisonous and non-poisonous snakes.</li> <li>vi. Mammalia: Bat (insectivorous and frugivorous), Funambulus.</li> </ul>	18
ų.	2 <sup>nd</sup> SEMESTER (Gen)	DC4 Unit 6: Nervous System- Comparative account of brain, cranial nerves in mammals. Unit 7: Skeletal System- Evolution of visceral arches. DC4P Grp-A	18
13	4 <sup>th</sup> SEMESTER (HONS.)	DC10 Grp-A Unit 1: Definition of taxonomy, micro- and macro taxonomy, systematic, Linnean hierarchy, cladistics, hierarchy, taxonomic types Unit 2: Principles of Binomial nomenclature. Unit 3: Species concept: Types and modes, type concept, primary and secondary types-definition and application.	18
	4 <sup>th</sup> SEMESTER (Gen)	DC10 Grp-B Unit 3: Sources of variations - Types of variations and their role in evolution Unit 4: Population genetics - Hardy-Weinberg law, Natural selection; Genetic drift mechanism (Founder's effect, Bottleneck phenomenon);	18
	6 <sup>TH</sup> SEMESTER (Hons)	<b>ZOOL DSE: 2 Biostatistics (OR) Bioinformatics</b> 4. Test of significance: t-test, ANOVA, Chi-square	18

	<ul> <li>test. 5. Correlation and regression analysis. 6. Probability distribution and significance.</li> <li>Practical (=15 marks)</li> <li>2. Chi-square test, t-test, ANOVA, Correlation analysis from data provided.</li> <li>ZOOL DC13: Parasitology and Immunology, Group A: Parasitology (=12.5 marks)</li> <li>Unit 3: Parasitic Platyhelminthes: Study of Morphology, Life Cycle, Prevalence, Epidemiology, Pathogenicity, Diagnosis, Prophylaxis and Treatment of Schistosoma haematobium, Taenia saginata.</li> <li>Practical (=15 marks)</li> <li>Unit 5: Parasitic Arthropods: Biology, importance and control of Ticks, Mites, Lice, Flea and Bug Practical (=15 marks)</li> <li>5. Study of nematode/cestode parasites from the intestines of Poultry bird (Intestine can be procured from poultry/market as a by-product).</li> <li>6. Submission of a brief report on parasitic vertebrates.</li> <li>7. Study of rectal parasites of Periplaneta sp. / Bufo sp. 8. Demonstration of lymphoid organs.</li> </ul>	
6 <sup>TH</sup> SEMESTER (Gen)	DSE 4A: Aquatic Biology(=50 marks)Unit 3: Marine Biology- Salinity and density of Seawater, Continental shelf, Adaptations of deep seaorganisms, Unit 4: Management of AquaticResources- Causes of pollution: Agricultural,Industrial, Sewage, Thermal and Oil spills,Eutrophication, Management and conservation(legislations), Sewage treatment Water qualityassessment- BOD and COD.Practical (=15 marks)iv. Observation on the Instruments used in limnology(Secchi disc, Van Dorn Bottle, Conductivity meter,Turbidity meter, PONAR grab sampler) and theirsignificance. v. A Project Report on a visit to aSewage treatment plant/Marine bio-reserve/ FisheriesInstitutes/ any aquatic habitat/ aquaculture farm.	18



ACADEMIC QUARTER	CLASS	NAME OF THE TEACHER	TOPIC TO BE COVERED	NO OF LECTURES
JULY 21, TO SEPTEMBER 21	1 <sup>ST</sup> SEMESTER (HONS.)	TITU KARMAKAR HONS. (THEORY+ PRACTICAL) GENERAL (THEORY+ PRACTICAL) SYLLABUS TOPICS ARE TO BE ALLOTED	<ul> <li>ZOOL DC2: Non-Chordates II (Coelomates)</li> <li>Unit 1: Introduction: Evolution of coelom and metamerism.</li> <li>Unit 2: Annelida: General characteristics and classification up to classes: Type study of Pheretima sp. (morphology, locomotion, circulation and reproduction), Excretion in Annelida.</li> <li>Practical (Full marks = 15) [ZOOL-H-DC2-P]</li> <li>1. Study of following specimens: a. Annelids - Aphrodite, Nereis, Heteronereis, Sabella, Serpula, Chaetopterus, Pheretima, Hirudinaria</li> </ul>	18
	1 <sup>st</sup> SEMESTER (Gen)		<ul> <li>(A1) DC 1: Animal Diversity and Ecology (=50 marks)</li> <li>Group B: Biology of Chordates (=10 marks)</li> <li>Unit 1: Introduction to Chordates- General characteristics and outline classification of phylum Chordata.</li> <li>Unit 2: Protochordata (invertebrate chordate) - General characteristics and classification of subphylum Urochordata and Cephalochordata up to classes; retrogressive metamorphosis in Ascidia; chordate features and feeding in Branchiostoma</li> <li>Practical (=15 marks) [(A1)-ZOOL-G-DC 1-P]:</li> <li>Biology of Chordates</li> <li>i. Identification: a. Protochordata: Balanoglossus, Herdmania, Branchiostoma;Agnatha- Petromyzon, Myxine.</li> </ul>	18
15	3 <sup>RD</sup> SEMESTER (HONS.)		<b>ZOOL DC7: Developmental Biology and</b> <b>Reproductive Biology</b> Unit 1: Introduction- Basic concepts: Phases of development, cell-cell interaction, differentiation and growth, differential gene expression. Unit 2: Early Embryonic Development- Gametogenesis, spermatogenesis, oogenesis; types of eggs, egg membranes; fertilization in sea urchin, role of yolk in cleavage, blocks to polyspermy; planes and patterns of cleavage; fate maps (frog and chick); early development of frog and chick up to gastrulation; embryonic induction and organizers.	45

	<ul> <li>Unit 3: Late Embryonic Development-Fate of germ layers; extra-embryonic membranes in chick, placenta (structure, types and functions of placenta)</li> <li>Practical (Full marks = 15) [ZOOL-H-DC7-P]:</li> <li>1. Study of whole mounts of developmental stages of chick through permanent slides: Primitive streak 24, 48, 72, and 96 hours of incubation</li> <li>2. Study of the developmental stages and life cycle of Drosophila from stock culture</li> <li>3. Study of different sections of placenta (photomicropgraph/slides).</li> <li>4. Project report on Drosophila culture/Chick embryo development/ Metamorphosis of Frog (Subject to UGC guideline</li> </ul>	
3 <sup>RD</sup> SEMESTER (Gen)	<ul> <li>(A3)DC7 Physiology and Biochemistry</li> <li>Group A: Physiology (= 12.5 marks)</li> <li>Unit 1: Digestion and Absorption of Food-Digestion and absorption of carbohydrates, fats and proteins.</li> <li>Unit 2: Functioning of Excitable Tissue (Nerve and Muscle): Structure of neuron, Propagation of nerve impulse (myelinated and non-myelinated nerve fibre); structure of skeletal muscle, Mechanism of muscle contraction, Neuromuscular junction, Synaptic transmission.</li> <li>Practical Group A: Experimentation Physiology</li> <li>i. Preparation of hemin and hemochromogen crystals</li> <li>iii. Estimation of haemoglobin using Sahli's haemoglobinometer.</li> </ul>	18
5 <sup>th</sup> SEMESTER (Hons)	<ul> <li>ZOOL DC11: Histology and Endocrinology Unit1: Muscular system-Histology of different types of muscle, Ultra structure of skeletal muscle. Unit2: Histo-architechture of liver and its function. Unit 3: Introduction to Endocrinology- General idea of endocrine systems, classification, characteristic and transport of hormones, neurosecretions and neurohormones. Unit 4: Epiphysis, Hypothalamo-hypophysial Axis- (i) Structure of pineal gland, secretions and their functions in biological rhythms and reproduction, (ii) Structure and functions of hypothalamus and hypothalamic nuclei, regulation of neuro-endocrine glands, feedback mechanisms, (iii) Structure of pituitary gland, hormones and their functions, hypothalamo-hypophysial portal system, disorders of pituitary gland. Practical (Full marks = 15) 1. Study of animal house: set up and maintenance of basic animal house, breeding techniques, care taken for normal and experimental animals. 2. Examination of vaginal smear rats from live animals (Subject to UGC guideline).</li> </ul>	45

