Seat	
No.	

M.Sc. (Semester - I) (New) (NEP CBCS) Examination: March/April-2024 ZOOLOGY **Biosystematic (2309101)**

Day & Date: Friday, 10-05-2024 Time: 03:00 PM To 05:30 PM

Instructions: 1) All questions are compulsory.

2) Figure to right indicate full marks.

Q.1 A) Choose the correct alternatives.

- This type of speciation enables production of hybrids between two 1) species
 - a) allopatric speciation c) bottleneck
- parapatric speciation b)
- d) Sympatric

Class

- Generally, within a lineage, the largest number of shared derived 2) characters should be found among two organisms that are members of the same
 - a) Kingdom
 - c) Domain Family d)
- When using a cladistic approach to systematics, which of the following is 3) considered most important for classification?

b)

- a) shared primitive characters
- b) analogous primitive characters
- c) shared derived characters
- d) the number of homoplasies
- Which of these illustrates the correct representation of the binomial 4) scientific name for the African lion?
 - a) Pantheraleo
 - b) pantheraleo c) Panthera Leo d) Pantheraleo
- Binomial nomenclature means writing the name of plant in two words 5) which Designate
 - a) Order and family b)
 - Family and genus c) Species and variety Genus and species d)
- The replacement of two kingdom classification by five kingdom 6) classification was proposed by the year
 - 1859 a) 1853 b)
 - c) 1969 1863 d)
- This type of speciation enables production of hybrids between two 7) species
 - a) allopatric speciation c) bottleneck
- b) parapatric speciation sympatric d)
- This is not a reproductive isolating mechanism 8)
 - a) ecological isolation b) individual isolation
 - temporal isolation d) behavioural isolation c)

Set

Max. Marks: 60

	B)	 Fill in the blanks OR Write true/false. 1) Basic unit or smallest taxon of taxonomy/classification is 2) A taxon is 3) 'International Code of Biological Nomenclature' is applicable to 4) Phylogenetic classification is one which is based on 	04
Q.2	Ans a) b) c) d) e) f) g)	wer the following. (Any Six) What is Binomial nomenclature? Define Clade. What is Panmixia? Define apomixis population. Define speciation. Define hybridization. Define hybridization.	12
Q.3	Ans a) b) c) d)	wer the following. (Any Three) Illustrate the taxonomical hierarchy with suitable examples of a an animal How is a taxonomic key useful? Describe Importance and applications of biosystematics in biology? How to Construct Phylogenetic Trees?	12
Q.4	Ans a) b) c)	wer the following. (Any Two) Describe hierarchy of categories. What is Speciation? Describe the mechanism of Speciation. Systematic publications.	12
Q.5	Ans a) b) c)	wer the following. (Any Two) Describe applications of Biosystematics. Describe Taxonomic collection method. Describe with suitable example International Code of Zoological Nomenclature.	12

IIme	: 03:0		100	5:30 PM			
Instr	uctio	ns: 1) 2)	All c Figu	questions are compulsory. ure to right indicate full marks.			
Q.1	A)	Choo 1)	o se t The men a) c)	the correct alternative transportation of oxygen and can brane is carried out by the pro- Active diffusion Pinocytosis	arbo cess b) d)	n dioxide across the plasma of Osmosis Passive diffusion	80
		2)	Micr a) c)	rotubules are made up of Actin Dynin	cor b) d)	e component. Tubulin Kinesin	
		3)	Cilia a) c)	a and flagella are made up of Actin filament Microtubule	b) d)	Tubulin filament Intermediate filaments	
		4)	The a) c)	cells of malignant tumours exhi Metastasis High differentiation	ibits b) d)	Contact inhibition Slow proliferation	
		5)	In pi a) c)	rotein synthesis the process of Mitochondria Nucleus	orote b) d)	ein uptake is takes place in Endoplasmic reticulum Plastids	
		6)	The a) c)	formation of spindle fibers is ca Centrioles Golgi bodies	nrried b) d)	l out by Lysosomes basal bodies	
		7)	The a) c)	site for Kreb's cycle is providec Mitochondria Golgi bodies	l by b) d)	Nucleus Ribosomes	
		8)	a) c)	are referred as machineries Mitochondria Golgi bodies	of pr b) d)	otein synthesis. Nucleus Ribosomes	
	B)	Write 1)	e tru Lipio men	e /false d bilayer and proteins are a core nbrane.	e bio	logical component of plasma	04
		2) 3)	Meta Mito prot	astasis is characteristics feature ochondria provide the site for po ein synthesis.	e of c st tra	cancer ceil. anscription modification of	
		4)	Cyto	oskeleton provides the structure	, stre	ength and shape to the cell.	

Seat	
No.	

M.Sc. (Semester - I) (New) (NEP CBCS) Examination: March/April-2024 ZOOLOĠY

Cell and Molecular Biology (2309102)

Day & Date: Monday, 13-05-2024 Tin

SLR-HS-2

Set

Max. Marks: 60

B

Ρ

Q.2	Ans	swer the following. (Any Six)	12
	a)	State the functions of Lysosomes.	
	b)	Draw neat labelled diagram of Nucleus.	
	C)	Discuss the various treatment of cancer.	
	d)	What is the symport transportation?	
	e)	Draw neat labelled diagram of Desmosomes.	
	f)	What is tight junction?	
	g)	Discus the features of microfilaments.	
	h)	State the functions of mitochondria.	
Q.3	Ans	swer the following (Any Three)	
	a)	Describe the structure and function of Mitochondria.	12
	b)	Write a note on Golgi bodies.	
	c)	Discuss the different types of cancer.	
	d)	Write a short note on Gap junction.	
Q.4	Ans	swer the following (Any Two)	12
	a)	Give an account of transportation across the cell membrane.	
	b)	Describe the different types of cell signaling.	
	c)	Write a note on structure of Nucleus.	
Q.5	Ans	swer the following. (Any Two)	12
	a)	Explain in detail role of Endoplasmic reticulum in protein synthesis.	
	b)	Describe in detail biogenesis of mitochondria.	
	(

c) Give an account on different type cell junction.

Set	
No.	

M.Sc. (Semester - I) (New) (NEP CBCS) Examination: March/April-2024 ZOOLOGY

Techniques in Biology (2309107)

Day & Date: Wednesday, 15-05-2024 Time: 03:00 PM To 05:30 PM

Instructions: 1) All questions are compulsory.

2) Figure to right indicate full marks.

Q.1 A) Choose correct alternative. (MCQ)

- 1) Maxam and Gilbert method of DNA sequence is known as .
 - a) Cryopreservation c) Chilling
- b) Fermentation d) Chemical Degradation
- 2) The half-life of radioisotope is _____.
 - a) half the time taken for complete decay
 - b) half the time taken for half decay
 - c) time taken for half decay
 - d) time taken for complete decay

3) Technique used to separate biomolecules having different densities by spinning them at high speed is known as

- a) Electrophoresis
- c) PCR

- b) Chromatography
- d) Centrifugation
- 4) EDTA binds to _____ ions.
 - a) Calcium c) Magnesium
 - d) Carbon
- 5) In cryopreservation storage is done in a) Paraffin
 - b) Nitrogen gas
 - c) Liquid nitrogen d) Liquid hydrogen
- 6) In _____ microscopy electron beam scans the sample.
 - a) Light b) TEM c) SEM
 - d) Compound

b)

Iron

- is used as a solidifying agent for media. 7)
 - a) Beef extract b) Peptone
 - c) Yeast extract d) Agar
- 8) Single layer of cells growing on surface is called b) Trilayer
 - a) Bilayer
 - c) Monolayer d) Qudralayer

SLR-HS-3

Max. Marks: 60

	 B) Fill in the blanks OR write true/false. 1) DNA sequencing technique is used to separate DNA, RNA, and protein molecules. 					04 ein		
			a)	True		b)	False	
		2)	Thin a)	Layer chrom True	natography is a typ	be of b)	partition chromatography. False	
		3)	The sam	spectrophoto ple absorbs.	ometer is used to r	neas	sure amount of light that	
			a)	True		b)	False	
		4)	Glyc a)	erol is addec True	l before cryoprese	rvatio b)	on to prevent ice crystal forma False	ation.
Q.2	Ans a) b) c) d) e) f) g) h)	wer th Princi Thin I Autor Cryot Centr Cell tr PCR. Types	ne fol iple o ayer adiog omy. ifuga ransfo s of P	l lowing. (An f spectropho chromatogra graphy. tion. ormation. PCR.	y Six) tometer. phy.			12
Q.3	Ans a) b) c) d)	wer th Write Write Desci Expla	ne fo l note type: ribe E iin ce	l lowing. (An on Centrifug s of PCR and DNA sequend Il hybrids and	y Three) ation. I its applications. ing. I its applications.			12
Q.4	Ans a) b) c)	wer tł Expla Expla Write	ne fo l iin fre iin pri appli	l lowing. (An eze drying a nciple and w cations of las	y Two) nd freeze fractioni orking of Transmis sers in biology.	ng te ssion	echnique. n Electron microscope- TEM.	12
Q.5	Ans a) b) c)	wer tł Expla Write Expla	ne fo l iin de note iin the	l lowing. (An sign and fun on cell sepa e Radio label	t Two) ctioning of tissue o ration by flow cyto techniques in biol	cultur metr logy.	re laboratory. y.	12

Seat No.		Set	Ρ				
M.Sc. (Semester - I) (New) (NEP CBCS) Examination: March/April-2024 ZOOLOGY							
		Economic Entomology (2309108)					
Day & D Time: 0	0ate: W 3:00 Pl	/ednesday, 15-05-2024 Max. Mark M To 05:30 PM	ks: 60				
Instruct	tions:	1) All Questions are compulsory. 2) Figure to right indicate full marks.					
Q.1 A) Ch 1)	oose correct alternative. Silk thread contains type of proteins. a) Collagen b) fibroin and sericin c) Sericin d) Gum	08				
	2)	Bee products containsa) Honeyb) Waxc) Propolisd) all the above					
	3)	Process of cocoon boiling is known as a) threading b) reeling c) cocoon cooking d) spening					
	4)	The larval stage of lac insect is known as a) instar b) larva c) nymph d) all the above					
	5)	Queen of bee is fed with by workers. a) nectar b) due c) honey d) royal jelly					
	6)	In biological control are used as living weapons. a) Parasites b) Predators c) Parasitoids d) all the A, B, C.					
	7)	attracts male insects for mating. a) Pheromones b) Pesticides c) Fungicides d) Bactericides					
	8)	Bee hive is only made up of materials. a) Steel b) Iron c) Aluminium d) Wooden					
В) Fill 1) 2) 3) 4)	in the blanks /Write True or False. Bee venom contains toxin. True/False Queen is developed from unfertilized egg parthenogenetically.? True/False In integrated pest management different types of methods of controls are used. True/False Lac is secreted by only males. True/False	04				

1

SLR-HS-4

Q.2	Ans	wer the following. (Any Six)	12
	a)	Honey extractor.	
	b)	Pheromones of insects.	
	C)	What are pesticides.	
	d)	Formation of lac stick.	
	e)	Casts of bees.	
	f)	Predators of Lac insects.	
	g)	Queen of lac insect.	
	h)	Silk thread formation by silk worm larva.	
Q.3	Ans	wer the following. (Any Three)	12
	a)	Autocidal control in insects.	
	b)	Give economic importance <i>of</i> honey.	
	c)	Explain life cycle of Lac insect with figure.	
	d)	Describe structure and function of silk worm larva.	
Q.4	Ans	wer the following. (Any Two)	12
	a)	Describe cultural method of rearing of lac insect.	
	b)	Describe instruments used in sericulture.	
	c)	Describe natural enemies of bees.	
Q.5	Ans	wer the following. (Any Two)	12
	a)	Describe in detail integrated pest management programme.	
	b)	Describe infra structure of modern bee hive with diagram.	
	c)	Describe processes of obtaining silk from cocoons.	
	-	· •	

Set F

M.Sc. (Semester - I) (New) (NEP CBCS) Examination: March/April-2024 ZOOLOGY

Research Methodology (2309103)

Day & Date: Friday, 17-05-2024 Time: 03:00 PM To 05:30 PM

Seat

No.

