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No.	

c) rRNA

M.Sc. – I (Semester – I) Examination, 2015 (New – CBCS) ZOOLOGY Biosystematics (Paper – 1)

	Biosysten	natics (Paper –	1)	
Day and Date : Mond	day, 16-11-2015		Max. Marks :	70
Time: 10.30 a.m. to	1.00 p.m.			
Instructions:	1) Question numbe	r I, 2 and 6 are com	pulsory.	
•	2) Attempt any two	from question nun	nber 3 , 4 and 5 .	
1. MCQ (Per ques	tion 2 marks) (Com	pulsory) :		14
1) Binomial non	nenclature means o	f		
a) One name	e given by two scie	ntists		
b) Two name	es, one scientific, o	ther local		
c) Two name	es, one latinize, oth	er of a person		
d) One scier	ntific name consistii	ng of a generic and	a specific epithet	
, .	n a grouping share a non ancestor called		r and all species derived	
a) Monophyl	etic	b) Paraphyletic		
c) Polyphyle	etic	d) None of thes	е	
	of linear invariants i among species is o	-	ferring the evolutionary	
a) Barry	b) Hartigan	c) Felsenstein	d) Cavender	
•	has an important a evel of variability an		es of phylogenetic research tation.	
a) Nuclear D	NA	b) Mt DNA		

d) None of these



	5)	"In	ternational			•				as first propo Congress for Z		
		a)	1890	-	1895			1950		d) 1900		
	6)			_have	been u	sed in lo	ng	time for	proble	ems of phylog	enetic	
	ŕ	inf	erence.									
		a)	Distance r	netho	d		•	Likeliho		thod		
		c)	Parsimon	y meth	od		d)	Both a a	and c			
	7)	a) b) c)	Not all des	ers of th scenda ers sha	e group ants of t are hon	share a c the comm	on no tra	n ancest aits	or are	that is included included mon ancesto		
2.	De	scr	answer typ ribe the dif ories.	-	•	-		- ,	cepts	and other int	eraspecific	14
3.	An	SW	er the follo	wing:								
	A)	Ch	emotaxon	omy.								7
	B)	His	storical res	sume c	of syste	matic.						7
4.	Ex	pla	in the follo	wing:								
		•	sic concep	•	Taxonoi	nv.						5
	,		eciation in			•	ctic	species	S.			5
	C)	Bio	odiversity I	ndices	3 .							4
5.	Ex	pla	in in short	:								
	A)	Cc	mputer aic	led tax	conomy							7
	,		scribe diffe		•		ati	c publica	itions.			7
6.			short note: NA-DNA hy		, ,	Compul	SC	ory):				14
	,	•	rtotaxonom	-								
			ylogenetic		_		m	ethod.				
			onstruct phy		netic tre	es.						
	,		ys in taxor	-	nia							
	0)	1111	munologic	ai iech	ırııques.							
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M.Sc. – I (Semester – I) Examination, 2015 (New – CBCS) ZOOLOGY Tools and Techniques in Biology (Paper – II

Tools and Techniqu	ies in Biology (Paper –	II)
Day and Date: Wednesday, 18-11-2015 Time: 10.30 a.m. to 1.00 p.m.		Total Marks : 70
·	1 2 and 6 are compulating	
Instructions: 1) Question number 2) Answer any two f	rom question number 3 , 4 ar	nd 5 .
1. MCQ (per question 2 marks) :		14
1) generates free radica	ls of acrylamide.	
a) TEMED	b) Acrylamide	
c) Ammonium persulphate	d) Agarose	
2) The index or extent of Electroph	oretic run is indicated by	
a) Bromophenol blue	b) Acrydine orange	
c) Methylene blue	d) Methyl green	
Sample dissolved in glycine chlo gel buffer exists as zwitterion.	oride buffer at pH 8-9	in the upper
a) Chloride	b) Protein sample	
c) Glycine	d) Both a) and b)	
4) gel as a support m molecules of RNA and DNA.	nedium is used for the sepa	aration of large
a) Polyacrylamide	b) Agarose	
c) Cellulose	d) Oligosaccharides	3
5) More recently a term immunoblo	otting is introduced in	technique.
a) Southern blotting	b) Western blotting	
c) Northern blotting	d) All of above	

SLR-MM – 537 6) The technique that uses antibodies to localize particular antigens in cytological preparation is called a) Immunodiffusion b) Immunity chromatography c) Immunoelectrophoresis d) Immunocytochemistry 7) The locating agent of amino acids is b) Ninhydrin spray a) Diazo reagent c) Amphoteric oxides d) Neutral oxides 14 2. Long answer type question: 1) What is Spectroscopy? Describe in detail NMR, FTIR and its applications. 3. Answer the following: A) Cell-based techniques. 7 7 B) Electron Miscroscope-TEM. 4. Explain the following: A) Sub-cellular fractionation of Nucleus. 5 5 B) Types of culture and its uses. C) Cell Viability Testing Method. 4 5. Explain in short: A) Use of Cryotomy. 7 B) TLC. 7 6. Write short notes (any four): 14 1) Column Chromatography. 2) Cryopreservation of Cells. 3) DNA library. 4) Autoradiography. 5) Antibody labels. 6) Vectors.