2		<ol> <li>Tissue fixation, embedding in paraffin, microtomy and slide preparation of any endocrine gland (Subject to UGC guideline).</li> <li>Examination of sections of mammalian skin, Cartilage, Bone, Spinal cord, Nerve cell, Pituitary, Pancreas, Testis, Ovary, Adrenal, Thyroid and Parathyroid (Subject to UGC guideline).</li> <li>Examination of histological sections from photomicrographs/ permanent slides of rat/human: testis, epididymis and accessory glands of male reproductive systems; Sections of ovary, Fallopian tube, Uterus (Subject to UGC guideline).</li> </ol>	
Oct21-Dec21	1 <sup>ST</sup> SEMESTER (HONS.)	ZOOL DC2: Non-Chordates II (Coelomates) Unit 4: Onychophora: General characteristics and evolutionary significance. Unit 5: Mollusca: General characteristics and classification up to classes; Nervous system and torsion in Gastropoda; Feeding and respiration in Pila sp.	18
	1 <sup>ST</sup> SEMESTER (Gen)	Discipline Core (DC): Zoology for General Studies (A1)DC 1: Animal Diversity and Ecology Theory[(A1)-ZOOL-G-DC 1-T]: Unit 7: Aschelminthes - General characteristics and classification up to classes, life cycle, and pathogenicity and control measures of Ascaris lumbricoides; Parasitic adaptation of Ascaris sp. Unit 8: Annelida - General characteristics and classification up to classes, Excretion in Annelida. Unit 9: Arthropoda - General characteristics and classification up to classes, Respiration in arthropoda (gills in prawn and trachea in cockroach). Unit 10: Onychophora- General characteristics, body structure and evolutionary significance. Unit 11: Mollusca: General characteristics and classification up to classes, Nervous system and torsion in gastropod; feeding and respiration in Pila sp. Page 5 of 23 Unit 12: Echinodermata: General characteristics and classification up to classes; water-vascular system in Asteroidea. Unit 13: Hemichordata: General characteristics of phylum Hemichordata; relationship with non- chordates and chordates.	18
	3 <sup>RD</sup> SEMESTER (HONS.)	ZOOL DC7: Developmental Biology and Reproductive BiologyUnit 5: Implications of Developmental Biology-(i) Teratogenesis: Teratogenic agents and their effects on embryonic development; in vitro fertilization, stem cell (ESC), amniocentesis Unit 6: Reproductive Endocrinology- (i) Mechanism of action of steroids and glycoprotein hormones. hypothalamo – hypophyseal – gonadal axis, regulation of gonadotrophin secretion in human (male and female),(ii) Reproductive system: development and differentiation of gonads, genital ducts and external genitalia.	45

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		Unit 7: Reproductive Health- (i) Infertility in male	
		and female: causes, diagnosis and management, (ii)	
		Assisted reproductive technology: sex selection,	
		sperm banks, frozen embryos, in vitro	
		fertilization,(iii) Modern contraceptive technologies	
		Practical (Full marks = 15) [ZOOL-H-DC7-P]:	
		5. Study of live gametes of white rat (Subject to UGC	
		guideline). 6. Examination of vaginal smear from	
		rats (Subject to UGC guideline). 7. Examination of	
		histological sections from	
		photomicrographs/permanent slides of rat/human:	
		testis, epididymis and accessory glands of male	
		reproductive systems; Sections of ovary, fallopian	
	3 <sup>RD</sup>	tube (Subject to UGC guideline).	19
	-	 (A3)DC7 Physiology and Biochemistry Unit 3: Respiratory Physiology: Ventilation, external	18
	SEMESTER	 and internal respiration, transport of oxygen and	
	(Gen)	 carbon dioxide in blood.	
		Unit 4: Renal Physiology: Functional anatomy of	
		kidney, Mechanism of urine formation.	
	5 <sup>TH</sup>	 ZOOL DC11: Histology and Endocrinology	45
	SEMESTER	Unit 4: Epiphysis, Hypothalamo-hypophysial Axis-	-
	(Hons)	(i) Structure of pineal gland, secretions and their	
	(110113)		
		functions in biological rhythms and reproduction, (ii)	
		 Structure and functions of hypothalamus and	
	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	hypothalamic nuclei, regulation of neuro-endocrine	
		glands, feedback mechanisms, (iii) Structure of	
		pituitary gland, hormones and their functions,	
		hypothalamo-hypophysial portal system, disorders	
		of pituitary gland.	
		Unit 5: Peripheral Endocrine Glands- (i) Structure,	
		hormones, functions and regulation of thyroid gland,	
	100 million (100 m	parathyroid, adrenal, pancreas, ovary and testis, (ii)	
		Hormones in homeostasis, disorders of endocrine	
		glands	
	and the second se	Practical (=15 marks)	
	and the second second	 4. Examination of sections of mammalian skin,	
1.		Cartilage, Bone, Spinal cord, Nerve cell, Pituitary,	
		Pancreas, Testis, Ovary, Adrenal, Thyroid and	
		Parathyroid (Subject to UGC guideline).	
		5. Examination of histological sections from	
		photomicrographs/ permanent slides of rat/human:	
		testis, epididymis and accessory glands of male	100
		reproductive systems; Sections of ovary, Fallopian	
10.1		tube, Uterus (Subject to UGC guideline).	
1.00		6. Double staining of prepared histological slides	
		(Subject to UGC guideline)	
3			
Jan22-March22	2 <sup>nd</sup>	DC3	18
	SEMESTER	Unit 7: Reptilia: (i) General characteristics and	
	(HONS.)	classification up to living Orders. (Young 1981),(ii)	
		Poison apparatus and biting mechanism in snake,	
		snake venom and method of treatment of snake	
		biting,(ii) Sphenodon- present status	
		Unit 8: Aves: (i) General characteristics and	
		classification up to Sub-Classes. (Young, 1981), (ii)	

		Excelution and migration in hinds (ii) Dringinlas	
		Exoskeleton and migration in birds, (ii) Principles	
		and aerodynamics of flight, (iv) Archaeopteryx-a	
	and	connecting link.	10
	2 <sup>nd</sup>	DC4	18
	SEMESTER	Unit 4: Circulatory System- General plan of	
	(Gen)	circulation, comparative account of heart and aortic	
		arches.	
		Unit 5: Urinogenital System- Succession of kidney,	
		Evolution of urinogenital ducts.	
		DC4P	
		i. Study of placoid, cycloid and ctenoid scales	
		through permanent slides/photographs.	
		ii. Study of disarticulated skeleton of toad, pigeon,	
		fowl, guineapig and rabbit.	
	th on thomp	iii. <b>Demonstration</b> of carapace and plastron of turtle.	4.5
	4 <sup>th</sup> SEMESTER	DC9	45
	(HONS.)	Unit 7: Physiology of Heart - Structure of mammalian heart, coronary circulation, structure	
	120.00	and working of conducting myocardial fibres, origin	
		and conduction of cardiac impulses; ECG, cardiac	
		cycle and cardiac output; blood pressure and its	
		regulation	
		Unit 8: Thermoregulation & Osmoregulation -	
		Physiological classification based on thermal	
	- Transfer and the	biology; thermoregulation of homeotherms;	
		osmoregulation in aquatic vertebrates; extra renal	
		osmoregulatory organs in vertebrates.	
		Unit 9: Renal Physiology - Histology of kidney and	
		nephrons, mechanism of urine formation,	
		glomerular filtration, tubular secretion, plasma	
	6 <sup>TH</sup>	clearance and counter current mechanism ZOOL DC13: Parasitology and Immunology,	45
	SEMESTER	Group A: Parasitology (=12.5 marks)	ч <i>3</i>
		Unit 1: Introduction to parasitology- Brief	
	(Hons)		
		introduction of Parasitism, Parasite, Parasitoid and	
	and the second se	Vectors (mechanical and biological vector) Host	
	and the second	parasite relationship.	
	the second se	Unit 2: Parasitic Protists: Study of Morphology, Life	
	- 1. T. I. I. M.	Cycle, Prevalence, Epidemiology, Pathogenicity,	
	- AB (1997)	Diagnosis, Prophylaxis and Treatment of Giardia	
	the second se	intestinalis, Trypanosoma gambiense, Leishmania	
		donovani.	
		Group A : Laboratory Experimentation	
		1. Study of life stages of Giardia intestinalis,	
		Trypanosoma gambiense and Leishmania donovani	
		through permanent slides/micro photographs.	
		2. Study of adult and life stages of Schistosoma	
		haematobium and Taenia saginata through	
		permanent slides/micro photographs.	
		3. Study of adult and life stages of Ancylostoma	
		duodenale, Brugia malayi and Trichinella spiralis	
		through permanent slides/micro photographs.	
		4. Study of Pediculus humanus, Xenopsylla cheopis	
4		and Cimex lectularius	