Instructions: 1) All questions are compulsory. 2) Figures to the right indicate full marks.

Q.1 A) Choose correct alternative.

- 1) The knowledge that is derived from experience and experimentation is known as _____.
 - a) Empirical b) Observed
 - c) Pragmatic d) Realistic
- 2) Measure of strength of evidence the sample data provides against the null hypothesis is labeled as _____.
 - a) P-Value b) B-Value
 - c) D-Value d) H-value
- 3) The process of drawing conclusions based on facts or observed evidence is called as _____.
 - a) Hypothesis b) Induction
 - c) Deduction d) Logic
- 4) _____ is a tool used to detect plagiarism.
 - a) GenBank b) NCBI
 - c) iThenticate d) BLAST
- 5) _____ is an educated guess based on observation.
 - a) Theory b) Publication
 - c) Hypothesis d) Validation
- 6) To steal and pass off the idea or words of another as one's own in research & academics is known as _____.
 - a) Bootlegging b) Plagiarism
 - c) Lifting d) Illegalism
- 7) _____ is a measurable representation of an abstract construct in research.
 - a) Variable b) Figures
 - c) Statistic d) Parameter

Max. Marks: 60

- 8) The is a measure of the frequency with which the average article in a journal has been cited in a particular year. b) Citation Index a) Impact Factor d) I-Index
 - c) H-Index

Write True or False B)

- 1) Scientific method is a systematic approach to the discovery of new information.
- 2) Firefox is one of the most popular citation management tools available today.
- 3) PlagAware is a plagiarism detection tool.
- 4) Validity is theoretical concept/theme/idea based on empirical observations.

Q.2 Answer the following. (Any Six)

- Research a)
- **b)** Alternative hypothesis
- c) Self-Plagiarism
- Bar Chart d)
- Univariate analysis e)
- f) Population
- Quantitative variable g)
- Independent variable h)

Q.3 Answer the following. (Any Three)

- a) Objectives of research
- **b)** Ethical issues of plagiarism
- c) Characteristic of scientific methods
- d) Deductive and inductive theory

Q.4 Answer the following. (Any Two)

- Explain layout of research paper. a)
- b) Discuss types of sampling methods-Random, stratified & systematic sampling.
- Give a detailed account on levels of measurement such as nominal, C) ordinal, interval & ratio,

Q.5 Answer the following. (Any Two)

- Discus the key attributes of research design. a)
- b) Write an account on impact factor of journals and criteria's for selection and publication of research articles.
- c) Write a summary of essential tools for literature review.

04

12

12

12

Instr	ructio	ns: 1 2 3) Q. N 2) Atte 3) Figu	los. 1 and. 2 are compo mpt any three question ire to right indicate full i	ulsory. s from C marks.	Q. No. 3 to Q. No. 7
Q.1	A)	Cho 1)	Syster Syster and a a) c)	correct alternative. ematics is the scientific all relationships among Linnaeus Darwin	study of them wa b) d)	^f kinds and diversity of c as described by Simpson Lamark
		2)	ICBN a) b) c) d)	I, ICN and ICZN; IC sta International code International board International Organisa International Trades	ands for _.	
		3)	In a) c)	there is fusion of n Panmictic Apomictic	nale and b) d)	female gametes in repr Parthenogenesis Sexual reproduction
		4)	Hom a) c)	o sapiens are Subspecies Species	b) d)	Genetic drift Order
		5)	Certa a) c)	ain invertebrates are pr Formalin Xylene	eserved b) d)	in Eosin Amino acid
		6)	Poly a) c)	clave key is also called Yoked Synoptic	as b) d)	 Apomictic Parral
		7)	Cheo a) c)	cklist, monograph are th Publications Nomenclature	ne terms b) d)	related with taxonomic Classifications Identification
		8)	a) c)	_ involves the designat Purification Classification	tion of a b) d)	nomenclature type for a Typification Centrifugation
		9)	and a) c)	_ is the study of relatio their evolutionary devel Phylogeny Population	nship an opment. b) d)	nong different group of Progeny Genes

Seat No. M.Sc. (Semester - I) (Old) (CBCS) Examination: March/April-2024

Day & Date: Friday, 10-05-2024 Time: 03:00 PM To 06:00 PM

SLR-HS-6

Set Ρ

10

ZOOLOGY **Biosystematics (MSC31101)**

- a name.
- organism
 - γ •1
- 10) The first step in taxonomy is _____.
 - b) Identification a) Classification c) Collection
 - d) Publications

roduction.

organisms

Max. Marks: 80

	B)	Fill	in the blanks OR True/False.	06
		1)	Carl Linnaeus was the father of Taxonomy.	
			a) True b) False	
		2)	Species is a group within a species that has become somewhat	
			physically and genetically different from the rest of the group.	
		2)	a) Irue D) Faise	
		3)	certain invertebrates are preserved in formalin.	
		4)	A phylogenetic tree is a diagram that represents evolutionary	
			relationships among organisms	
			a) True b) False	
		5)	In taxonomy, publications are any form like pamphlets, journal, articles,	
			DOOKS.	
		6)	a) The D) Faise	
		0)	a) True b) False	
Q.2	Ans	swer t	he following.	16
	a)	Impo	rtance of Biosystematics in biology.	
	b)	Chen	notaxonomy	
	c)	Merit	s and demerits of taxonomic keys	
	d)	laxo	nomic collection	
Q.3	Δng	swer t	the following.	16
	a)	Give	an account on trends in biosystematics.	
	b)	Expla	ain ICZN rules of taxonomy.	
		•		
Q.4	Ans	swer t	he following.	16
	a)	Desc	ribe historical resume of systematics.	
	b)	Desc	ribe cytotaxonomy.	
05	Δne	swer t	the following	16
Q.0	a)	Expla	ain difference between panmictic and apomictic speciation.	10
	b)	Expla	ain concept of biosystematics and taxonomy.	
	,	•		
Q.6	Ans	swer t	he following.	16
	a)	Desc	ribe different kinds of publications.	
	b)	Expla	ain application of biosystematics.	
07	۸n		the following	10
Q.1	AII 2)		to construct phylogenetic tree	10
	a) b)	Give	an account of amino acid phylogeny	
	~/	0.10	an account of anniho acia phylogony.	

		Tools and Techniques I	n biology	
/ & Da e: 03:	te: M 00 PI	londay, 13-05-2024 M To 06:00 PM		Max. Marks
tructio	ons:	1) Q. Nos.1 and 2 are compulso 2) Attempt any Three questions 3) Figures to the right indicate f	ory. s from Q.No full marks.	.3 to Q.No.7.
A)	Cho 1)	Dose correct alternatives. Numerical aperture related to a) Black Hole c) Digital Data	 b) d)	Resolving Power Size of sample for TEM
	2)	 PCR stands for a) Polymerase Chain Reactor b) Polynucleotide Chain Reactor c) Polymerase Chain Reactor d) Polykinase Chain Reactor 	or action on on	
	3)	The process of preservation c is called a) Canning c) Chilling	of cells in vit b) d)	ro in a very low temperature Fermentation Cryopreservation
	4)	The process of blotting techni molecules known as a) Northen Blotting c) Westen blotting	que which c b) d)	letect specific mRNA Southern blotting Eastern Blotting
	5)	is also known as colou a) NMR c) Chromatography	r writing. b) d)	Spectroscopy PCR

M.Sc. (Semester - I) (Old) (CBCS) Examination: March/April-2024 ZOOLOGY

chniques in Biology (MSC31102)

Day Tim

Inst

- lo.3 to Q.No.7.

Q.1

- Fermentation
 - Cryopreservation
- I detect specific mRNA
 - Eastern Blotting
 - - - PCR d)

6) In the secondary culture, cells are obtained from

- a) Primary culture Organism b) c) Organ culture d)
- Phenotypic culture 7) In thin layer chromatography (TLC) stationary phase is made up of
 - and mobile phase is made up of
 - Solid, liquid a)
 - c) Solid, gas
- Liquid, liquid b) Liquid, gas d)

To remove culture media

b)

d)

- Purpose of centrifuge for cell culture help 8) To spin down cells
 - a) To separate proteins
 - c) To extract DNA

9)

- In cryopreservation storage is done in
- Nitrogen gas a) Liquid nitrogen b) c) Liquid hydrogen Paraffin d)
- 10) In cell culture cycle _____ stage is last stage.
 - a) Lag b) Log
 - c) Plateau d) Death

Seat No.

Max. Marks: 80

10



Set

	B)	Fill i	n the blanks OR write true/false.	06
		1)	a) True b) False	
		2)	Log phase of cell culture cycle is also known as logarithmic phase. a) True b) False	
		3)	In scanning electron microscopy electron beam passes through sample a) True b) False	e.
		4)	Technique that used to prepare thin and frozen section of tissue called as cryotomy.	
		5)	a) True b) False Paper chromatography is a type of partition chromatography. a) True b) False	
		6)	Electrophoresis technique is used to separate only DNA molecules. a) True b) False	
Q.2	Ans a) b) c) d)	wer t Cell Pape Auto Cryo	transformation. er chromatography. oradiography. opreservation.	16
Q.3	Ans a) b)	wer t Expl Write	t he following. ain principle and working of Electron microscope- TEM? e brief note on Cryotomy?	16
Q.4	Ans a) b)	wer t Expl Write	t he following. ain design and functioning of tissue culture laboratory? e note on culture media preparation?	16
Q.5	Ans a) b)	wer t Wha Expla	t he following. t is DNA sequencing? ain cell hybrids and its application?	16
Q.6	Ans a) b)	wer t Write Free	t he following. cell characterization techniques? ze drying and freeze fractioning techniques.	16
Q.7	Ans a) b)	wer t Expla Expla	t he following. ain paper chromatography technique? ain electrophoresis technique?	16

Seat No.	
I	/I.Sc. (Semester - I) (Old) (CBCS) Examination: Marc
	ZOOLOGY
	Cell and Molecular Biology (MSC31103)

Day & Date: Wednesday, 15-05-2024 Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 and 2 are compulsory. 2) Attempt any three questions from Q. No. 3 to Q. No. 7

3) Figure to right indicate full marks.

Q.1 A) Choose the most correct alternative for given multiple choice questions.

- In biological membrane lipids and integral proteins are interacted 1) mainly by ____
 - a) Hydrophobic bond
 - c) Covalent bond
- b) H-bond
- d) Phosphodiester bond
- The mosaic pattern in plasma membrane is due to _____. 2) b) Lipids
 - a) Carbohydrates
 - c) Sterols d) Vitamins

Which of the following cell component is not the part of cytoskeleton? 3)

- a) Microtubules
- Intermediate filaments c)
- b) Microfilaments
- d) Endoplasmic reticulum

4) The Kinesin are the motor molecule which are related to _____.