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W.Sc I (Semester - (New CBC)	S Pattern)
Cell and Molecular E	Biology (Paper – III)
Day and Date :Friday, 20-11-2015 Time : 10.30 a.m. to 1.00 p.m.	Total Marks : 70
Instructions: 1) Question number 2) Attempt any two	er 1, 2 and 6 are compulsory . • from question number 3, 4 and 5 .
1. MCQ (Per question 2 marks):	14
 a) Microfilaments c) Nuclei 3) Lysosomes contain enzymes that can all Lower the pH of the cytosol b) Synthesize protein c) Synthesize ATP 	d) cross link with myosin ure are not moved by axonal transport? b) Mitochondria d) ER
is the	na membrane, but outside of organelles c) Vacuole d) Nucleoplasm
, ,	onents is not part of cytoskeleton of b) Mitochondria d) Microtubules

SLR-MM - 5386) During secretion newly made proteins in the ER more is a) cis-Golgi stack b) trans Golgi portion c) medial-Golgi cisternae d) trans-Golgi network 7) A signal sequence is located at the b) C-terminus a) N-terminus d) 5' end of m-RNA c) Cytosolic face of ER 14 2. Long answer type questions: 1) What is Cancer? Add a note on Biology of cancer and causes of cancer. 3. Answer the following: 7 A) Cytoskeleton. 7 B) Structure and dynamics of microfilaments and microtubules. 4. Explain the following: 5 A) Chemical synapses B) Cell cycle control. 5 C) Lysosomal assembly and functions. 4 5. Explain in short: A) Protein synthesis on free and bound polysomes. 7 7 B) Passive and active transport. 14 6. Write short notes (any four): 1) Biogenesis of mitochondria 2) Flagella: structure and dynamics 3) Molecular composition 4) Cilia

5) Microtubules in mitosis

6) Integrins.



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c) punctuated equilibrium

M.Sc. – I (Semester – I) Examination, 2015 (New CBCS) ZOOLOGY Population Genetics and Evolution (Paper – IV)

Day and Date: Monday Time: 10.30 a.m. to 1.	Total.	Marks: 70	
Instructions :	1) Question Number 1 , 2 2) Attempt any two from	and 6 are compulsory . question number 3 , 4 and 5	<u>.</u>
1. MCQ (Per questio	on 2 marks) :		14
, 5	change over a few generat olution of a new species is	ions in a population that do	es not
a) microevoluti	ion	b) macroevolution	
c) evolutionary	y equilibrium	d) genetic drift	
,	of the genetically inherited oppulation" is a description	changes in the individuals w of	nho are
a) Non-random	n mating	b) Genetic drift	
c) Evolution		d) Natural selection	
3) The present da	ay epoch is		
a) Palaeozoic		b) Coenozoic	
c) Mesozoic		d) Triassic	
The model of endes constant relations		v, progressive change at a n	nore or
a) gradualism		b) progressive equilibri	um

d) non progressive equilibrium



	5)	The effects of natural selection may be count	ere	d by	
		a) gene flow	b)	genetic drift	
		c) mutation	d)	inbreeding	
	6)	What is the ultimate source of genetic variable	ility	?	
		a) selection	b)	migration	
		c) genetic drift	d)	mutation	
	7)	Which of the following would cause deviat equilibrium?	ion	from the Hardy-Weinberg	
		a) small population			
		b) isolated			
		c) random mating			
		d) lack of selection pressure no mutations			
2.	Lo	ong answer type question :			14
	De	escribe in detail Migration.			
3.	Ar	nswer the following :			
	A)	Give an account on the role of Genomic stud	ies	and its use in Biodiversity.	7
	B)	Give an account on Assessment of molecular	r va	riations.	7
4.	Ex	plain the following :			
	A)	Reproductive isolation.			5
	B)	Phylogenetic gradualism.			5
	C)	Applications of Hardy-Weinberg equation.			4
5.	Ex	plain in short :			
	A)	Natural Selection and its parameters.			7
	B)	Estimation of heritability.			7



o. Write diloit floted (airy iour)	6.	Write	short notes	(any	y four))
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14

- 1) Gene evolution
- 2) Allopatric speciation
- 3) Assessment of molecular variation
- 4) Metapopulations
- 5) Neo-Darwinism
- 6) Meiotic drive.