April22-June22	2 <sup>nd</sup>	DC3:	18
	SEMESTER	Unit 9: Mammals: (i) General characters and	-
	(HONS.)	classification up to living Infra class (Young, 1981),	
	(	(ii) Affinities of Prototheria, (iii) Adaptive radiation	
		in mammals with reference to locomotory	
		appendages, (iv) Echolocation in Chiropterans and	
		Cetaceans.	
		DC3P	
		iv. Amphibia: Necturus, Bufo, Rana, Hyla, Alytes,	
		Axoltl, Tylototriton, Ambystoma. v. Reptilia: Chelone, Trionyx, Hemidactylus,	
		Varanus, Uromastix, Chamaeleon, Ophiosaurus, Draco, Bungarus, Vinera, Naia, Hydrophis	
		Draco, Bungarus, Vipera, Naja, Hydrophis,	
		Crocodylus; Key for identification of poisonous and	
	the second se	non-poisonous snakes.	
		vi. Mammalia: Bat (insectivorous and frugivorous),	
		Funambulus.	
	2 <sup>nd</sup>	DC4	18
	SEMESTER	Unit 6: Nervous System- Comparative account of	
	(Gen)	brain, cranial nerves in mammals.	
		Unit 7: Skeletal System- Evolution of visceral	
	1000	arches.	
	1 201 1	DC4P Grp-A	
		iv. Identification of mammalian skulls: Bufo, Rana,	
		Columba, Cavia and Dog.	
	4 <sup>th</sup> SEMESTER	DC10 Grp-A	45
	(HONS.)	Unit 1: Definition of taxonomy, micro- and macro	
		taxonomy, systematic, Linnean hierarchy, cladistics, hierarchy, taxonomic types	
		Unit 2: Principles of Binomial nomenclature.	
		Unit 3: Species concept: Types and modes, type	
		concept, primary and secondary types-definition and	
		application.	
	6 <sup>TH</sup>	ZOOL DC13: Parasitology and Immunology,	45
	SEMESTER	Group A: Parasitology (=12.5 marks)	
	(Hons)	Unit 3: Parasitic Platyhelminthes: Study of	
		Morphology, Life Cycle, Prevalence,	
1.1		Epidemiology, Pathogenicity, Diagnosis,	
		Prophylaxis and Treatment of Schistosoma	
		haematobium, Taenia saginata.	10 million (1990)
		Unit 4: Parasitic Nematodes: Study of Morphology,	
		Life Cycle, Prevalence, Epidemiology,	
		Pathogenicity, Diagnosis, Prophylaxis and	
1.000		Treatment of Ancylostoma duodenale, and	
		Trichinella spiralis, Brugia malayi, Meloidogyne	
		incognita, Heterodera rostochiensis-Life-Cycle,	
		symptoms and control.	
		Practical (=15 marks)	
		Unit 5: Parasitic Arthropods: Biology, importance	
		and control of Ticks, Mites, Lice, Flea and Bug	
		Practical (=15 marks)	
		5. Study of nematode/cestode parasites from the	
		intestines of Poultry bird (Intestine can be procured	
		from poultry/market as a by-product).	

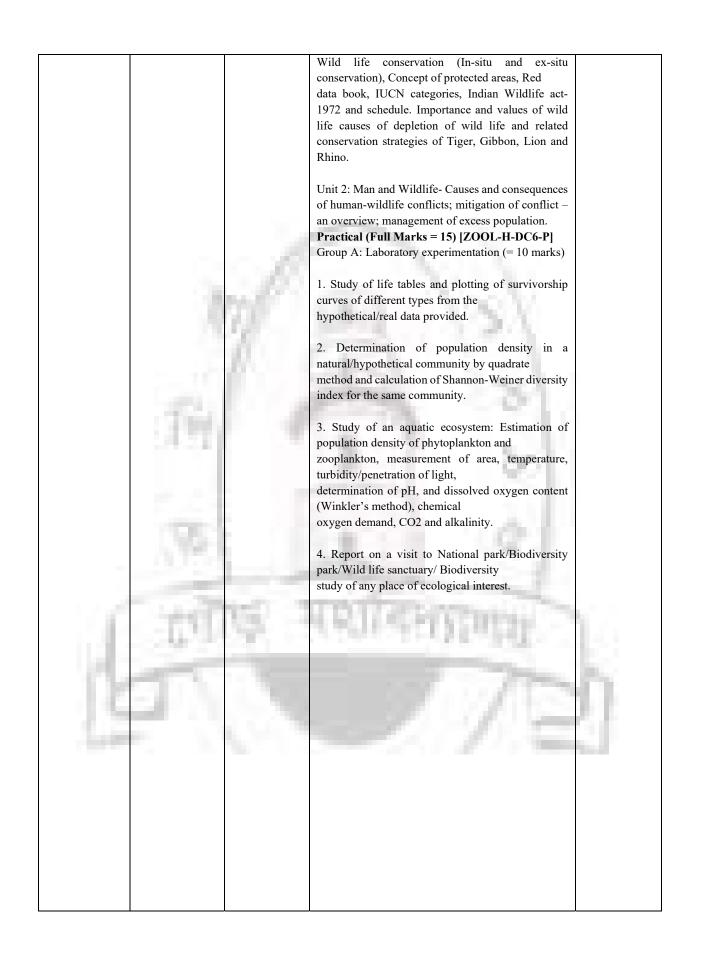
<ul> <li>6. Submission of a brief report on parasitic vertebrates.</li> <li>7. Study of rectal parasites of Periplaneta sp. / Bufo sp. 8. Demonstration of lymphoid organs.</li> <li>9. Unital parasited study of release therease and herease</li> </ul>
<ul> <li>9. Histological study of spleen, thymus and lymph nodes through slides/ photographs</li> <li>10. Preparation of stained blood film to study various types of blood cells.</li> <li>11. Antigen antibody reaction by immune-diffusion.</li> <li>12. Demonstration of ELISA.</li> </ul>
13. Determination of human blood group



ACADEMIC QUARTER	CLASS	NAME OF THE TEACHER	TOPIC TO BE COVERED	NO OF LECTURES
JULY 21, TO SEPTEMBER 21	1 <sup>ST</sup> SEMESTER (HONS.)	ATINDRIYA SEN HONS. (THEORY+ PRACTICAL) GENERAL (THEORY+ PRACTICAL) SYLLABUS TOPICS ARE TO BE ALLOTED	<ul> <li>ZOOL DC2: Non-Chordates II (Coelomates)</li> <li>Unit 1: Unit 3: Arthropoda: General characteristics and classification up to classes; Respiration in Arthropoda (gills in prawn and trachea in cockroach), Metamorphosis in Lepidopteran insects, Vision in insects.</li> <li>Unit 4: Onychophora: General characteristics and evolutionary significance.</li> <li>Unit 5: Mollusca: General characteristics and classification up to classes; Nervous system and torsion in Gastropoda; Feeding and respiration in Pila sp.</li> <li>Unit 6: Echinodermata: General characteristics and classification up to classes; Water-vascular system in Asteroidea; Larval forms in Echinodermata; Affinities with Chordates.</li> </ul>	18
			<ul> <li>Unit 7: Hemichordata: General characteristics of phylum Hemichordata; Relationship</li> <li>with non-chordates and chordates.</li> <li>(Practical (Full marks = 15) [ZOOL-H-DC2-P]</li> <li>1. Study of following specimens: <ul> <li>a. Arthropods - Limulus, Palamnaeus, Palaemon, Daphnia, Balanus, lepas, Sacculina,</li> <li>Carcinus, Eupagurus, Buthus, Scolopendra, Julus, Bombyx, Periplaneta, termites and honey bees,,Peripatus.</li> <li>b. Onychophora</li> <li>c. Molluscs - Chiton, Dentalium, Pila, Doris, Helix, Unio, Mytilus, Ostrea, Pinctada, Sepia, Octopus, Nautilus, Loligo.</li> <li>d. Echinodermates - Pentaceros/Asterias, Ophiura, Clypeaster, Echinus, Cucumaria and Antedon.</li> </ul> </li> </ul>	0