- Microfilaments a) Intermediate filaments
- b) Microtubules d) Myosin filaments
- c) The core of microfilament is formed of
- Actin filament a)

5)

a)

c)

- Microtubule c)
- b) Tubuline filament
- d) Intermediate filaments
- Lysosomes are produced by _____ cell organelles. 6)
 - Mitochondria b) Endoplasmic reticulum
 - Golgi bodies d) Plastids
- Microtubules are made up of _____ core component. 7)
 - a) Actin b) Tubulin
 - d) Kinesin c) Dynin

8) Cilia and flagella are made up of _ b) Tubulin filament

- a) Actin filament
 - d) Intermediate filaments c) Microtubule

The cells of malignant tumours exhibits _ 9)

- a) Metastasis b) Contact inhibition
- c) High differentiation d) Slow proliferation
- In protein synthesis the process of protein uptake is takes place in _____. 10)
 - a) Mitochondria b) Endoplasmic reticulum
 - Golgi bodies c)
- d) Plastids

CBCS) Examination: March/April-2024

Max. Marks: 80

10

Set

		SLR-H	S-8
	B)	 Fill in the blanks. 1) In eukaryotes control the cellular activity and carry genetic mart 2) are called as suicide bags of cell. 3) Transportation of cellular material across the cell membrane with specific amount of energy is called as transportation. 4) Uncontrolled cell growth spreads other parts of body is a symptom of 5) provides the structure, strength and shape to the cell. 6) Sorting and trafficking of protein in the cell is carried out by 	06 ial.
Q.2	Ans a) b) c) d)	wer the following. Write a note on active and passive transport through the cell membrane. Describe the structure of Gap junction. Discuss the polysomes in protein sysnthesis. Write a note on functions of lysosomes.	16
Q.3	Ans a) b)	wer the following. Describe the structure and function of mitochondria. Write a note on morphology of cancer cell.	10 06
Q.4	Ans a) b)	wer the following. Give an account of biological composition of cell membrane. Describe the different cause of cancer.	10 06
Q.5	Ans a) b)	wer the following. Explain in detail post transcriptional modification in protein synthesis. Describe the structure of Nucleus with neat labelled diagram	10 06
Q.6	Ans a) b)	wer the following. Give an account on biogenesis of mitochondria. State the functions of endoplasmic reticulum.	10 06
Q.7	Ans a) b)	wer the following. Describe the different types transportations across the cell membrane. Describe the structure of microtubules.	10 06

Change in shape of RBC Change in eye color	b) d)	Weak bones Change in size of RBC
hark's theory of organic evol Effect of environment Use and disuse principle Inheritance of acquired cha All of the above	utior racte	n is based upon er
ew species can arise in a sir if allopatric speciation occu In a very large population the Through the geographical is If change in chromosome n	าgle rs าat s solat umb	generation pread over large area ion er creates are reproductive barrie
win's finches are example o Reproductive isolation Adaptive radiation	f b) d)	Post zygotic isolation Pre zygotic isolation
random change in a gene f ulation is called Mutation Genetic drift	requ b) d)	ency by a chance a small Gene pool Genetic shift
en the population is in genet Increase Zero	ic eo b) d)	quilibrium the rate of evolution Decrease Constant

Q.1 A) 1)

2) Attempt any three questions from Q. No. 3 to Q. No. 7.

M.Sc. (Semester - I) (Old) (CBCS) Examination: March/April-2024 ZOOLOGY **Population Genetics and Evolution (MSC31108)**

- Choose the correct alternatives. (MCQ) A small isolated population is more likely to undergo speciation than
- - the large population because small population _____.
 - a) is more affected by genetic drift and natural selection
 - b) contain relatively more genetic diversity

 - c) is more susceptible to gene flow
 - d) has higher mutation rate

3) Figure to right indicate full marks.

2) The term evolution was given by

- Mendel a) Lamark b) d) Herbert Spencer
- c) Darwin

Instructions: 1) Question no. 1 and 2 are compulsory.

Seat

Day & Date: Friday, 17-05-2024

Time: 03:00 PM To 06:00 PM

No.

- 3) An example of neutral mutations .
 - a)
 - c)

4) Lam

- a)
- b)
- c)
- d)

5) A ne

- a)
 - b)
 - c)
 - d) r

6) Darv a)

7) The ρορι

- a) c)
- Whe 8) a)

c)

SLR-HS-9

Max. Marks: 80

06

16

- 9) The Hardy-Weinberg law describes
 - a) Genotype frequencies of a population when evolutionary forces are not acting.
 - b) How sexual reproduction would change the relative gene frequencies in a population.
 - c) How mutation occur and balance each other.
 - d) Genotypic frequencies of population when evolutionary forces are acting
- The present-day epoch is _____ 10)
 - a) Palaezoic b) Cenozoic
 - c) Mesozoic d) Triassis

B) Fill in the blanks or write true or false.

- pxq = 1 is the equation of Hardy-Weinberg equilibrium. 1) a) True b) False
- 2) Genetic Drift is also called as Sewall Wright Effect. b) False a) True
- Parapatric speciation occurs when a species separates into two 3) separate groups due to geographical barrier. a) True

b) False

- 4) The life originated about 3.6 billion years ago in the Silurian era.
 - a) True b) False
- 5) In a small population gene frequencies will fluctuate in unpredictable directions. This fluctuation is called genetic drift. a) True

The tendency of offspring to differ from parent is called inheritance. 6) a) True False

b)

Q.2 Answer the following

- a) Ecological significance of molecular variations
- **b)** Parapatric model of speciation
- c) Lamarckism
- d) Gene evolution

Q.3 Answer the following

4.0	a) b)	Explain Hardy-Weinberg law of genetic equilibrium and deduce the equation. What is speciation? Describe the mechanism of speciation.	08 08
Q.4	An a) b)	swer the following. Describe phylogenetic and biological concept of speciation. Give an account on Eukaryotic evolution based on different gene families.	08 08
Q.5	An a) b)	swer the following. Give detailed account of destabilizing forces. Describe in detail the Darwin theory of evolution.	10 06
Q.6	An a) b)	swer the following. Give an account on concept of evolution and theories of organic evolution. Give an account on assessment of molecular variations.	08 08
Q.7	An a) b)	swer the following. Give an account on emergence of Neo- Darwinism-Neutral hypothesis. Describe the patterns and mechanism of reproductive isolation.	08 08

Day & Date: Thursday, 09-05-2024 Max. Mar Time: 11:00 AM To 01:30 PM Max. Mar							
Instructio	o ns: 1) 2	All questions are compulsory. Figure to right indicate full marks.					
Q.1 A)	Cho 1)	ose the correct alternatives from the options.0Second thoracic segment of Drosophila consists ofa)One pair of legb)One pair of wing	8				
	2)	 c) Both a and b d) Antenna complex During development, if a cell has committed to a particular fate, it is said to be 					
		c) determined d) differentiated					
	3)	The fluid fill cavity formation is characteristic of a) morula b) blastula c) gastrula d) neurula					
	4)	The genotype of sperm isa) haploidb) diploidc) polypoidd) tetraploid					
	5)	The first stage of commitment iswhich is a labile phase.a) determinationb) differentiationc) aggregationd) specification					
	6)	The only cell that can give rise to complete new organism isa)pluripotentb)multipotentc)totipotentd)monopotent					
	7)	The adult <i>Caenorhabditis elegans</i> is a) dioecious b) monophrodite c) hermaphrodite d) unisexual					
	8)	The bones of autopods in vertebrates consist of a) humerus b) ulna c) radius d) metacarpels					
В)	Fill i 1)	the blanks. 0 The proximal-distal axis appears to be regulated by the family of proteins.	4				
 The thorax of <i>Drosophila</i> consists of segments. When structure and function of cell changes, the process is called The shelled eggs first time observed in during evolution. 							

Seat

No.

M.Sc. (Semester - II) (New) (NEP CBCS) Examination: March/April-2024 ZOOLOGY

Embryology (2309201)

SLR-HS-11

Set Ρ

Q.2 Answer the following. (Any Six)

- a) Why C. elegans is a favorite experimental organism for studying development?
- **b)** Write a note on cell apoptosis.
- **c)** Give the significance of fertilization.
- **d)** Draw and label the structure of blastula (blastocyst) of mammals.
- e) What is commitment? Give its stages.
- f) Give the broad classification of human nervous system.
- g) Discuss the induction of early limb bud in chick.
- **h)** Write a note on progress zone in limb development.

Q.3 Answer the following. (Any Three)

- a) Give an account on formation of limb buds.
- **b)** Explain the gastrula stage of human.
- c) Write a note on egg polarity genes in *Drosophila*.
- d) Describe different types of eggs based on quantity of yolk.

Q.4 Answer the following. (Any Two)

- a) Explain the anterior-posterior limb axis specification in birds.
- **b)** Illustrate in detail the acrosome reaction and penetration of sperm components in ovum during fertilization.
- c) Describe the process of gastrulation in chick.

Q.5 Answer the following. (Any Two)

- a) Write in brief control of development in *Drosophila*.
- **b)** Describe the organization of male reproductive system of human.
- c) Discuss the terms induction and competence in development with suitable example.

12

12

12

Seat No.							Set	Ρ
М.S	Sc. (Ser	nester - II) ((New) (NEP CBCS) E	Exa	mination: March	April-202/	24
				ZOOLOGY Animal Physiology (230)9202)		
Day 8 Time:	a Dat 11:0	e: Sa 0 Al	aturday, 11-0 M To 01:30 Pl	5-2024 M		,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	Max. Marks	: 60
Instru	uctio	ns:	1) All questior 2) Figure to ri	ns are compulsory. ght indicate full marks.				
Q.1	A)	 Cho 1) 2) 3) 4) 	The structura a) alveoli c) acini The SA node a) Right a c) left aur The mass m a) ingesti c) defeca	alternative. al and functional unit of ki e is situated in the auricle ricle ovements which expel th on tion s a combination of both e	idne b) d) b) e fae b) d) endo	y is nephron villi Right ventricle left ventricle eces is called peristalsis absorption crine and exocrine g	Jlands.	08
		5)	c) Kidney The carbohy a) Fats c) Glucos	, drate currency of body is se	b) d) b) d)	amino acids		
		6) 7)	The excretion a) glucos c) lactosu The colour o a) Haemo	n of glucose in urine is ca uria Iria f the blood is red due to r ocvanin	alled b) d) espi	fructosuria None of these ratory pigment calle	d	
		8)	 c) Pinnag The receptor a) gustate c) chemo 	plobin s which respond to chem preceptors preceptors	d) nical: b) d)	chlorocruorin s are known as olfactoryreceptors tangoreceptors		
	B)	Fill 1) 2) 3) 4)	in the blanks The record o The mainten The physiolo is a m	s OR write True/False. of electric impulse genera ance of constant water b ogical instrument used to netabolic disorder charact	ted l alan reco erizo	by the heart is called ce in body is known rd muscle twitch is _ ed by high blood sug	as as jar level.	04

Q.2	Ans a) b) c) d) e) f) g) h)	wer the following. (Any Six) Describe two hormones of pancreas. Name two salivary glands. Name two muscle proteins. Name the two different valves which prevent the backflow of blood. Name any 2 enzymes responsible for digestion of food. Give any 2 names of nervous disorder. Give two functions of thyroid gland. Name any two hormones which regulate menstrual cycle.	12
Q.3	Ans a) b) c) d)	Swer the following. (Any Three) Describe Cardiac cycle. Explain physiology of digestion in the alimentary canal. What is Blood? Describe composition of blood and its function. Explain treatment of kidney failure.	12
Q.4	Ans a) b) c)	wer the following. (Any Two) Mechanism of urine formation and its regulation. Describe molecular mechanism of muscle contraction. Describe nervous disorders signs, symptoms and causes.	12
Q.5	Ans a) b) c)	wer the following. (Any Two) Describe structure of heart. Describe structure and function of Digestive glands. Describe Stomach Ulcers signs, symptoms, causes and treatment of ulcers.	12