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M.Sc. (Part – II) (Semester – III) Examination, 2015 ZOOLOGY (Paper – IX) (CGPA) Molecular Cytogenetics

	Molecu	lar Cytogenetics	
Day and Date : Mor	nday, 16-11-2015	Total Marks : 7	70
Time: 2.30 p.m. to	5.00 p.m.		
Instructions:	2) Attempt any tw3) Draw neat labe	nd 6 are compulsory. vo questions from 3, 4 and 5. lled diagram wherever necessary. right indicate marks.	
		•	14
1. 1) RNAs that known as	catalyze biological	reactions, such as self-splicing introns, are	
a) enzyme	es	b) spliceosomes	
c) ribozym	nes	d) RNase	
The region are called	ns of DNA in a eukar	yotic gene that encode a polypeptide product	
a) hnRNA	s	b) exons	
c) enhanc	ers	d) leader sequences	
3) mRNA will	form hybrids only w	vith the coding strand of DNA because	
a) DNA wi	a) DNA will not reanneal at high temperatures		
b) The sal	b) The salt concentration will affect DNA reannealing		
c) DNA wi	ill not reanneal at lov	w temperatures	
d) RNA:DI	NA hybridization foll	lows the base-pairing rules	
	he following molecu the cytoplasm?	lles functions to transfer information from the	
a) DNA		b) mRNA	
c) tRNA		d) Proteins	

SLI	R-M	M – 548			
	5)	The sex ratio of a normal male in Droso	ph	ila is	
		a) 0.5	b)	1.0	
		c) 2.0	d)	0.0	
	6)	Barr bodies are found in			
		a) Both males and females	b)	Females only	
		c) Males only	d)	Supermales	
	7)	technique helps to visualis	e t	he chromosomes.	
		a) DNA finger printing	b)	Automated sequencing	
		c) Chromosome painting	d)	Hybridisation	
2.	Но	w is sex determined in humans? Explain t	he	dosage compensation in humans.	14
3.	A)	Explain eukaryotic genome organisation	١.		7
	B)	Add a note on telomere and its maintena	anc	e.	7
4.	Ex	plain in short :			
		Banding.			5
	B)	Lysogeny.			5
	C)	C-value paradox.			4
5.	Dis	scuss in brief :			
	A)	Techniques in human chromosome ana	lys	is.	7
	B)	Structural alterations in chromosome.			7
6.	Wr	ite short notes on any four of the followi	ng	:	14
	a)	DNA finger printing			
	b)	Automated karyotyping			
	c)	Yeast genome			
	d)	T4phage			
	e) PKU				
	f)	Genetic counselling.			



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M.Sc. (Part – II) (Semester – III) Examination, 2015 ZOOLOGY (Paper – X) (CGPA) Wild life and Conservation Biology

Day and Date: Wednesday, 18-11-2015	Max. Marks : 70
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Time: 2.30 p.m. to 5.00 p.m.

Instructions: 1) Question 1, 2 and 6 is compulsory.

- 2) Attempt any two questions from question 3, 4 and 5.
- 3) Answers of Section I, II, and III are to be written in same answer book.
- 4) Draw neat labelled diagrams wherever necessary.
- 5) Figures to the right indicate marks.

SECTION-I

1.	1)	is a transition area be	tween two adjacent	ecological communities	6
		(ecosystems).			14
		a) Ecosystem	b) Ecotone		
		c) Energy pyramids	d) Community		
	2)	National Environmental Engineering	ng Research Institu	te is at	
		a) Bijapur b) Kanpur	c) Nagpur	d) Pune	
	3)	The WWF was established in 1961 was chosen its symbol.	at Gland in Switzer	land and the	-
		a) Tiger	b) Grate Indian Bu	ıstard	
		c) Giant Panda	d) Musk Deer		
	4)	will give a complete I	ist of all endangere	d animals and plants ir	1
		the country for the first time.			
		a) National Wildlife Action Plan			
		b) WWF			
		c) Red Data Book			
		d) Indian Data Book		•	D T O
					P.T.O.