1 <sup>ST</sup> SEMESTER	Discipline Core Courses (DC): Zoology for 18
(Gen)	General Studies
	(A1)DC 1: Animal Diversity and Ecology
	Theory[(A1)-ZOOL-G-DC 1-T]:
	Group A: Biology of Non-Chordates(=10 marks)
	Unit 11: Mollusca: General characteristics and
	classification up to classes, Nervous
	system and torsion in gastropod; feeding and
	respiration in Pila.
	Unit 12: Echinodermata: General characteristics and
	classification up to classes;
	Discipline Core Courses (DC): Zoology for General
	Studies
3 14.0	(A1)DC 1: Animal Diversity and Ecology
1.4.4.4.1	Theory[(A1)-ZOOL-G-DC 1-T]:
1 1 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	Group A: Biology of Non-Chordates(=10 marks)
1.100	Unit 11: Mollusca: General characteristics and
- 10 M C	classification up to classes, Nervous
	system and torsion in gastropod; feeding and
- Charles I I	respiration in Pila.
1.000	Unit 12: Echinodermata: General characteristics and
	classification up to classes;
	classification up to classes,
	water-vascular system in Asteroidea.
1000	Unit 13: Hemichordata: General characteristics of phylum Hemichordata;
. 7.8-1	relationship with non-chordates and chordates.
	reactioning war not onordates and enordates.
	Practical (=15 marks) [(A1)-ZOOL-G-DC 1-P]:
and the second se	•Identification:
1.	f. Molluscs : Chiton, Doris, Unio, Sepia, Octopus,
1.4 1.5 4 2.5 2.5	Nautilus, Loligo. Mytilus.
and the second se	g. Echinodermate: Pentaceros/Asterias, Ophiura,
	Echinus, Cucumaria and
	Antedon.
the second se	+ Foology
And the second s	• Ecology:
	i. Study of an aquatic ecosystem: determination of
	pH, and Dissolved Oxygen content
	(Winkler's method) and CO2 in water.
	ii Doport op a ops dage visit ta
	ii. Report on a one-day visit to Sanctuary/Zoo/Sericulture
	station/Fishery/apiculture
	station/pond ecosystem/agro-ecosystem.

3 <sup>RD</sup>	ZOOL DC6: Ecology and Conservation Biology	45
SEMESTER (HONS.)	[Allotted Marks- 50 (Theory 25+ Practical 15+ Internal Assessment 10)]	
	Theory (Full marks = 25) [ZOOL-H-DC6-T]	
	<b>Group A: Perspective of Ecology</b> (= 12.5 marks)	
	Unit 1: Introduction to Ecology- History of ecology, autecology and synecology,	
5.50	levels of organization, laws of limiting factors, limiting factors: temperature and light.	
101	Unit 2: Population-(i) Population density, natality, birth rate and mortality,(ii)	
	Unique and group attributes of population: demographic factors, life tables,	
	fecundity tables, survivorship curves, dispersal and dispersion,(iii) Geometric,	
764	exponential and logistic growth, equation and patterns, r and k strategies,	
14.31	population regulation - density-dependent and independent factors, (iv)	
	Population interactions, Gause's principle with laboratory and field examples,	
	Lotka-Volterra equation for competition, intra- and inter-specific interaction.	
1.55-1	1 C 1 C 2 T	
	Unit 3: Community- (i) Community characteristics: Species diversity,	
and the second sec	abundance, dominance, richness, diversity indices, (ii) Vertical stratification,	
- TTING -	ecotone and edge effect, ecological succession with example.	
	Unit 4: Structure of Ecosystem -(i) Types of	
11/11/11/11	ecosystem with examples in details, food chain: detritus and grazing food chains, linear	0
1.000	and Y-shaped food chains, food web, energy flow through the ecosystem,	8. E
1100 C 11 C 11 C	ecological pyramids and	
	ecological efficiencies. (ii) Nutrient and biogeochemical cycles with an example of nitrogen cycle.	
	Group B: Conservation Biology	
	Unit 1: Introduction to Biodiversity & Conservation- Types and level of biodiversity,	
	Mega-biodiversity countries, Biodiversity Hotspots, Flagship species, Keystone species,	



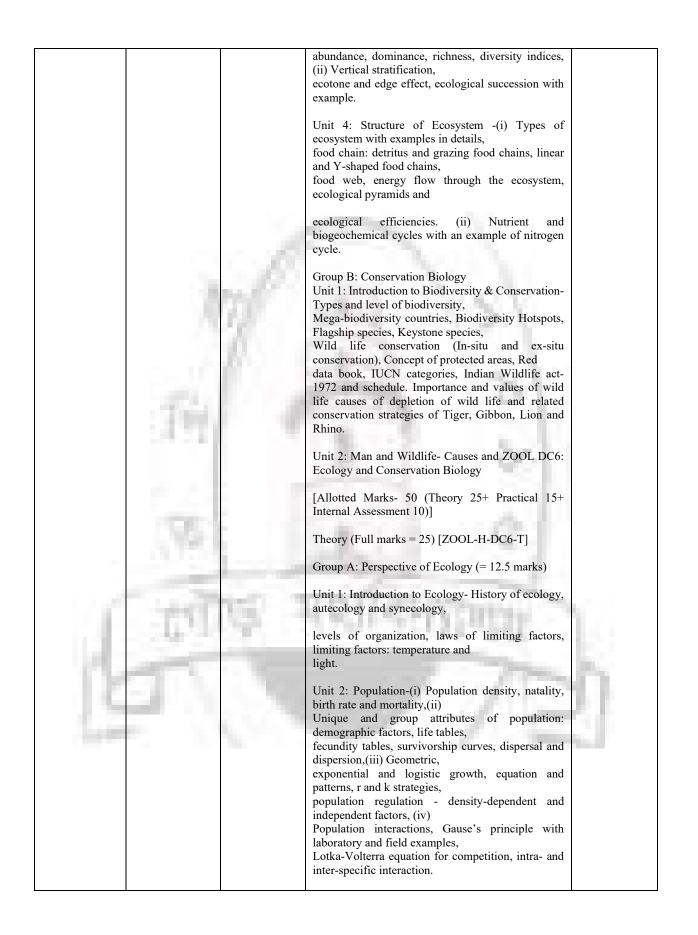
3 <sup>RD</sup>	(A3)DC7 Physiology and Biochemistry	18
SEMESTER	Unit 4: Nucleic Acids - DNA is the genetic material,	
(Gen)	Structure of purines and	
	pyrimidines, nucleosides, nucleotides, nucleic acids;	
	types of DNA and RNA.	
	Unit 5: Enzymes - Nomenclature and classification;	
	Mechanism of enzyme action.	
	(A4) DC 10 Genetics and Evolutionary Biology (=50 marks)	
	(Theory: 25 marks, Practical: 15 marks, Internal Assessment: 10 marks)	
0.000	Group B: Evolutionary Biology (= 125 marks)	
100	Unit 1: Life's Beginnings- Origin of life, Chemogeny	
10.00		
1.4	Unit 2: Theory and concept of evolution - Historical	
100	review of evolutionary concepts, Lamarkism, Darwinism and Neo-	
	Darwinism, Geological time scale,	
100 C	evolution of Horse.	
The state	Unit 3: Sources of variations - Types of variations	
14.71	and their role in evolution	
	Unit 4: Population genetics - Hardy-Weinberg law,	
	Natural selection; Genetic drift	
1 C 4	mechanism (Founder's effect, Bottleneck phenomenon);	
100-1	Unit 5: Species concept - Biological species concept	
	(advantages and limitations),	
13 T T T	isolating mechanisms, modes of speciation	
and the second se	(Allopatric, Sympatric)	
and the second s	Unit 6: Macro-evolution – Idea about Macro-	
and the second s	evolutionary Principles and stages in	
- 1. M. M.	macro-evolution (example: Darwin's Finches)	1.1
	Unit 7: Zoogeography - Zoogeographical realms,	100
A REAL PROPERTY AND A REAL	distribution of birds and	100
	mammals in different realms.	
1441111	Practical (=15 marks) [(A4)-ZOOL-G-DC 10-P]:	2.5
1480 L 1 1 1 1	Evolutionary Biology	
	i. Study of fossil evidences from plaster cast models and pictures	
	ii. Study of homology and analogy from suitable specimens/ pictures	
	iii. Study from charts: (i) Phylogeny of horse with diagrams/ cut outs of limbs and teeth	
	of horse ancestors, (ii) Darwin's Finches with diagrams/ cut outs of beaks of different	