Day & D Time: 1	Date: Tue 1:00 AM	esday, To 01	14-05-2024 :30 PM		Max. Marks: 6	0
Instruct	tions: 1) 2)) All qu) Figur	estions are compulso te to right indicate full r	ry. marks.		
Q.1 A)) Choo 1)	ose co Juver a) c)	prrect alternative. (M e nile fish is a sta Adult Larvae	CQ) ge in fish. b) d)	0 Egg Sterile	8
	2)	Youn matu a) c)	g stages of fish from ti re adult are known as Egg Adult	ime of hatch b) d)	ing till they become fully Fry Tadpole	
	3)	a) c)	_ byproducts are prep Fish blue Liver oil	ared from sk b) d)	in, fins, and bones of fishes. Fish oil Isinglass	
	4)	Placo a) c)	oid scales are found in Lung fishes Cartilaginous Fishes	 b) d)	Bony Fishes Paleontological Fishes	
	5)	Estua of a) c)	aries, salt water marsh ecosystem. Brackish Freshwater	es, mangrov b) d)	re swamps are examples Marine Tundra	
	6)	eggs a) c)	_ specialized enclosur and hatching of larvae Hapas Traditional Hatchery	res or nets u e. b) d)	sed for the incubation of fish Chinese Hatchery Kappa	
	7)	Bacte cause a) c)	erial action, enzymatic es of Preservation of fish Culture of fish	action and c b) d)	hemical action are main Spoilage of fish Byproducts of fish	
	8)	Elect a) c)	ric Ray fish have Light Electricity	_ producing b) d)	organs. Sound Coloration	

M.Sc. (Semester - II) (New) (NEP CBCS) Examination: March/April-2024 ZOOLOGY

Fishery Science (2309207)

D

No.

Seat

SLR-HS-13

Page 1 of 2

Set Ρ

	B)	Write	e Tru	ie/False.					04
		1)	Perc	ciformes is th	e largest order	of marir	ne fishes.		
			a)	True		b)	False		
		2)	Mrig	jal is Indian N	linor Carp.				
			a)	True		b)	False		
		3)	Phy a)	toplankton in True	clude photosyr	nthetic al b)	gae and False	cyanobacteria	
		4)	Natu spor a)	ural breeding ntaneously in True	occurs when t suitable aqua	bloodstoo tic envirc b)	ck are allo onments. False	owed to spawr	1
Q.2	Ans	wer tł	ne fo	llowing. (An	y Six)				12
	a)	Write	nam	es of Major (Carps.				
	b)	Defin	e Bra	ckish Water	Ecosystem.				
	c)	Defin	e Ind	luced Breedir	ng.				
	a)	Type	Cuit s of h	ure					
	f)	Finae	rlina	S					
	g)	Cann	ing	-					
	ĥ)	Amaz	zing f	ishes					
Q.3	Answer the following. (Any Three)								
	a)	Write	diffe	rence betwee	en phytoplankt	on & zoc	plankton		
	b)	Expla	lin ch		of Freshwater	ecosyste	em.		
	d)	Expla	in Pr	olyculture of f	iapas. ishes				
	u)	Слріа			5105.				
Q.4	Ans	wer th	ne fo	llowing. (An	y Two)	<i>c</i>	,		12
	a)	VVrite	gene	eral characte	rs of freshwate	er fishes.	•		
	(u ()	Desci	ribe (Chinese hatc	herv	e.			
	-,	2000							
Q.5	Ans	wer th	ne fo	llowing. (An	t Two)	- 1 6 1			12
	a)	VVrite	gene	erai characte	rs of marine wa	ater fishe	enio and	honthic fiches	
	u)	vvrite	note		non or plankto	піс, пекі	onic and		•

c) Explain Physiology of Coloration in fishes.

Set No.										Set	Ρ
М.	Sc. (Sem	ester	- II) ((New) (N		6) Exai	mination:	March/A	pril-202	24
				Α	pplied F	Parasitolo	gy (23	809208)			
Day & Time	& Dat : 11:0	e: Tue 00 AM	esday, To 01:	14-05 :30 PI	5-2024 ∕I				Ма	x. Marks	: 60
Instr	uctio	ns: 1) 2)) All qu) Figure	estior e to ri	is are con ght indicat	npulsory. te full marks	i.				
Q.1	A)	Choo 1) 2)	a) / c) F	orrect _ disea Amoe Filaria	alternativ ase is cau biasis sis na belong	/e. (MCQ) sed by a ne s to which c	matod. b) d) of the fo	Leprosy Poliomyeliti Ilowing grou	s p?		08
		3)	a) f c) S Paras a) A c) F	Mastig Sporo site tha Ascari Fascio	jophore zoan at is also a s bla	a vector hos	b) d) t is b) d)	Ciliate Bug House fly			
		4)	Filaria a) F c) s	al larva Periph smear	a can be c leral blood rs of intest	collected froi d at midnigh inal content	m man's t b) s d)	s smears of s biopsy of liv	pleen ver		
		5)	This d a) i b) r c) (d) i	loes n nterm mainly Chylui s cau Brugia	ot accura ediate ver affects the ria is the r sed by the a malayi	tely describe ctor is the m ne lower lim nost commo e parasitic w	e Lympl Iollusk b on mani rorms И	hatic filariasi festation /uchereria ba	s ancrofti and	b	
		6)	The d a) (c) F	liseas Cystic Phyllo	e caused ercosis bothrium	by the Taen	ia soliui b) d)	m is called a Taeniasis Dysentery	s		
	B)	Fill in 1) 2) 3) 4)	n the k Ascar The p gastro Liver f In an intesti	blanks rincip pintest fluke l individ	s OR Writ Ibricoides al site of g tinal tract. belongs to dual infect	e True/Fals is transmitte jametocyte f cestodes. ed with asca	s e. ed by in formation aris, the	gestion of eg on is the hum e larvae can l	ggs. han be found in	the	04
Q.2	Ans a) b) c) d) e) f)	wer th Defin Host Paras Seco Class Geog	ne folle itive ho parasit site Pe ndary h sificatio raphic	owing ost. te inte riodici host. on of C al dist	J. (Any Si raction. ty. Cestodes. ribution o	x) f Taenia sag	ginata.				12

- g) Vector
- h) Mutualism

Q.3	Ans a) b) c) d)	wer the following. (Any Three) Explain Pathogenicity of Trypanosoma. Write an account on Types of parasites. Describe pathogenicity, laboratory diagnosis and prophylaxis of <i>Dracunculus medinensis.</i> Discuss control measures of <i>Plasmodium vivax.</i>	12
Q.4	Ans a) b) c)	wer the following. (Any Two) Give general account on parasitic protozoans. Explain Classification of parasitic nematode. Give a detail account on laboratory diagnosis and prophylaxis <i>Trichuri</i> <i>strichura</i> .	12
Q.5	Ans a) b) c)	w er the following. (Ant Two) Explain life cycle <i>Enamoeba histolytica.</i> Describe Life cycle <i>Taenia saginata.</i> Give detail account on signs, symptoms and causes of Bird flu.	12

Seat No.		
	M.Sc. (Semeste	er - II) (CBCS) Examination: March/April-2024
	·	ZOOLOGY
	Dev	/elopmental Biology (MSC31201)

Day & Date Thursday, 09-05-2024 Time: 11:00 AM To 02:00 PM

Instructions: 1) Q. Nos. 1 and. 2 are compulsory.

2) Attempt any three questions from Q. No. 3 to Q. No. 7 3) Figure to right indicate full marks.

Choose the correct alternative from the options. Q.1 A)

The developmental stage which immediately follows Cleavage is . 1) b) Fertilization

d)

Growth

- a) Gastrulation
- c) Blastulation
- 2) Blastulation results in _____
 - a) A decrease in the zygote total mass
 - No change in the total zygote mass b)
 - A non-specific change in the total zygote mass c)
 - An increase in the zygote total mass d)

Neurons develop from _____. 3)

- Neuroblasts a)
- b) Ependymal cells
- c) Diocoele
- d) None of these
- In chick, retinoic acid is involved in the formation of _____. 4)
 - Brain Limbs a) b)
 - c) Heart d) Eyes
- During embryonic development the establishment of polarity along 5) anterio/posterior, dorsal/ventral or medial/lateral axis is called

b)

- anamorphosis a)
- pattern formation c)
- axis formation d)

organizer phenomenon

- Neurons develop from _____. 6)
 - Neuroblasts a) c) Diocoele

c)

- b) Ependymal cells None of these d)
- In chick, retinoic acid is involved in the formation of 7)
 - Brain Limbs a) b)
 - Heart d) Eves
- 8) Anterior end of neural groove forms future.
 - a) Liver b) Spinal cord c) Heart d) Brain
- Which of the following is not a part of unfertilized egg of frog? 9)
 - a) Acrosome b) Vitelline membrane
 - Animal hemisphere c) d) Vegetal pole

Max. Marks: 80

10



Set

		10)	Num a) c)	ber of pairs of somit 4 8	es presen	it in : b) d)	26 h 6 5	nrs chick eml	oryo is	·
	В)	Fill in 1) 2) 3) 4) 5) 6)	n the Ferti hapl Poly Acro pellu Albu wet Gas The sper	blanks OR Write T ilization is union of ha oid zygote. (True / Fa spermy is penetratio sin is an enzyme pro ucida of the ovum. (T imen is a glycoprotei environment to embr solid mass of cells fo trula. (True / False) transformation of the miogenesis. (True / I	rue/False aploid spe alse) on of one s oduced by rue / Fals on which se ryo. (True ormed as e spermate False)	: spern the e) erve / Fa a res	with m in acr s as ilse) sult nia i	haploid ovur to an ovum. osome that o food and al of cleavage nto spermate	m to form (True / Fal lissolves zo so provides is known as ozoon is ca	06 se) ona s s illed
Q.2	Ans [•] a) b) c) d)	Answer the following. Acrosome reaction Prevention of polyspermy Vitellogenesis Cleavages in Frog							16	
Q.3	Ans [.] a) b)	wer th Fate o Types	ne fo of thr s of e	llowing. ee germ layers in An eggs on the basis of a	nphioxus amount of	yolk	K			16
Q.4	Ans a) b)	wer th Capa Forma	ne fo citation ation	llowing. on of three germ layers	s in Frog					16
Q.5	Ans a) b)	wer th Devel Patte	ne fo l lopm rns o	llowing. ent of limbs in mamn f apoptosis in birds	nals					16
Q.6	Ans a) b)	wer th Desci Gastr	ne fo ribe r rulatio	llowing. egulation of develop on in Drosophila	ment in D	roso	phil	a.		16
Q.7	Ans a) b)	wer th The g How a	ne fo jap g anter	llowing. enes in Drosophila ior - posterior axis is	specified	in D)ros	ophila?		16

NO.									
		M.S	c. (S	emest	er - II) (C	CBCS) Ex ZOOL	ami DGY	nation: March/Apri	I-2024
		(Gene	ral and	d Compa	arative E	ndod	rinology (MSC312	02)
Day Time	& Da e: 11:	ate: S 00 A	aturd M To	ay, 11-0 02:00 P	5-2024 M				Max. Marks: 80
Instr	uctio	ons:	1) Qu 2) Att 3) Fiç	lestion 1 tempt an gure to ri	and 2 are y Three fi ght indica	e compulso rom Q.3 to ite full mark	ry. Q.7. ːs.		
Q.1	A)	Chc 1)	a) c)	correct horm LH TSH	alternativ one is not	'e. secreted b	y ant b) d)	erior pituitary. FSH ADH	10
		2)	a) c)	is not Adrena Lacrima	an endoc I al	rine gland.	b) d)	Pituitary Thyroid	
		3)	a) c)	is kno Kelvin Candol	own as fat le	her of Endo	bcrind b) d)	ology. Edward Addison	
		4)	Test a) c)	osterone Steroid Amino	e hormone acid	e belong to	b) d)	_ class of hormone. Protein Peptide	
		5)	a) c)	is gla Adrena Ovaries	nd located I S	d superior t	o kidı b) d)	ney. Pancreas Pituitary	
		6)	In th a) c)	e pancro alpha gamma	eas	_cells secre	ete G b) d)	lucagon. delta beta	
		7)	a) c)	is not cGMP Calciun	a second	messenge	er in h b) d)	ormonal action. Sodium cAMP	
		8)	a) c)	endoo Thymus Parathy	crine glan s /roid	d responsik	ble fo b) d)	^r body's circadian rhyth Pineal Pituitary	m.