	5) is defined as the most efficient and most beneficial utilization of the natural resources.	
	a) Ecoysytem b) Conservation c) Ecotone d) Community	
	6) Fishery resources are one of the important resources and are greatly valued by man as food.	
	a) Biotic b) Non-renewable	
	c) Non-living d) Abiotic	
	7) The term is defined as the study of how living systems influence, and are controlled by, the geology and chemistry of the earth.	
	a) Biophysics b) Biogeochemistry	
	c) Geology d) Ecology	
	SECTION - II	
2.	What are the different natural factors affecting ecosystem? Add a note on Tsunami.	14
3.	Answer the following: A) Give an account of Traditional Fishing methods. B) Give an account on food chain and food web.	7 7
4.	Explain the following: A) Give an account on Hot spots in India. B) Pyramids of energy. C) Urbanization.	5 5 4
5.	Explain in short:	
	A) Cryopreservation for gametes.	7
	B) Effect of landslides on Ecosystem.	7
	SECTION - III	
6.	Short notes (any four): 1) Tropical and rain forest. 2) Ecological indicators. 3) Quantifying community diversity. 4) Ecotone. 5) Deforestation. 6) Earth summit Agenda.	14



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M.Sc. – II (Semester – III) Examination, 2015 ZOOLOGY (CGPA) Paper No. XI: Comparative Animal Physiology

	•	•			
Day a	Day and Date : Friday, 20-11-2015 Max. Marks : 70				
Time	: 2.30 p.m. to 5.00 p	o.m.			
<i>In</i> :	3) Drav	mpt any 2 questio	ns from questions 3 gram wherever ned		
1. N	Multiple Choice Que	stions (Write the c	correct answer):		14
	 Which of the follo a) Vasopressin 	wing drug reduces b) Oxytocin	s the excretion of wa c) TSH	ater in urine ? d) FSH	
2	 Parental care in r a) Prolactin 	nales is stimulated b) Oxytocin	d by c) Thyroid	d) Adrenalin	
,	 Labour pain is car a) Prolactin 	used due to b) Oxytocin	c) Thyroid	d) Adrenalin	
4	 Which of the follo a) Thyroid 		docrine gland ? c) Pancreas	d) All the above	
;	5) The total rate of g a) 125 ml per mir c) 200 ml per mir	nute	n for the whole body b) 150 ml per min d) 250 ml per min	ute	
(6) Pain occurs due ta) Release of ceib) Ischaemia of tc) Muscle spasmd) All of the abov	tain chemicals fro issue is	m damaged tissue		
-	7) In circulatory syst a) Veins	tem maximum sur b) Capillaries	face area is seen in c) Arterioles	n d) Arteries	

SLF	R-MM – 550	
2.	Write an account on human eye.	14
	A) Functions of blood.B) Difference between arteries and veins.	7
	Explain the following: A) Functions of fats. B) Basal Metabolic Rate. C) Osmoregulation.	5 5 4
	A) Types of respiration.B) Difference between RBC and WBC.	7 7
6.	Write short note (on any four): 1) Taste receptors 2) Functions of ear 3) Structure of sperm 4) Types of ovum 5) Communication in bee 6) Role of chromatophore.	14



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M.Sc. (Part – II) (Semester – III) Examination, 2015 ZOOLOGY (Paper – XII) (CGPA) Biochemistry

Bioche	emistry	
Day and Date : Monday, 23-11-2015 Time : 2.30 p.m. to 5.00 p.m.	Total Ma	rks : 70
Instructions: 1) Questions number 2) Attempt any two f	r 1 , 2 and 6 are compulsory . From question number 3 , 4 and 5 .	
1. Rewrite the following questions by choos	osing correct alternative :	14
i) Oxidation of which substance in the	body yields the most calories	
A) Glucose	B) Glycogen	
C) Protein	D) Lipids	
ii) Enzymes catalyzing electron transp	oort are present mainly in the	
A) Ribosome	B) Endoplasmic reticulum	
C) Lysosomes	D) Inner mitochondrial membrane	
iii) A pentose sugar is		
A) Dihydroxyacetone	B) Ribulose	
C) Erythrose	D) Glucose	
iv) Dehydrogenases involved in HMP s	shunt are specific for	
A) NADP+	B) NAD+	
C) FAD	D) FMN	
v) D-Mannose is present in some plan	t products like	
A) Resins	B) Pectins	
C) Mucilage	D) Gums	

SL	R-MM – 551		
	vi) For vegetarians, pulses are	e an important source of	
	A) Carbohydrates	B) Proteins	
	C) Fat	D) Iron	
	vii) Hemoglobin has a high cor	ntent of this amino acid	
	A) Proline	B) Leucine	
	C) Arginine	D) Histidin	
2.	Write an essay on the structure	es and role of proteins.	14
3.	A) Explain in details the reaction	ons of Glycolysis pathway.	7
	B) Add a note on its regulation	and energetic.	7
4.	Discuss in details :		
	A) Phospholopids and their ro	les.	5
	B) First law of thermodynamic	S.	5
	C) Site directed mutagenesis.		4
5.	Explain in short :		
	A) Enzyme Engineering.		7
	B) Isoenzymes.		7
6.	Write short notes (any four):		14
	a) Micro-RNA		
	b) Ribozymes		
	c) Hydrogen Bond		
	d) Co-enzymes		
	e) Significance of Km		
	f) Immobilized Enzymes.		