	species.	
	iv. Identification of Zoogeographical fauna.	
5 <sup>th</sup> SEMESTER (Hons)	Paper ZOOL DC12: Economic Zoology and Industrial Zoology	45
	[Allotted Marks- 50 (Theory: 25+ Practical: 15+ Internal Assessment: 10)]	
100	Theory (Full marks = 25) [ZOOL-H-DC12-T]	
3. A	Unit 1: Aquaculture: Composite fish culture, Induced breeding of fish, types of hatcheries, Prawn culture (Fresh Water), Pearl culture, Fish diseases	
	Unit 2: Elementary idea on Agricultural insect pests : Categorization of insect pests; basic idea on economic threshold level (ETL) and economic injury level (EIL).	
194	Unit 3: Major insect pests: Life history, damage and control measures of the following pests a) Leptocorisa sp.,b) Scirpophaga sp c) Anomis sp. d) Autocharis sp. e) Sitophilus oryzae	
370	Unit 4: IPM and Insect Pest Management- Elementary idea about IPM, components, strategy and approaches, pest surveillance, sampling methods and forecasting. Elementary idea about GMO and its application on pest management.	
LTT S	Unit 5: Insecticides: Types of insecticides, insecticide residues in food stuff, phyto- toxicity due to insecticide application, first aid antidotes. Evaluation of insecticide toxicity, insecticide synergism, potentiation and antagonism, insect pest resurgence, bio- rational insecticides.	ĥ
1.00 C	Unit 6: Animal Husbandry: Types of Cattle breeds, Artificial insemination.	
	Unit 7: Poultry Farming: Types of poultry breeds, management of breeding stocks and broiler, poultry diseases and control.	
	Unit 8: Preservation of fish: Causes of fish spoilage and prevention (Drying. Salting pickling and smoking, freezing) use of ice in storage,	

			<ul> <li>Harvest limit for sustainable fishery.</li> <li>Practical (Full marks = 15) [ZOOL-H-DC12-P]</li> <li>Group A : Laboratory Experimentation (= 10 marks)</li> <li>1. Identification of different types of bees (Queens, Drones and Worker bees) with</li> <li>characters.</li> <li>2. Identification of different types of silk moths with characters.</li> </ul>	
			<ol> <li>Identification of different types of pearls with characters.</li> <li>Identification of different types of fish diseases with characters.</li> <li>Identification of different types of scales in fishes with characters.</li> <li>Identification of different types of fins with characters.</li> <li>Identification of different types of fins with characters.</li> <li>Study of different modified structures of fishes (Saw of sawfish, Hammer of hammer head fish, tail of sharks etc.).</li> </ol>	
	1.75	_	<ol> <li>8. Identification of various types of natural silks.</li> <li>9. Visit to a sericulture farm/ poultry farm/ apiary.</li> </ol>	
2		100	3. VISIT to a sericulture farm/ poultry farm/ aplary.	
Oct21-Dec21	1 <sup>ST</sup> SEMESTER (HONS.)		<b>ZOOL DC2: Non-Chordates II (Coelomates)</b> Unit 1: Unit 3: Arthropoda: General characteristics and classification up to classes; Respiration in Arthropoda (gills in prawn and trachea in cockroach), Metamorphosis in Lepidopteran insects, Vision in insects.	18
			<ul> <li>Unit 4: Onychophora: General characteristics and evolutionary significance.</li> <li>Unit 5: Mollusca: General characteristics and classification up to classes; Nervous system and torsion in Gastropoda; Feeding and respiration in Pila sp.</li> <li>Unit 6: Echinodermata: General characteristics and classification up to classes; Water-</li> </ul>	