- 9) hormone responsible for pigmentation.
 - a) Norepinephrine b) Insulin c) Estrogen d) Melanin

10) Cell surface receptors also known as _____.

- a) Intracellular receptors
- b) Nuclear receptors
- c) Nucleus receptors
- d) Plasma membrane receptors

Seat

No.



Set Ρ

SLR-HS-16

	B)	Fill in the blanks OR write True/ False.	06
		1) Oxytocin hormone also known as 'Love horm	one'.
		a) True b) False	
		2) Insulin is belonging to peptide class of normo	ne.
		3) Gastrin hormone is secreted by dastrointestir	al tract
		a) True b) False	
		4) Melanin is also known as 'Dark Hormone'.	
		′a) True b) False	
		5) Hypersecretion of thyroid hormone causes 'G	iraves's disease'.
		a) True b) False	
		6) Nuclear receptors are intracellular receptors.	
		a) True b) False	
02	۸nc	swor the following	16
Q.2	a)	Write note on Pituitary gland	10
	b)	Write the functions of Progesterone.	
	c)	Write the functions of Anti-Diuretic Hormone (ADH).
	d)	Write note on classification of hormones.	,
~ ~			
Q.3	Ans	swer the following.	16
Q.3	Ans a)	swer the following. Explain hormonal control of implantation?	16
Q.3	Ans a) b)	swer the following. Explain hormonal control of implantation? Explain hormonal role in homeostasis?	16
Q.3 Q.4	Ans a) b) Ans	swer the following. Explain hormonal control of implantation? Explain hormonal role in homeostasis? swer the following.	16
Q.3 Q.4	Ans a) b) Ans a)	 swer the following. Explain hormonal control of implantation? Explain hormonal role in homeostasis? swer the following. Write note on biosynthesis of steroid hormones. 	16 16
Q.3 Q.4	Ans a) b) Ans a) b)	 swer the following. Explain hormonal control of implantation? Explain hormonal role in homeostasis? swer the following. Write note on biosynthesis of steroid hormones. Explain intracellular receptors of hormonal action? 	16 16
Q.3 Q.4	Ans a) b) Ans a) b)	 swer the following. Explain hormonal control of implantation? Explain hormonal role in homeostasis? swer the following. Write note on biosynthesis of steroid hormones. Explain intracellular receptors of hormonal action? 	16
Q.3 Q.4 Q.5	Ans a) b) Ans a) b) Ans	 swer the following. Explain hormonal control of implantation? Explain hormonal role in homeostasis? swer the following. Write note on biosynthesis of steroid hormones. Explain intracellular receptors of hormonal action? swer the following. 	16 16 16
Q.3 Q.4 Q.5	Ans a) b) Ans a) b) Ans a)	 swer the following. Explain hormonal control of implantation? Explain hormonal role in homeostasis? swer the following. Write note on biosynthesis of steroid hormones. Explain intracellular receptors of hormonal action? swer the following. Write note on female reproductive system. 	16 16 16
Q.3 Q.4 Q.5	Ans a) b) Ans a) b) Ans a) b)	 swer the following. Explain hormonal control of implantation? Explain hormonal role in homeostasis? swer the following. Write note on biosynthesis of steroid hormones. Explain intracellular receptors of hormonal action? swer the following. Write note on female reproductive system. Explain hormonal role in gastrointestinal tract? 	16 16 16
Q.3 Q.4 Q.5 Q.6	Ans a) b) Ans a) b) Ans a) b)	 swer the following. Explain hormonal control of implantation? Explain hormonal role in homeostasis? swer the following. Write note on biosynthesis of steroid hormones. Explain intracellular receptors of hormonal action? swer the following. Write note on female reproductive system. Explain hormonal role in gastrointestinal tract? swer the following. 	16 16 16 16
Q.3 Q.4 Q.5 Q.6	Ans a) b) Ans a) b) Ans a) b) Ans a)	 swer the following. Explain hormonal control of implantation? Explain hormonal role in homeostasis? swer the following. Write note on biosynthesis of steroid hormones. Explain intracellular receptors of hormonal action? swer the following. Write note on female reproductive system. Explain hormonal role in gastrointestinal tract? swer the following. Describe lactation and its regulation. 	16 16 16 16
Q.3 Q.4 Q.5 Q.6	Ans a) b) Ans a) b) Ans a) b) Ans a) b)	 swer the following. Explain hormonal control of implantation? Explain hormonal role in homeostasis? swer the following. Write note on biosynthesis of steroid hormones. Explain intracellular receptors of hormonal action? swer the following. Write note on female reproductive system. Explain hormonal role in gastrointestinal tract? swer the following. Describe lactation and its regulation. Explain role of insulin in diabetes? 	16 16 16 16
Q.3 Q.4 Q.5 Q.6	Ans a) b) Ans a) b) Ans a) b) Ans a) b)	 swer the following. Explain hormonal control of implantation? Explain hormonal role in homeostasis? swer the following. Write note on biosynthesis of steroid hormones. Explain intracellular receptors of hormonal action? swer the following. Write note on female reproductive system. Explain hormonal role in gastrointestinal tract? swer the following. Describe lactation and its regulation. Explain role of insulin in diabetes? 	16 16 16 16
Q.3 Q.4 Q.5 Q.6 Q.7	Ans a) b) Ans a) b) Ans a) b) Ans a) b)	 swer the following. Explain hormonal control of implantation? Explain hormonal role in homeostasis? swer the following. Write note on biosynthesis of steroid hormones. Explain intracellular receptors of hormonal action? swer the following. Write note on female reproductive system. Explain hormonal role in gastrointestinal tract? swer the following. Describe lactation and its regulation. Explain role of insulin in diabetes? 	16 16 16 16
Q.3 Q.4 Q.5 Q.6 Q.7	Ans a) b) Ans a) b) Ans a) b) Ans a) b)	 swer the following. Explain hormonal control of implantation? Explain hormonal role in homeostasis? swer the following. Write note on biosynthesis of steroid hormones. Explain intracellular receptors of hormonal action? swer the following. Write note on female reproductive system. Explain hormonal role in gastrointestinal tract? swer the following. Describe lactation and its regulation. Explain role of insulin in diabetes? swer the following. Explain hormonal regulation of metabolism? 	16 16 16 16 16

M.Sc. (Semester - II) (CBCS) Examination: March/April-2024 ZOOLOGY **Environmental Physiology (MSC31206)**

Day & Date: Tuesday, 14-05-2024

Seat

No.

Time: 11:00 AM To 02:00 PM

Instructions: 1) Q. Nos. 1 and. 2 are compulsory.

2) Attempt any three questions from Q. No. 3 to Q. No. 7 3) Figure to right indicate full marks.

Q.1 A) Multiple Choice Questions.

c)

- Which of the following blood cells play an important role in blood 1) clotting?
 - a) Thrombocytes
 - b) **Neutrophils** Erythrocytes Leucocytes d)
- 2) In Space, what sickness do astronauts frequently experience? Food poisoning
 - Motion sickness a) c)
 - b) Migraines Body pain d)
- Which of the following pair has double circulation pathway. 3) Bird and mammal
 - a) Amphibian and Mammal b) Reptile and Mammal c) d)
- Fish and Bird Which one of the following organizations dedicated to protecting 4) human health from environmental harms?
 - Environment and Human Health a)
 - **Environmental and Scientific Science** b)
 - **Ecological Protection Organization** c)
 - **Ecological Science and Solutions** d)
- Which of the following statements is true? 5)
 - Moodiness is a cognitive symptom of stress a)
 - Moodiness is an emotional symptom of stress b)
 - Poor judgement is an emotional symptom of stress c)

hair root

- Agitation is cognitive symptom of stress. d)
- 6) DNA is not present in
 - an enucleated ovum a) b)
 - c) a mature spermatozoon d) mature RBCs
- 7) Which of these is known as the pacemaker of the heart?
 - Purkinjifibers a) b) AVN c) SAN
 - d) Bundle of His
- organ is important in regulating the body temperature. 8)
 - Skin Kidnev a) b) Bladder Appendix d) c)
- The astronauts inside spaceship feel weight. 9)
 - more b) less a)
 - depends on G force c) zero d)

SLR-HS-17



Max. Marks: 80

		10)	Whi a) c)	ch is mechanical occupatio Noise Unskilled	nal he b) d)	alth hazard? Toxic Unguarded machinery	
	B)	One 1) 2) 3) 4) 5) 6)	sent Defi Defi Defi Wha Defi Defi	ence answer. ne Homeostasis. ne ECG. ne cardiac output. at is acclimatization? ne stress ne motion sickness.			06
Q.2	Ans a) b) c) d)	wer tl What What Expla Expla	h e fo is va are l ain wl ain th	llowing. asoconstriction, give its sigr biological health hazards? ny the body temperature ne e structure of heart of ampl	nifican eeds to nibians	ce in thermoregulation? b be maintained. s.	16
Q.3	Ans a) b)	wer tl Desc What being	h e fo ribe i are o js?	llowing. n detail the process of hem occupational health hazard	opoie s. Exp	sis. lain their effect on human	16
Q.4	Ans a) b)	wer tl Expla Desc	h e fo ain th ribe t	llowing. e importance of Yoga in str he comparative anatomy o	ess m f hear	anagement. t of vertebrate.	10 06
Q.5	Ans a) b)	wer tl Desc Expla	he fo ribe i ain in	llowing. n detail the process of hem dustrial health hazards.	opoie	sis.	08 08
Q.6	Ans a) b)	wer tl What syste What on th	h e fo is th m? A is bl e boo	llowing. e effect of low gravity on ca dd a note on microgravity ood pressure? Describe hig dy.	ardiova enviro gh and	ascular system and muscular nment in space. I low pressure and their effects	08 08
Q.7	Ans a) b)	wer tl What Expla	he fo is st ain th	llowing. ressor? And explain differe e composition and function	nt type of blo	es of environmental stressors. od.	08 08

Instr	uctio	ons:	1) Q. N 2) Atte 3) Figu	los. 1 and 2 are compulsory. mpt any three questions from (ire to right indicate full marks.	Q. N	o. 3 to Q. No. 7	
Q.1	Q.1 A)	Ch 1)	oose t The h chrom a) c)	he correct alternative. ighly condensed, gene-poor an natin is called as Heterochromatin Chromatin	nd tra b) d)	anscriptionally inactive Euchromatin Homologous Chromatin	1
		2)	a) c)	cell organelles have their ov Ribosome & Lysosome Chloroplast & Mitochondria	vn ge b) d)	enome and genetic systems. Golgi Complex & Lysosome Endosome & Karyosome	
		3)	The p a) c)	rotein coat of a bacteriophage Head Tail	is ca b) d)	alled as Capsid Receptors	
		4)	cells a a) c)	ensures equal distribution o at cell division. Telomere P-arm	f eac b) d)	ch chromosome to the daughter Centromere Q-arm	
		5)	Huma and th a) c)	in chromosomes are placed in ne location of the centromere ir A-through-D A-through-F	grou n a k b) d)	ups based on their size aryotype. A-through-E A-through-G	
		6)	The m partic a) b) c) d)	nethod for selective replication ular DNA sequence is called _ Polymerase Chain Reaction Electrophoresis Ultracentrigugation Autoradiography	to ol	btain large quantities of 	
		7)	Down a) c)	's Syndrome is caused by the 20 22	triso b) d)	my of chromosome number 12 21	<u> </u>
		8)	assoc in a fa a) c)	is a communication process iated with the occurrence, or ri amily. Genetic psychoanalysis Genetic Psychotherapy	that isk o b) d)	deals with the human problems f occurrence of a genetic disorde Genetic Therapy Genetic Counseling	۶r

M.Sc. (Semester - III) (New) (CBCS) Examination: March/April-2024 ZOOLÓGY Molecular Cytogenetics (MSC31301)

Seat No.

Day & Date: Friday, 10-05-2024 Time: 11:00 AM To 02:00 PM

SLR-HS-19

Set

Ρ

Max. Marks: 80

0

- 9) GISH in molecular biology refers to _____.
 - a) Genomic in situ Hybridization
 b) Genomic in situ Hybridoma
 c) Genomic in situ Hybrid
 d) Genomic in situ

Q.2

Q.3

Q.4

Q.5

Q.6

Q.7

	 10) received two Nobel Prizes DNA & Protein sequencing. a) Rosalind Francklin c) Fredrick Sanger 	for hi b) d)	s contribution in sequencing of Paul Berg Francis Crick	
B)	 Fill in the blanks. 1) is used as genetic markers 2) Blotting method used to detect unk 3) The less condensed, gene-rich & tr called as 4) The lack of correlation between bio content is known as 5) Syndrome in humans with three se 6) Inherited disorders that affect the s carrying capacity 	for li nown ansc logica x chro hape	nkage analysis or genetic mapping protein is riptionally active chromatin is al complexity and the DNA omosomes (XXX) is of erythrocytes & its oxygen	06 J.
Ans a) b) c) d)	swer the following. Satellite DNA Bacterial chromosome structure Morphology of bacteriophage Dosage compensation in humans			16
Ans a) b)	swer the following. Give a comparative account on the gence eukaryotes structure. Give a short account on human karyotyp	ome s oe.	structure of prokaryotes with	10 06
Ans a) b)	swer the following. Write an account on genetic disorder tha Give a short account on transposable ge	alasse enetic	emia. c elements.	08 08
Ans a) b)	swer the following. Explain the principle, working & applicat Write an account on types of bacterioph	ions o age.	of polymerase Chain Reaction.	10 06
Ans a) b)	swer the following. Explain the lytic cycle of bacteriophage w Write a short account on western blotting	with s g & its	suitable diagram. s applications.	10 06
Ans a) b)	swer the following. Define Q & R banding with application ir Discuss a brief account on the coding &	n kary non-	<i>r</i> otype. coding sequences.	08 08

	ZOOLOG Biochemistry (M	GY //SC31302)	
Day & Date: Time: 11:00 /	Monday, 13-05-2024 AM To 02:00 PM	Max. Marks: 8	30
Instructions	 1) Q. Nos. 1 and 2 are compulsory. 2) Attempt any three questions from 3) Figure to right indicate full marks. 	n Q. No. 3 to Q. No. 7 3.	
Q.1 A) C 1)	hoose correct alternative. From the stoichiometry of the oxida molecule produces ATP.	ation phosphorylation one NADH	10
	c) 4.5	d) 6	
2)	inhibitor can bind only to free complex. a) Competitive c) Non-competitive	e enzyme not to enzyme substrate b) Uncompetitive d) Mixed	
3)	The enzymes enhance reaction rat a) Activation c) Gibb's free	tes by lowering energies. b) Binding d) Free	
4)	The amount of energy released fro a) -7.3 Kcal/mol c) +7.3 Kcal/mol	om ATP hydrolysis is b) 30.5 Kcal/mol d) +30.5 Kcal/mol	
5)	According to IUB nomenclature sys class. a) First c) Third	stem the Transferase enzyme fall in b) Forth d) Second	
6)	Gamma Amino Butyric Acid is prod a) Transamination c) Decarboxylation	duced by reaction of glutamate. b) Deamination d) Transketonation	
7)	 Synthesis of ATP or GTP occurs by from a high energy substrate to AD a) Phosphorylation b) Oxidative phosphorylation c) Substrate level phosphorylation d) Non oxidative phosphorylation 	y direct transfer of phophoryl group OP or GDP is called on n	
8)	The relationship between free ener by a) AG=AH-TAS c) AS AG-7 AS	rgy, enthalpy and entropy is given b) AH-AG-TAS d) AS-AH-TAG	

M.Sc. (Semester - III) (New) (CBCS) Examination: March/April-2024

Seat

No.

(

- 9) Both de novo and salvage pathway lead to the synthesis of _____.
 - a) Nucleoside
 - c) Ribonucleotides
- b) Ribulose
- d) Ribonucleosides

SLR-HS-20

Set Ρ

		 10) The enzyme catalyzing breakdown reaction in presence of water belongs to class in IUB classification. a) Second b) Third c) Sixth d) Fourth 						
	В)	 Fill in the blanks. 1) A carrier protein within the inner mitochondrial membrane transfer fatty acyl-carnitine into mitochondrial matrix. 2) According to model enzymes are flexible and that the shapes of the active sites can be markedly modified by the binding of substrate. 3) Glycogen is synthesized from G6P mainly in the muscle and liver and stored within these tissues as 4) The entropy of universe always increases is the law of thermodynamics. 5) Protein contains linkage in their structure. 6) is a structural analog of succinate and acts as a competitive inhibitor of the enzyme succinate dehydrogenase, a citric acid cycle enzyme that converts succinate to fumarate. 	06					
Q.2	Ans a) b) c) d)	swer the following. 1 Explain in detail biosynthesis of pyrimidines. 1 Explain the structure and role of cAMP. 1 What is monosaccharide? Write a note on isomeric properties of monosaccharides. Metabolic regulation during hypoxia.						
Q.3	Ans a) b)	wer the following. Describe in detail Beta-oxidation of fatty acid. Add a note on oxidation of fatty acid with odd numbered carbon chains. Describe the A-form, B-form and Z-form of DNA.						
Q.4	Ans a) b)	wer the following. Explain in detail reactions of glycolysis and write a note on its energetics. Discuss in detail electron transport chain in oxidative phosphorylation.	08 08					
Q.5	Ans a) b)	wer the following. Explain the Amino acid synthesis and breakdown and give an account on general reactions of amino acid metabolism. Derive Michaelis Menten equation for enzyme.	10 06					
Q.6	Ans a) b)	wer the following. What is metabolism? Explain in detail coordinated control of metabolism. Explain in detail enzyme activators and inhibitors.	08 08					
Q.7	Ans a) b)	wer the following. Explain in detail reactions of Tricarboxylic Acid Cycle and gives its energetics. Describe in detail the IUB classification and nomenclature system of enzymes.	10 06					

	ZOOLOG Comparative Animal Physi	Y ology (MSC31306)	
y & Date: Weo ne: 11:00 AM	dnesday, 15-05-2024 To 02:00 PM		Max. Marks: 80
structions: 1) 2) 3)	Q. Nos. 1 and. 2 are compulsory. Attempt any three questions from 6 Figure to right indicate full marks.	Q. No. 3 to Q. No. 7	
1 A) M ulti 1)	ple Choice Questions. Parts of the digestive system a) Duodenum c) Oesophagus	n contain Brunner's glan b) Ileum d) Stomach	10 Ids.
2)	In the buccal cavity of Human bein a) Protein c) lipid	g digestion of sta b) Fat d) Carbohydrate	rted.
3)	 Trachea, bronchi, and bronchioles a) incomplete cartilaginous rings b) complete cartilaginous rings c) in-cartilaginous rings d) bones 	are all supported by s	
4)	Breathing rate in human is controllea) Medulla oblongatac) Hypothalamus	ed by b) Cerebellum d) Thalamus	
5)	 A large proportion of oxygen is left after its uptake by the body tissues a) helps in releasing more oxyge b) raises the pCO₂ of blood to 75 c) acts as a reserve during must d) is enough to keep oxyhemogical 	unused in the human blo . This oxygen en to tissues 5mm of Hg cular exercise obin saturation at 96%	ood even
6)	Mechanism of regulation, typically solutes and the loss and gain of wa a) Homeostasis c) Hemostasis	between entities and its ater is known as b) Thermoregulation d) Osmoregulation	environment of
7)	Damage to the may cause s a) eardrum c) stapes	sensorineural hearing los b) pinna d) cilia	SS.
8)	Visual accommodation involves a c a) lens c) retina	change in structur b) cornea d) fovea	e.
9)	Muscle fatigue is due to the accum a) carbon dioxide c) creatine phosphate	ulation of b) lactic acid d) none of the above	9

Set No.

M.Sc. (Semester - III) (New) (CBCS) Examination: March/April-2024

Dav Tim

Ins

Q.