		vascular system in Asteroidea; Larval forms in	
		Echinodermata; Affinities with	
		Chordates.	
		Unit 7: Hemichordata: General characteristics of	
		phylum Hemichordata; Relationship	
		with non-chordates and chordates.	
		(Practical (Full marks = 15) [ZOOL-H-DC2-P]	
		1. Study of following specimens:	
		a. Arthropods - Limulus, Palamnaeus, Palaemon,	
		Daphnia, Balanus, lepas, Sacculina,	
		Carcinus, Eupagurus, Buthus, Scolopendra, Julus,	
		Bombyx, Periplaneta, termites and	
		honey bees,,Peripatus.	
	100 100	b. Onychophora	
	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	and the second se	
	1.00	c. Molluscs - Chiton, Dentalium, Pila, Doris, Helix,	
		Unio, Mytilus, Ostrea, Pinctada,	
		Sepia, Octopus, Nautilus, Loligo.	
		Sepia, Octopus, Ivaunus, Longo.	
		I FI' I A DA HAR OT	
- 17.6		d. Echinodermates - Pentaceros/Asterias, Ophiura,	
		Clypeaster, Echinus, Cucumaria and	
		Antedon.	
1 <sup>ST</sup> SEMEST	TER	Discipline Core Courses (DC): Zoology for	18
(Gen)		General Studies	
		and the second se	
		(A1)DC 1: Animal Diversity and Ecology	
		(A1)DC 1: Animal Diversity and Ecology Theory(A1)_ZOOL_C_DC 1_T1:	
100		Theory[(A1)-ZOOL-G-DC 1-T]:	
100			
1		Theory[(A1)-ZOOL-G-DC 1-T]:	
1.70		Theory[(A1)-ZOOL-G-DC 1-T]: Group A: Biology of Non-Chordates(=10 marks)	
17		Theory[(A1)-ZOOL-G-DC 1-T]: Group A: Biology of Non-Chordates(=10 marks) Unit 11: Mollusca: General characteristics and	
		Theory[(A1)-ZOOL-G-DC 1-T]: Group A: Biology of Non-Chordates(=10 marks)	
		Theory[(A1)-ZOOL-G-DC 1-T]: Group A: Biology of Non-Chordates(=10 marks) Unit 11: Mollusca: General characteristics and	
		Theory[(A1)-ZOOL-G-DC 1-T]: Group A: Biology of Non-Chordates(=10 marks) Unit 11: Mollusca: General characteristics and classification up to classes, Nervous	
		Theory[(A1)-ZOOL-G-DC 1-T]: Group A: Biology of Non-Chordates(=10 marks) Unit 11: Mollusca: General characteristics and classification up to classes, Nervous system and torsion in gastropod; feeding and	16
		Theory[(A1)-ZOOL-G-DC 1-T]: Group A: Biology of Non-Chordates(=10 marks) Unit 11: Mollusca: General characteristics and classification up to classes, Nervous system and torsion in gastropod; feeding and respiration in Pila.	6
		<ul> <li>Theory[(A1)-ZOOL-G-DC 1-T]: Group A: Biology of Non-Chordates(=10 marks)</li> <li>Unit 11: Mollusca: General characteristics and classification up to classes, Nervous system and torsion in gastropod; feeding and respiration in Pila.</li> <li>Unit 12: Echinodermata: General characteristics and</li> </ul>	į,
		<ul> <li>Theory[(A1)-ZOOL-G-DC 1-T]: Group A: Biology of Non-Chordates(=10 marks)</li> <li>Unit 11: Mollusca: General characteristics and classification up to classes, Nervous system and torsion in gastropod; feeding and respiration in Pila.</li> <li>Unit 12: Echinodermata: General characteristics and classification up to classes;</li> </ul>	K.
		<ul> <li>Theory[(A1)-ZOOL-G-DC 1-T]: Group A: Biology of Non-Chordates(=10 marks)</li> <li>Unit 11: Mollusca: General characteristics and classification up to classes, Nervous system and torsion in gastropod; feeding and respiration in Pila.</li> <li>Unit 12: Echinodermata: General characteristics and classification up to classes; Discipline Core Courses (DC): Zoology for General</li> </ul>	í.
		<ul> <li>Theory[(A1)-ZOOL-G-DC 1-T]: Group A: Biology of Non-Chordates(=10 marks)</li> <li>Unit 11: Mollusca: General characteristics and classification up to classes, Nervous system and torsion in gastropod; feeding and respiration in Pila.</li> <li>Unit 12: Echinodermata: General characteristics and classification up to classes;</li> </ul>	ĥ
		<ul> <li>Theory[(A1)-ZOOL-G-DC 1-T]: Group A: Biology of Non-Chordates(=10 marks)</li> <li>Unit 11: Mollusca: General characteristics and classification up to classes, Nervous system and torsion in gastropod; feeding and respiration in Pila.</li> <li>Unit 12: Echinodermata: General characteristics and classification up to classes; Discipline Core Courses (DC): Zoology for General Studies</li> </ul>	ĥ
		<ul> <li>Theory[(A1)-ZOOL-G-DC 1-T]: Group A: Biology of Non-Chordates(=10 marks)</li> <li>Unit 11: Mollusca: General characteristics and classification up to classes, Nervous system and torsion in gastropod; feeding and respiration in Pila.</li> <li>Unit 12: Echinodermata: General characteristics and classification up to classes; Discipline Core Courses (DC): Zoology for General Studies</li> <li>(A1)DC 1: Animal Diversity and Ecology</li> </ul>	9
		<ul> <li>Theory[(A1)-ZOOL-G-DC 1-T]: Group A: Biology of Non-Chordates(=10 marks)</li> <li>Unit 11: Mollusca: General characteristics and classification up to classes, Nervous system and torsion in gastropod; feeding and respiration in Pila.</li> <li>Unit 12: Echinodermata: General characteristics and classification up to classes; Discipline Core Courses (DC): Zoology for General Studies</li> <li>(A1)DC 1: Animal Diversity and Ecology Theory[(A1)-ZOOL-G-DC 1-T]:</li> </ul>	9
		<ul> <li>Theory[(A1)-ZOOL-G-DC 1-T]: Group A: Biology of Non-Chordates(=10 marks)</li> <li>Unit 11: Mollusca: General characteristics and classification up to classes, Nervous system and torsion in gastropod; feeding and respiration in Pila.</li> <li>Unit 12: Echinodermata: General characteristics and classification up to classes; Discipline Core Courses (DC): Zoology for General Studies</li> <li>(A1)DC 1: Animal Diversity and Ecology</li> </ul>	9
		<ul> <li>Theory[(A1)-ZOOL-G-DC 1-T]: Group A: Biology of Non-Chordates(=10 marks)</li> <li>Unit 11: Mollusca: General characteristics and classification up to classes, Nervous system and torsion in gastropod; feeding and respiration in Pila.</li> <li>Unit 12: Echinodermata: General characteristics and classification up to classes; Discipline Core Courses (DC): Zoology for General Studies</li> <li>(A1)DC 1: Animal Diversity and Ecology Theory[(A1)-ZOOL-G-DC 1-T]:</li> </ul>	9
		<ul> <li>Theory[(A1)-ZOOL-G-DC 1-T]: Group A: Biology of Non-Chordates(=10 marks)</li> <li>Unit 11: Mollusca: General characteristics and classification up to classes, Nervous system and torsion in gastropod; feeding and respiration in Pila.</li> <li>Unit 12: Echinodermata: General characteristics and classification up to classes; Discipline Core Courses (DC): Zoology for General Studies</li> <li>(A1)DC 1: Animal Diversity and Ecology Theory[(A1)-ZOOL-G-DC 1-T]: Group A: Biology of Non-Chordates(=10 marks)</li> </ul>	9
		<ul> <li>Theory[(A1)-ZOOL-G-DC 1-T]: Group A: Biology of Non-Chordates(=10 marks)</li> <li>Unit 11: Mollusca: General characteristics and classification up to classes, Nervous system and torsion in gastropod; feeding and respiration in Pila.</li> <li>Unit 12: Echinodermata: General characteristics and classification up to classes; Discipline Core Courses (DC): Zoology for General Studies</li> <li>(A1)DC 1: Animal Diversity and Ecology Theory[(A1)-ZOOL-G-DC 1-T]: Group A: Biology of Non-Chordates(=10 marks)</li> <li>Unit 11: Mollusca: General characteristics and</li> </ul>	9
		<ul> <li>Theory[(A1)-ZOOL-G-DC 1-T]: Group A: Biology of Non-Chordates(=10 marks)</li> <li>Unit 11: Mollusca: General characteristics and classification up to classes, Nervous system and torsion in gastropod; feeding and respiration in Pila.</li> <li>Unit 12: Echinodermata: General characteristics and classification up to classes; Discipline Core Courses (DC): Zoology for General Studies</li> <li>(A1)DC 1: Animal Diversity and Ecology Theory[(A1)-ZOOL-G-DC 1-T]: Group A: Biology of Non-Chordates(=10 marks)</li> <li>Unit 11: Mollusca: General characteristics and classification up to classes, Nervous</li> </ul>	9
		<ul> <li>Theory[(A1)-ZOOL-G-DC 1-T]: Group A: Biology of Non-Chordates(=10 marks)</li> <li>Unit 11: Mollusca: General characteristics and classification up to classes, Nervous system and torsion in gastropod; feeding and respiration in Pila.</li> <li>Unit 12: Echinodermata: General characteristics and classification up to classes; Discipline Core Courses (DC): Zoology for General Studies</li> <li>(A1)DC 1: Animal Diversity and Ecology Theory[(A1)-ZOOL-G-DC 1-T]: Group A: Biology of Non-Chordates(=10 marks)</li> <li>Unit 11: Mollusca: General characteristics and classification up to classes, Nervous system and torsion in gastropod; feeding and</li> </ul>	9
		<ul> <li>Theory[(A1)-ZOOL-G-DC 1-T]: Group A: Biology of Non-Chordates(=10 marks)</li> <li>Unit 11: Mollusca: General characteristics and classification up to classes, Nervous system and torsion in gastropod; feeding and respiration in Pila.</li> <li>Unit 12: Echinodermata: General characteristics and classification up to classes; Discipline Core Courses (DC): Zoology for General Studies</li> <li>(A1)DC 1: Animal Diversity and Ecology Theory[(A1)-ZOOL-G-DC 1-T]: Group A: Biology of Non-Chordates(=10 marks)</li> <li>Unit 11: Mollusca: General characteristics and classification up to classes, Nervous</li> </ul>	9
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		<ul> <li>Theory[(A1)-ZOOL-G-DC 1-T]: Group A: Biology of Non-Chordates(=10 marks)</li> <li>Unit 11: Mollusca: General characteristics and classification up to classes, Nervous system and torsion in gastropod; feeding and respiration in Pila.</li> <li>Unit 12: Echinodermata: General characteristics and classification up to classes; Discipline Core Courses (DC): Zoology for General Studies</li> <li>(A1)DC 1: Animal Diversity and Ecology Theory[(A1)-ZOOL-G-DC 1-T]: Group A: Biology of Non-Chordates(=10 marks)</li> <li>Unit 11: Mollusca: General characteristics and classification up to classes, Nervous system and torsion in gastropod; feeding and respiration in Pila.</li> <li>Unit 12: Echinodermata: General characteristics and classification up to classes, Nervous</li> <li>system and torsion in gastropod; feeding and respiration in Pila.</li> <li>Unit 12: Echinodermata: General characteristics and</li> </ul>	9
		<ul> <li>Theory[(A1)-ZOOL-G-DC 1-T]: Group A: Biology of Non-Chordates(=10 marks)</li> <li>Unit 11: Mollusca: General characteristics and classification up to classes, Nervous system and torsion in gastropod; feeding and respiration in Pila.</li> <li>Unit 12: Echinodermata: General characteristics and classification up to classes; Discipline Core Courses (DC): Zoology for General Studies</li> <li>(A1)DC 1: Animal Diversity and Ecology Theory[(A1)-ZOOL-G-DC 1-T]: Group A: Biology of Non-Chordates(=10 marks)</li> <li>Unit 11: Mollusca: General characteristics and classification up to classes, Nervous system and torsion in gastropod; feeding and respiration in Pila.</li> </ul>	9

	water-vascular system in Asteroidea.
	Unit 13: Hemichordata: General characteristics of
	phylum Hemichordata;
	relationship with non-chordates and chordates.
	Practical (=15 marks) [(A1)-ZOOL-G-DC 1-P]:
	•Identification:
	f. Molluscs : Chiton, Doris, Unio, Sepia, Octopus,
	Nautilus, Loligo. Mytilus.
	g. Echinodermate: Pentaceros/Asterias, Ophiura,
	Echinus, Cucumaria and
	Antedon.
374.01	1000
1111	• Ecology:
0.54%	i. Study of an aquatic ecosystem: determination of
E 184	pH, and Dissolved Oxygen content
	(Winkler's method) and CO2 in water.
1000	ii. Report on a one-day visit to
1.000	Sanctuary/Zoo/Sericulture
14.12	station/Fishery/apiculture
3RD	station/pond ecosystem/agro-ecosystem
SEMESTER	<b>ZOOL DC6: Ecology and Conservation Biology</b> 45
(HONS.)	[Allotted Marks- 50 (Theory 25+ Practical 15+
1000	Internal Assessment 10)]
. 101	Theory (Full marks = 25) [ZOOL-H-DC6-T]
	Group A: Perspective of Ecology (= 12.5 marks)
and the second se	Unit 1: Introduction to Ecology- History of ecology,
and the second sec	autecology and synecology,
1 TTT 1	levels of organization, laws of limiting factors,
1.4 10.44 (20.28) 11	limiting factors: temperature and
and the second s	light.
	Unit 2: Population-(i) Population density, natality,
	birth rate and mortality,(ii) Unique and group attributes of population:
	demographic factors, life tables,
And the second s	fecundity tables, survivorship curves, dispersal and dispersion (iii) Geometric
	dispersion,(iii) Geometric, exponential and logistic growth, equation and
	patterns, r and k strategies,
	population regulation - density-dependent and independent factors, (iv)
	Population interactions, Gause's principle with
	laboratory and field examples, Lotka-Volterra equation for competition, intra- and
	inter-specific interaction.
	Unit 2: Community (i) Community characteristics
	Unit 3: Community- (i) Community characteristics: Species diversity,



3 <sup>RD</sup> SEMESTER (Gen)	(A3)DC7 Physiology and Biochemistry Unit 4: Nucleic Acids - DNA is the genetic material, Structure of purines and	18
	<ul> <li>determination of pH, and dissolved oxygen content (Winkler's method), chemical oxygen demand, CO2 and alkalinity.</li> <li>4. Report on a visit to National park/Biodiversity park/Wild life sanctuary/ Biodiversity study of any place of ecological interest.</li> </ul>	
	3. Study of an aquatic ecosystem: Estimation of population density of phytoplankton and zooplankton, measurement of area, temperature, turbidity/penetration of light,	9
- 주민자주 -	2. Determination of population density in a natural/hypothetical community by quadrate method and calculation of Shannon-Weiner diversity index for the same community.	6
	<ol> <li>Study of life tables and plotting of survivorship curves of different types from the hypothetical/real data provided.</li> </ol>	
	Unit 2: Man and Wildlife- Causes and consequences of human-wildlife conflicts; mitigation of conflict – an overview; management of excess population. Practical (Full Marks = 15) [ZOOL-H-DC6-P] Group A: Laboratory experimentation (= 10 marks)	
191	Unit 1: Introduction to Biodiversity & Conservation- Types and level of biodiversity, Mega-biodiversity countries, Biodiversity Hotspots, Flagship species, Keystone species, Wild life conservation (In-situ and ex-situ conservation), Concept of protected areas, Red data book, IUCN categories, Indian Wildlife act- 1972 and schedule. Importance and values of wild life causes of depletion of wild life and related conservation strategies of Tiger, Gibbon, Lion and Rhino.	
1	ecological efficiencies. (ii) Nutrient and biogeochemical cycles with an example of nitrogen cycle. Group B: Conservation Biology	
	Unit 4: Structure of Ecosystem -(i) Types of ecosystem with examples in details, food chain: detritus and grazing food chains, linear and Y-shaped food chains, food web, energy flow through the ecosystem, ecological pyramids and	
	Unit 3: Community- (i) Community characteristics: Species diversity, abundance, dominance, richness, diversity indices, (ii) Vertical stratification, ecotone and edge effect, ecological succession with example.	







			<ol> <li>Identification of different types of bees (Queens, Drones and Worker bees) with characters.</li> <li>Identification of different types of silk moths with characters.</li> <li>Identification of different types of pearls with characters.</li> </ol>	
		1	<ul> <li>4. Identification of different types of fish diseases with characters.</li> <li>5. Identification of different types of scales in fishes with characters.</li> <li>6. Identification of different types of fins with characters.</li> <li>7. Study of different modified structures of fishes (Saw of sawfish, Hammer of hammer</li> </ul>	
3	19		<ul> <li>head fish, tail of sharks etc.).</li> <li>8. Identification of various types of natural silks.</li> <li>9. Visit to a sericulture farm/ poultry farm/ apiary.</li> </ul>	
Jan22-March22	2 <sup>nd</sup> SEMESTER (HONS.)	1 1 1 1 1	ZOOL DC4: Comparative Anatomy of Vertebrates[Allotted Marks- 50 (Theory: 25+ Practical: 15+ Internal Assessment: 10)]Unit 5: Circulatory System: General plan of circulation; Comparative account of heart and aortic arches.	18
			<ul> <li>Unit 6: Urinogenital System: Comparative anatomy of kidney; Evolution of</li> <li>urinogenital ducts; Types of mammalian uteri.</li> <li>Unit 7: Nervous System: Comparative account of brain; Cranial nerves in mammals</li> <li>(Origin distribution and nature)</li> </ul>	9
	2 <sup>nd</sup> SEMESTER (Gen)		(A2)-DC 4 Comparative Anatomy and Developmental Biology of Vertebrates (=50 marks)	18

	(Theory: 25 marks, Practical: 15 marks, Internal Assessment: 10 marks)	
	Theory (=25 marks) [(A2)-ZOOL-G-DC 4-T]:	
	<b>Group A: Comparative Anatomy (= 12.5 marks)</b> Unit 4: Circulatory System- General plan of circulation, comparative account of	
	heart and aortic arches.	
	Unit 5: Urinogenital System- Succession of kidney, Evolution of urinogenital ducts.	
Sec.	Unit 6: Nervous System- Comparative account of brain, cranial nerves in mammals.	
1997	Unit 7: Skeletal System- Evolution of visceral arches.	
4 <sup>th</sup> SEMESTER (HONS.)	ZOOL DC10: Systematics and Evolution (Full marks = 50)	45
541 4	[Allotted Marks- 50 (Theory: 25+ Practical: 15+ Internal Assessment: 10)] Group B: Evolution (=12.5marks)	
	Unit 1: Evidences of organic evolution- Study of comparative anatomy, embryology,	
	paleontology, biochemistry, physiology and molecular biology.	
N6-1	Unit 2 : Origin of life, chemogeny, RNA world	
	Unit 3: Historical review of evolutionary concepts, Lamarkism, Darwinism and natural	
1 40 100	selection and Neo-Darwinism	1 C - 1
1.24.26.26	Unit 4: Geological time scale, Evolution of horse.	
	Unit 5: Sources of variations and their role in evolution.	N
1000	Unit 6 : Population genetics- Hardy-Weinberg law (statement and derivation of	2.2
1000 C 11 C 11 C	equation, application of law to human population); genetic drift mechanism (founder's	
	effect, bottleneck phenomenon).	
	Unit 7: Species- Species concept, isolating mechanisms, modes of speciation; adaptive	
	radiation/macroevolution (exemplified by mammals and Galapagos finches).	