SLR-HS-21

Set P

		10)	Syna a) c)	aptic vesicle Acetylchol Estradiol	es discharge _ ine	6	at the b) d)	e neuromuscular junction. Adrenaline Testosterone	
	B)	Write	e Tru	e / False.					06
		1)	Saliva a)	a helps in th True	ne process dig	gestion	b)	False	
		2)	In the dioxid	e process of de is taken i	respiration, c	oxygen	is gi	ven out while the carbon	
			a)	True			b)	False	
		3)	Gami exam a)	ma-amino b ples of inhil True	outyric acid (G bitory neurotr	SABA), ansmit	glyci ters. b)	ine and serotonin are False	
		4)	, Neuro a)	ohormone is True	s secreted by	Hypotl	, halar b)	nus. False	
		5)	, Durin a)	g sleep res True	piratory syste	m beco	omes b)	s inactive. False	
		6)	Exter a)	nal fertilizat True	ion can occu	r both i	n wa b)	ter and on land. False	
Q.2	Ans	wer t	he fol	llowing.					16
	a) h)	Defin	liation e visi	i of PH in DO Ial impairm	ody Iluid. ent its types :	and ca			
	c)	Myoc	genic	heart.			4000		
	d)	Give	an ac	count on S	urrogacy and	Infertil	ity.		
0.2	A no	wor t	ha fal	lowing					16
Q.3	a)	wer t What	t is nu	trition? Des	cribe the phy	sioloav	of n	utrition and digestion.	10
	b)	Expla reptil	ain in es.	detailed pat	tterns of nitro	gen ex	cretio	on among the birds and	
Q.4	Ans	wer t	he fol	lowing.					16
	a) b)	Expla What	ain the t is ne	e molecular urotransmit	mechanism o ter? Describe	of muso e its typ	cle co es a	ontraction. nd roles.	
Q.5	Ans	wer t	he fol	lowina.					16
_	a) b)	Defin Expla	ie Car ain ph	diac cycle? ysiology of	Explain role sleep and and	of LDH esthesi	l in c a.	ardiac physiology.	
Q.6	Ans	wer t	he fol	lowina.					16
	a) b)	Desc Give hiber	ribe ir an ac natior	n detail horr count of the	nonal control ermoregulatio	of repr n in Pc	oduc oikilot	ction in mammals. therms, homeothems and	
Q.7	Ans	wer t	he fol	lowing.					16
	a) b)	Desc Phys Mam	ribe tl iology mals.	ne Physiolo of nervous	gy of biolumir system with	nescen referer	ce. nce to	o neurohormone regulation in	_

Set No.								Set	Ρ
	M.So	c. (Se	emester - I	III) (New) (CBC ZOO	CS) Exa	mi	nation: March/A	pril-2024	
			Eco	onomic Entor	nology	(MS	SC31307)		
Day o Time	& Dat : 11:(te: We 00 AM	ednesday, 15 I To 02:00 P	5-05-2024 M				Max. Marks	s: 80
Instr	uctio	o ns: 1 2 3) Q. Nos. 1 a) Attempt an) Figure to ri	and. 2 are compu y three questions ght indicate full m	lsory. 5 from Q. 1arks.	No	. 3 to Q. No. 7		
Q.1	A)	Cho 1)	o se correct Transmissi a) Culex c) Tsets	t alternative. (MC ion of malaria disc t e fly	:Q) ease by _.	b) d)	mosquito. Female anopheles Trypanosoma	5	10
		2)	Arthropoda a) Free l c) Jointe	a means legs ed legs		b) d)	Paired legs Four legs		
		3)	Leishmania a) Willia c) Carl L	a parasite discove m Harding .innaeus	ered by _	b) d)	scientist. William Leishman Rutherford	's	
		4)	Kala azar i a) Visce c) Trypa	s name of ral leishmaniasis nosomiasis	_disease	e. b) d)	Malaria Dengue		
		5)	Sleeping si a) Leish c) Malar	ickness is also kn maniasis ia	iown as _.	b) d)	 Trypanosomiasis Dengue		
		6)	In India lar a) Tasar c) Eri	gest silk productio	on from _	b) d)	type of silkworm Muga Bombyx mori	1.	
		7)	Filaria dise a) Black c) Deng	ase is known as _. fever ue		b) d)	Elephantisis Malaria		
		8)	Silk is obta a) Egg c) Larva	ined fromof	silkworr	n. b) d)	Cocoon Adult		
		9)	Lac insect a) Laccif c) Malva	belongs to family ferida acae		b) d)	Ricinidae Flaviviridae		
		10)	a) Serici c) Globu	tein is secreted by n Ilin	y silkwor	m. b) d)	Pectin Insulin		

Γ

	B)	Write True/False.	06					
		a) True b) False						
		 Worker bees in honey comb is larger than queen and drone. a) True b) False 						
		 3) Mulberry silk is produced by Bombyx nori silkworm. a) True 						
		 a) Faise 4) Promastigote form of Trypanosome is infective stage of Trypanosomiasis. 						
		a) True b) False 5) Dengue disease is caused due to TMV virus.						
		 a) True b) False 6) Honey, Silk and Lac are secretary substance of insects. a) True b) False 						
Q.2	Ans a) b) c) d)	1swer the following. Describe casts of Honey bees. Describe economic importance of silk. Describe disease filariasis. Describe life cycle of nonmuberry silkworm.						
Q.3	Ans a) b)	swer the following. Describe appliances used in apiculture. Describe life cycle of Bombyx mori.	16					
Q.4	Ans a) b)	swer the following. Describe Indian visceral leishmaniasis and its life cycle. Describe types of parasites in detail.	16					
Q.5	Ans a) b)	swer the following. Describe products of apiculture and give its economic importance. Describe life cycle of Lac insect.	16					
Q.6	Ans a) b)	swer the following. Describe disease Dengue with life cycle and give its control measures. Describe types of parasites.	16					
Q.7	Ans a) b)	swer the following. Describe parasitic adaptations in detail. Describe life cycle of Honey bees with their products in apiculture.	16					

				200LC Animal Biotechnolo	ogy (MSC31401)	
Day Time	& Da e: 03:	te: T 00 P	hursda M To (ay, 09-05-2024 06:00 PM		Max. Marks: 8	30
nsti	ructio	ons:	1) Q. I 2) Atte 3) Fig	Nos. 1 and. 2 are compulsor empt any three questions fro ure to right indicate full mark	y. m Q. ːs.	No. 3 to Q. No. 7	
Q.1	A)	Ch 1)	oose Whic a) c)	correct alternative. In of the following is synthetic Coagulans MEM	c med b) d)	lia? Plasma clot Tissue extract	0
		2)	Gene a) c)	e expression refer to protein Transcription Both a & b	synth b) d)	esis occur through Translation None of the above	
		3)	Wha a) c)	t is the primary purpose of S DNA Sequencing Protein analysis	outhe b) d)	rn blotting? RNA quantification DNA fragment detection	
		4)	Who a) c)	coined the term western blo Dr. Edwin Western Dr. Neal Burnette	tting? b) d)	Dr. George stark Dr. Francis Crick	
		5)	Stem a) b) c) d)	cell are unique cell with the Specialize into different cel Fight infections Divide uncontrollably Transmit genetic informatic	abilit <u></u> I type: n	y to s	
		6)	Basio spec a) b) c) d)	c tool of genetic regulation a ific Regulatory DNA sequences Regulatory RNA sequences Enzymes of cell Promotor portion of genes	re the s s	ability of some protein to bind to	
		7)	In eu a) c)	karyotes and bacteria the m Promotor control Repressor control	ost co b) d)	ommon form of regulation is Translation control Transcriptional control	
		8)	How a) c)	many t-RNA are required to 31 30	trans b) d)	late all 61 codon 32 29	
		9)	Whic a) c)	h position of codon is said to First Third	bew b) d)	obble Second Fourth	

Seat	
No.	

M.Sc. (Semester - IV) (New) (CBCS) Examination: March/April-2024

C

SLR-HS-23 Set P

		10)	 What may complicate the process of gene cloning within the cell a) One recognition site b) Foreign site c) More than one recognition site d) Antibody 	
	B)	Fill 1) 2) 3) 4) 5) 6)	I in the blanks. The cell lines which grow through a limited number of cell generations and have a limited life are called Aplastic anemia is disorder of Process of synthesis of an RNA molecule corresponding to a gene is called Technology that facilitates the identification of individuals at genetic level is known as In cot curve DNA is always stranded. Analysis of related genes in a DNA restriction fragment is called	06
Q.2	An a) b) c) d)	swer Gen Bioe DNA Mon	r the following. ne regulation by lac operon model. ethics in animal genetic engineering. A methylation. noclonal Antibodies.	16
Q.3	An a) b)	swer Expl Expl	r the following. Dain transgenic animals. Dain genetic code.	08 08
Q.4	An a) b)	swer Dese Disc	r the following. scribe embryonic stem cells (ES). cuss in detail process of protein synthesis in prokaryotes.	08 08
Q.5	An a) b)	swer Dese Dese	r the following. scribe environmental regulation of gene expression. scribe the sequencing of proteins.	08 08
Q.6	An a) b)	swer Expl Expl	r the following. Ilain techniques of nucleic acid hybridization. Ilain in detail Gene therapy.	08 08
Q.7	An a) b)	swer Write scier Disc	r the following. te an essay on applications of genetic engineering principles in medical ences. cuss in brief the post transcriptional mRNA processing in eukaryotes.	08 08

				Applied Zoology (M	SC	31402)
Day a Time	& Dat : 03:0	e: S 0 P	aturda M To (ay, 11-05-2024 06:00 PM		Max. Marks: 80
Instr	uctio	ns:	1) Q. I 2) Atte 3) Fig	Nos. 1 and. 2 are compulsory. empt any three questions from G ure to right indicate full marks.). No	. 3 to Q. No. 7
Q.1	A)	Mu 1)	Itiple In IVI a) c)	Choice Questions- F, in vitro means Inside the body In semen bank	b) d)	10 Outside the body Both a and b
		2)	A per is kno a) c)	rson who agrees to carry and giv own as the Surrogacy Adopter	ve bii b) d)	rth to a baby for someone else Mother Donar
		3)	Seru Testo a) c)	_ test is performed on a sample m Cortisol, TSH, FT3, FT4, LH, osterone in blood. ELISA Hormonal assay	of bl FSH b) d)	lood to measure the level of , Prolactin, Estradiol and IVF Lipid profile
		4)	lmmı a) c)	unoglobulins are also called Antibodies Hormones	 b) d)	Antigens Enzymes
		5)	T lym a) c)	nphocytes are produced in bone Pineal Thymus	mari b) d)	row but mature in the gland. Thyroid Tesits
		6)	harm a) c)	_ weapons disseminate disease or kill humans, animals or plant Chemical Physical	e-cau s. b) d)	sing organisms or toxins to Biological Both a and b
		7)	The 2 a) c)	Zy,COV-D is the world first and l RNA vaccine Antibodies	ndia b) d)	's indigenously developed DNA vaccine Medicine
		8)	a) c)	_ is used for vermicompost. Eisenia fetida Pheretima posthuman	b) d)	Bombyx mori Lacciferlacca
		9)	a) c)	_ is caused by Wuchereria band Malaria Dengue	crofti b) d)	Cholera Filariasis

Seat No.

M.Sc. (Semester - IV) (New) (CBCS) Examination: March/April-2024 ZOOLOGY

SLR-HS-24

Set

Ρ

		10)	Cocc a) c)	cidia and Giardia are mo Virus Protozoan parasites	ost common _ b) d)	 Worms Helminthes parasites			
	 b) Write True of Faise. 1) Liquid Nitrogen is used in centrifugation- 2) Chickenpox is a vaccine - 3) Cervical, ovarian, uterine, vaginal, and vulvar are types of gynecologic cancer- 4) Vaccination is a natural immunity- 5) The separation of plasma from blood usually occurs through centrifuga 6) For vermiculture local species used in India are Perionyx excavates and Lampitomauritii. 								
Q.2	Ans a) b) c) d)	 Answer the following. a) Cancer and reproductive tract infections b) Scope of Immunology c) ELISA d) Vermiwash 							
Q.3	Ans a) b)	swer Give Exp	the fo e an a lain b	ollowing. account on vaccines. lood bank protocols.			08 08		
Q.4	Ans a) b)	swer Des Des	the fo scribe scribe	ollowing. IVF sterility and its trea common methods of bi	tment. ological warfa	are.	08 08		
Q.5	Ans a) b)	swer Defi Des	the fo ine ve scribe	ollowing. ermiculture? Describe in important veterinary pa	nportance of v rasites.	vermiculture	08 08		
Q.6	Ans a) b)	swer Des Give	the fo cribe e an <i>a</i>	bllowing. blood cell routine tests account on surrogacy.	of blood for h	epatitis and ELISA.	08 08		
Q.7	Ans a) b)	swer Exp Des	the fo lain B cribe	bllowing. Iymphocytes and T lym important human paras	nphocytes. ites.		08 08		

Seat	
No.	