	Theory (Full marks = 25) [ZOOL-H-DC14-T]	
(Hons)	[Allotted Marks- 50 (Theory: 25+ Practical: 15+ Internal Assessment: 10)]	
6 <sup>TH</sup> SEMESTER	ZOOL DC14: Molecular Biology	45
	12. Pedigree analysis of some human inherited traits.	1.1
	11. Distribution of animals in Zoogeographical realm by map pointing method.	1.5
	humans in relation to their age and sex.	0
1.14.14	10. Graphical representation and interpretation of data of height/ weight of a sample of 100	
1 11115	9. Study and verification of Hardy-Weinberg Law by chi-square analysis.	6.2
1.75	<ul><li>7. Study of homology and analogy from suitable specimens</li><li>8. Study of fossils from models / pictures.</li></ul>	
00	6. Mapping of the distribution of endangered species on supplied data.	
	5. Dichotomous key preparation for insect identification at genus level	
199	4. Allozyme analysis in relation to morphology and taxonomy	
100 C	data.	
	3. Analysis of RFLP and RAPD data in connection with molecular taxonomy on supplied	
	2. Morphometric analysis of the wing, antenna, leg of insect for taxonomic categorization.	
	1. Cladistic analysis on the supplied data.	
	Group A: Laboratory experimentation (=10 marks)	
	Practical (Full marks = 15) [ZOOL-H-DC10-P]	
	distribution, zoogeographical realms and their faunal peculiarities; Plate tectonic and continental drift theory.	
	Unit 9: Animal distribution- Pattern of animal distribution, factors affecting animal	
	effects), detailed example of K-T extinction.	
	Unit 8: Abolition of species- Extinctions, Back ground and mass extinctions (causes and	

			Assessment: 10 marks)	
			Vertebrates (=50 marks) (Theory: 25 marks, Practical: 15 marks, Internal	
	(Gen)		Developmental Biology of	
	2 <sup>nd</sup> SEMESTER		DC4 (A2)-DC 4 Comparative Anatomy and	18
1			Unit 7: Nervous System: Comparative account of brain; Cranial nerves in mammals	1
10-		1	urinogenital ducts; Types of mammalian uteri.	0
1.1	- 44		Unit 6: Urinogenital System: Comparative anatomy of kidney; Evolution of	E
116	100	16	and aortic arches.	17.
			Unit 5: Circulatory System: General plan of circulation; Comparative account of heart	
	(HONS.)		[Allotted Marks- 50 (Theory: 25+ Practical: 15+ Internal Assessment: 10)]	
April22-June22	2 <sup>nd</sup> SEMESTER		ZOOL DC4: Comparative Anatomy of Vertebrates	18
4			sequencing, DNA finger printing.	
	1200	1	Southern blot, Northern Blot, DNA	
	120		and retinoblastoma. Apoptosis and necrosis. Unit 9: Molecular Techniques-PCR, Western and	
		1	genes with special reference to p53	
	- 38	nd i	cells, Study of Retrovirus and oncogene (Ras) mediated cancer. Tumor suppressor	
	0	- A	proto oncogenes to oncogenes , Properties of cancer	
			Unit 8: Cancer Biology- Concepts of proto oncogenes and oncogenes, Activation of	
			repair, SOS response.	
			Unit 7: DNA Repair Mechanisms-Photo- reactivation nucleotide and base excision	
			mutation and physical and chemical mutagens.	
			Unit 6: Gene Mutation-Molecular basis of gene mutation in relation to spontaneous	

Group A: Comparative Anatomy (= 12.5 marks) Unit 4: Circulatory System- General plan of	
circulation, comparative account of	
heart and aortic arches.	
Unit 5: Urinogenital System- Succession of kidney, Evolution of urinogenital ducts.	
Unit 6: Nervous System- Comparative account of brain, cranial nerves in mammals.	
Unit 7: Skeletal System- Evolution of visceral arches.	
4th SEMESTER (HONS.)ZOOL DC10: Systematics and Evolution (Full marks = 50)45	
[Allotted Marks- 50 (Theory: 25+ Practical: 15+ Internal Assessment: 10)] Group B: Evolution (=12.5marks)	
Unit 1: Evidences of organic evolution- Study of comparative anatomy, embryology,	
paleontology, biochemistry, physiology and molecular biology.	
Unit 2 : Origin of life, chemogeny, RNA world	
Unit 3: Historical review of evolutionary concepts, Lamarkism, Darwinism and natural	
selection and Neo-Darwinism	
Unit 4: Geological time scale, Evolution of horse.	
Unit 5: Sources of variations and their role in evolution.	
Unit 6 : Population genetics- Hardy-Weinberg law (statement and derivation of	
equation, application of law to human population); genetic drift mechanism (founder's	
effect, bottleneck phenomenon).	
Unit 7: Species- Species concept, isolating mechanisms, modes of speciation; adaptive	
radiation/macroevolution (exemplified by mammals and Galapagos finches).	
Unit 8: Abolition of species- Extinctions, Back ground and mass extinctions (causes and	
effects), detailed example of K-T extinction.	

		1
	Unit 9: Animal distribution- Pattern of animal distribution, factors affecting animal	
	distribution, zoogeographical realms and their faunal peculiarities; Plate tectonic and continental drift theory.	
	Practical (Full marks = 15) [ZOOL-H-DC10-P]	
	Group A: Laboratory experimentation (=10 marks)	
	1. Cladistic analysis on the supplied data.	
	2. Morphometric analysis of the wing, antenna, leg of insect for taxonomic categorization.	
mill	3. Analysis of RFLP and RAPD data in connection with molecular taxonomy on supplied	
100	data.	
10	4. Allozyme analysis in relation to morphology and taxonomy	
1000	5. Dichotomous key preparation for insect identification at genus level	
122	6. Mapping of the distribution of endangered species on supplied data.	
	<ul><li>7. Study of homology and analogy from suitable specimens</li><li>8. Study of fossils from models / pictures.</li></ul>	
375	9. Study and verification of Hardy-Weinberg Law by chi-square analysis.	
	10. Graphical representation and interpretation of data of height/ weight of a sample of 100	
1 1 1 1 1 1 1	humans in relation to their age and sex.	C 1
1.11.12	11. Distribution of animals in Zoogeographical realm by map pointing method.	£1.
	12. Pedigree analysis of some human inherited traits.	£1 -
6 <sup>TH</sup> SEMESTER	ZOOL DC14: Molecular Biology	45
(Hons)	[Allotted Marks- 50 (Theory: 25+ Practical: 15+ Internal Assessment: 10)]	1
	Theory (Full marks = 25) [ZOOL-H-DC14-T]	
	Unit 6: Gene Mutation-Molecular basis of gene mutation in relation to spontaneous	
	mutation and physical and chemical mutagens.	
	Unit 7: DNA Repair Mechanisms-Photo-reactivation nucleotide and base excision	

	repair, SOS response.	
	Unit 8: Cancer Biology- Concepts of proto oncogenes and oncogenes, Activation of	
	proto oncogenes to oncogenes , Properties of cancer cells, Study of Retrovirus and	
	oncogene (Ras) mediated cancer. Tumor suppressor genes with special reference to p53	
 A	and retinoblastoma. Apoptosis and necrosis.	
 d.	Unit 9: Molecular Techniques-PCR, Western and Southern blot, Northern Blot, DNA	
 18	sequencing, DNA finger printing.	