M.Sc. (Semester - IV) (New) (CBCS) Examination: March/April-2024 ZOOLOGY

Environmental Biology and Toxicology (MSC31403)

Day & Date: Tuesday, 14-05-2024 Time: 03:00 PM To 06:00 PM

Instructions: 1) Question no. 1 and 2 are compulsory.

- 2) Attempt any three questions from Q. No. 3 to Q. No. 7.
- 3) Figure to right indicate full marks.

Q.1 A) Choose correct alternative.

- 1) The organisms which feed on dead organisms wastes of living organisms are called _____.
 - a) Chemotrophs b) Carnivores
 - c) Detritivores d) Decomposers

2) The difference between the phosphorous cycle and carbon cycle lies in the fact that _____.

- a) The phosphorous cycle does not include a gaseous phase but the carbon cycle does.
- b) Phosphorous does not enter living entities but carbon enters
- c) The phosphorous cycle includes a solid phase the carbon cycle does not
- d) Primary reservoir of the phosphorous cycle is the atmosphere but rocks are the primary reservoirs for carbon cycle.

3) Biochemical oxygen demand means _____.

- a) Industrial pollution
- b) Air pollution
- c) Polluting capacity of effluent
- d) Dissolved O₂ needed by microbes to decompose organic waste.

b) Bhopal

- 4) Detritus food chain starts from _
 - a) Green plants b) Grass
 - c) Dead organic matter d) Phytoplankton
- 5) Yellowing of Taj Mahal is an effect of _____
 - a) Acid rain b) Global warming
 - c) Ozone depletion d) All of the above
- 6) The upright pyramid of number is absent in _
 - a) Lake b) Pond
 - c) Grassland d) Forests
- 7) Which of the following is not an air pollutant _____.
 - a) Smoke b) CO₂
 - c) Nitrogen d) Sulphur Dioxide
- 8) The biggest nuclear accident occurred in ____
 - a) New York
 - c) Chernobyl d) Beijing

Set | F

Max. Marks: 80

		9)	 Matter must be recycled again and again by an ecological process called 								
			b) c)	Ecological pyramid Energy flow	b) d)	Ecological succession Biogeochemical cycle					
		10)	Wha a) b) c) d)	t kind of Ecosystem is know The one in which all specie The one in which there are The one in which animals All of these.	n as es are no a feed	sustainable? e in balance animals on each other					
	B)	Fill	in the	e blanks.			06				
		1) 2)	Incre The g	eased levels of air pollution i greatest problem of water c	esuli onse	is in rvation is to reduce the amount					
		3) 4) 5)	 A foc	is said to be biodegradab is an organism used to ga od web consists of	le wa auge	aste. the quality of an ecosystem.					
		6)	The	waste products and the dea releasing phosphorus.	d org	anisms are decomposed by					
Q.2	Ans a) b) c) d)	Explain toxic agents in household use. Write a note on Food additives. Explain types of productivity. Describe conservation of natural resources.									
Q.3	Ans a) b)	swer Expl Note	the fo ain sc on P	b llowing. blid waste management. oly house.			08 08				
Q.4	Ans a) b)	swer Expl Wha	the fo ain co t is se	bllowing. Introl measures of thermal p Indimentary cycle? Explain it	ollut s typ	ion. es with diagram.	08 08				
Q.5	Ans a)	swer Expl rate.	the fo ain Po	bllowing. Opulation Growth And write	short	note on Natality rate and mortality	08				
	b)	Disc	us the	e causes and effects of soil	pollut	tion.	08				
Q.6	Ans	swer	the fo	ollowing.							
	a) b)	Write Expl	e note ain bi	on three mile island. ological control.			08 08				
Q.7	Ans	swer	the fo	ollowing.		with diagram	00				
	a) b)	Expl Expl indu	ain m ain in stries.	ethods of rain water harves dustrial pollution control with	n refe	erence to textile and sugar	08 08				

Set No.							Set	Ρ
	M.So	c. (Se	eme	ster-IV) (New)	(CBCS) Exa	amina /	ation: March/April - 2024	
		Zoo	kee	ping and Anin	nal House N	lanag	gement (MSC31406)	
Day & Time	& Dat : 03:0	e: Thu 0 PM	ursda To 0	y, 16-05-2024 6:00 PM			Max. Marks	: 80
Instr	uctio	ns:1) 2) 3)	Q. N) Atte) Figu	os. 1 and. 2 are o mpt any three qu ire to right indica	compulsory. estions from C te full marks.). No.	3 to Q. No. 7	
Q.1	A)	Cho 1)	ose o One a) c)	who maintains / Security guard	/e. cares for anim	als in b) d)	zoo Forest officer Taxonomist	10
		2)	Pyth a) c)	on and rat snake Poisonous snak Poisonous amp	e are es hibians	b) d)	Non Poisonous snakes Non Poisonous amphibians	
		3)	a) c)	is a nocturna Sparrow Owl	l bird.	b) d)	Eagle Parrot	
		4)	Trar	smittable diseas	e from wild bird	ds to p	ooultry and to human being is	
			a) c)	SARS Rabies		b) d)	Influenza Typhiod	
		5)	Kala a) c)	Azar is also kno Visceral leshma Sleeping sickne	wn as niasis ss	b) d)	Elephantiasis Mad cow disease	
		6)	MBI a) c)) in reptiles is ter Muscles Teeth	m used to dese	cribe a b) d)	a problem with their Bones Skin	
		7)	Hipp a) c)	oopotamus is larg Ungulate mamn Reptile	lest in nal	world. b) d)	Ruminant mammal Aves	
		8)	disp a) c)	is a way of p lay or study. Taxonomy Zoo keeping	reparing, stuffiı	ng and b) d)	d /or mouting an animal for Taxidermy Cryopreservation	
		9)	Any a) c)	kind of shelter, ro Zoo keeping Sanctuary	efuge affording	prote b) d)	ction to animal is called National parks Animal Housing	
		10)	a) c)	is a largest bir Emu Ostrich	d.	b) d)	Kiwi Eagle	

SLR-HS-26 Set P

	B)	Writ 1)	e true Visc a)	e/ false. eral leshn True	naniasis is a	ilso known k	i as s o)	sleeping False	sickness.		06
		2)	Spe a)	ctacle mai True	rks is a featı	ure of iden	itifica b)	ation of K False	(ing cobra	ι.	
		3)	Pyth a)	ion is a lai True	rgest bird.		b)	False			
		4)	Diun a)	nality is fo True	rm of anima	al behaviou	ur ch b)	anging a False	ictivity dui	ring day tim	IE.
		5)	A cr a)	ocodile be True	elongs to cla	ss reptiles	s. b)	False			
		6)	Taxi anim a)	dermy is a nal remain True	a fundament Is.	tal techniq	ue fo b)	or preser False	ving inver	tebrate	
Q.2	Ans a) b) c) d)	wer ti Introc Desc Expla Give	ver the following. Introduction of zoo keeping. Describe housing behaviour in tortoise. Explain feeding behaviour in land birds. Give an account on public awareness program in zoo keeping.						16		
Q.3	Ans a) b)	wer t l Give Write	he fo an ao diffe	llowing. ccount on rence bety	poisonous s ween diurna	snakes. Il and noct	urna	l birds.			16
Q.4	Ans a) b)	wer t l Desc Write	he fo ribe h note	llowing. nousing, fe on public	eeding beha awareness	viour in gr program i	azin n a z	g mamm 200.	als.		16
Q.5	Ans a) b)	wer t l Desc Desc	he fo ribe h ribe e	llowing. nousing, fe ethical issu	eeding and b ues in zoo a	preeding b rchitecture	ehav e.	/iour in s	nakes.		16
Q.6	Ans a) b)	wer t l Expla Expla	he fo ain ve ain ge	llowing. terinary se eneral guic	ervices in zo delines for vi	oo. isitors in z	00.				16
Q.7	Ans a)	wer ti Expla	he fo ain po	llowing. blicies of z	oo keeping.						16

b) Give an account on animal house management.

N	I.Sc	. (Sei	mest	ter - IV) (New) (Cl 7	BCS) Exar OOLOGY	nin	ation: March/April – 2024	ł
				– Fishery Sc	ience (MS	C3	1407)	
Day o Time	& Da : 03:0	te: Th 00 PM	ursda I To 0	y, 16-05-2024 6:00 PM	-		Max. Marks	: 80
Instr	uctic	o ns: 1) 2 3	Q. N) Atte) Figu	os. 1 and. 2 are com mpt any three questi ure to right indicate fu	pulsory. ons from Q. Ill marks.	No.	3 to Q. No. 7	
Q.1	A)	Cho 1)	ose c Catl a) c)	c orrect alternative. a, rohu, mrigal are _ Marine Estuarian	fishes	s. b) d)	Freshwater Brackish	10
		2)	a) c)	is a class of jawe Chondrichthyes Placoderms	ed fishes hav I	ving c) d)	a cartilaginous skeleton. Osteichthyes Agnathan	
		3)	Larv a) c)	val stage of major cai Tadpole Maggot	rp is called _	b) d)	 Caterpillar Juvenile fish	
		4)	a) c)	gland is used in Thyroid Pituitary	induced bree	edin b) d)	g of fishes. Pancreas Adrenal	
		5)	Conv a) c)	entional and non-cor Fish catching Fish marketing	ventional m	ethc b) d)	ods are used for Fish preservation Fish degradation	
		6)	a) c)	_ fishes migrate betv Catadromous Amphidromous	veen salt wa	ter a b) d)	and fresh water for spawning. Anadromous Diadromous	
		7)	Colo a) c)	oration in fishes is pro Air bladder Gills	oduced by _	b) d)	 Skin Chromatophores	
		8)	lssir a) c)	n glass is used in pre Wine Manure	_ paration of ا ر) d)	 Cosmetics Leather	
		9)	Elec a) c)	ctric organ is present Labeo Torpedo	in fi	sh. b) d)	Sardine Bombay duck	
		10)	In fis a) c)	shes, venom gland is Salivary Pituitary	modified I) d)	_ gland. Pancreas Thyroid	

Set No.

SLR-HS-27

Set P

	B)	Write	e true/false. Bony fishes belong to class Osteichthyes.	06			
		,	a) True b) False				
		2)	Heterocercal and homocercal are terms related with gills. a) True b) False				
		3)	The benthos is comprised all of the organism that live in upper surface of running water / standing water.				
		4)	Monosex culture refers to the culture of male or female population of fishes.				
			a) True b) False				
		5)	lssin glass is prepared from air bladder of fish. a) True b) False				
		6)	Bioluminescence is found in some fishes. a) True b) False				
Q.2	Ans ^a) b) c) d)	wer the following. Describe general characters of Marine fishes. Define fish culture and describe monoculture. Anadromous migration. Give an account on light producing fishes.					
Q.3	Ans a) b)	wer th Desci Desci	he following. cribe role of plankton in fisheries. cribe non-conventional methods in fishes.	16			
Q.4	Ans [.] a) b)	wer th Desci Give	he following. cribe identification keys of adult major carps up to species level. an account on products of fishes.	16			
Q.5	Ans [.] a) b)	wer tł Give Desci	he following. an account on induced breeding techniques in fishes. cribe venom and venomous gland in fishes.	16			
Q.6	Ans [.] a) b)	wer th Desci Desci	he following. cribe brackish ecosystem and faunal diversity of it. cribe types of fish culture.	16			
Q.7	Ans ^v a)	wer th Desci	he following. cribe identification of larval stages of major carp.	16			

b) Give an account on types of migration.