

F-6384

Sub. Code

7MZO1C1

M.Sc. DEGREE EXAMINATION, NOVEMBER 2021

First Semester

Zoology

ANIMAL DIVERSITY

(CBCS – 2017 onwards)

Time : 3 Hours

Maximum : 75 Marks

Part A

(10 × 2 = 20)

Answer **all** questions.

Write short notes on

1. Genus
2. Phylogeny
3. Coral reefs
4. Metamerism
5. Tube feet
6. *Bombyx mori*
7. Caudal fin
8. Cod liver oil
9. Synsacrum
10. Ratitae

Part B

(5 × 5 = 25)

Answer **all** questions, choosing either (a) or (b).

11. (a) Enlist the salient features of Protozoa.

Or

- (b) Classify Porifera upto class level.

12. (a) Classify Phylum Annelida upto classes.

Or

- (b) Describe the polymorphism in coelenterates.

13. (a) Discuss any three beneficial insects.

Or

- (b) Give a short account on adaptive radiation in Arthropods.

14. (a) Explain the need and types of migration in fishes.

Or

- (b) Enumerate the general characters of vertebrates.

15. (a) Discuss briefly 'Origin of Amphibians'.

Or

- (b) Write an account on Prototherian mammals.

Part C

(3 × 10 = 30)

Answer any **three** questions.

16. Describe the general characters and classify Protozoa upto classes with examples.
 17. Give a detailed account on parasitic adaptations of helminthes.
 18. Discuss water vascular system of Starfish.
 19. Write an essay on economic importance of fishes.
 20. Why Mesozoic era is called as Golden age of Reptiles? Discuss in detail.
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F-6385

Sub. Code

7MZO1C3

M.Sc. DEGREE EXAMINATION, NOVEMBER 2021

First Semester

Zoology

BIOCHEMISTRY

(CBCS – 2017 onwards)

Time : 3 Hours

Maximum : 75 Marks

Part A

(10 × 2 = 20)

Answer **all** questions.

1. What are monosaccharide?
2. Define glycogenesis.
3. What are essential amino acids?
4. Define deamination.
5. Differentiate saturated and unsaturated fatty acids.
6. What is zDNA?
7. Define co enzyme.
8. What is alpha tocopherol?
9. List out the endocrine glands.
10. What is Glucocorticoid?

Part B

(5 × 5 = 25)

Answer **all** questions, choosing either (a) or (b).

11. (a) Write the biological importance of Glycogen.

Or

- (b) Explain the mechanism of Glycolysis and formation of Acetyl CoA.

12. (a) Give an account on the classification of protein.

Or

- (b) What are enzymes mediate the transamination reactions? Explain.

13. (a) Write the structure and functions of cholesterol.

Or

- (b) Write a short note on

(i) Nucleodies and

(ii) Nucleotides

14. (a) Give the general properties of enzymes.

Or

- (b) Explain the functions of vitamin A.

15. (a) Briefly explain the mechanism of synthesis of thyroid hormone.

Or

- (b) Explain the important functions of steroid hormones.

Part C

(3 × 10 = 30)

Answer any **three** questions.

16. Describe the metabolic pathways of TCA Cycle.
 17. Give an account on protein synthesis.
 18. Explain the double helix structure of DNA molecule.
 19. Discuss the mechanism of enzyme and substrate reaction and regulating factors.
 20. How hormone secretions are controlled and regulated? Explain in detail.
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F-6386

Sub. Code

7MZO1E3

M.Sc. DEGREE EXAMINATION, NOVEMBER 2021

First Semester

Zoology

Elective – ANIMAL BEHAVIOUR

(CBCS – 2017 onwards)

Time : 3 Hours

Maximum : 75 Marks

Part A

(10 × 2 = 20)

Answer **all** questions.

1. Name the categories of behavioral patterns of animals.
2. What is adjunctive behaviour?
3. Define reverse migration in birds.
4. What is diadromous?
5. Define marking territory.
6. Write a note on encounter dilution effect.
7. What is autism?
8. What is positive punishment?
9. Define altruism.
10. Make a note on kin relationship.

Part B

(5 × 5 = 25)

Answer **all** questions, choosing either (a) or (b).

11. (a) How genes are regulate the patterns of behaviour in animals? Explain.

Or

- (b) Write the components of fixed action pattern in animals.

12. (a) Write a note on nocturnal migratory behaviour of animals.

Or

- (b) Give an account on forage fish migration.

13. (a) Explain the importance of social relationship of animals.

Or

- (b) How behaviour plays an important role in biological adaptation of animals? Explain.

14. (a) Write a note on the types of animal behaviour in relation to location.

Or

- (b) What are the function of animal aggregation? Explain.

15. (a) Explain the mechanism of reciprocal altruism.

Or

- (b) Write an account on neural basis of learning.

Part C

(3 × 10 = 30)

Answer any **three** questions.

16. Describe the method of identification of functioning behaviour.
 17. How the ecological and evolutionary factors regulate the migration in birds? Explain.
 18. Give a detailed account on the classification of fish migration.
 19. Discuss on social behavior of animals with an example.
 20. Give an overview of altruistic behaviour of animals.
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F-6387

Sub. Code

7MZO2C2

M.Sc. DEGREE EXAMINATION, NOVEMBER 2021

Second Semester

Zoology

GENETICS

(CBCS – 2017 onwards)

Time : 3 Hours

Maximum : 75 Marks

Part A

(10 × 2 = 20)

Answer **all** questions.

1. Law of segregation
2. Human skin colour
3. Telomere
4. Polytene chromosomes
5. RFLP
6. *In-situ* hybridization
7. Intervening sequences
8. IFGTP
9. Genotype frequency
10. Euthenics

Part B

(5 × 5 = 25)

Answer **all** questions, choosing either (a) or (b).

11. (a) Explain the simple Mendelian traits in man.

Or

- (b) Write a short account on the scope of genetics.

12. (a) Explain the types and importance of linkage with examples.

Or

- (b) Give an account on the mechanism of crossing over in chromosomes.

13. (a) Describe about the mechanism of physical mapping.

Or

- (b) Explain mapping method of gene using trihybrid test cross.

14. (a) Brief the genetic regulation of development.

Or

- (b) Explain the mechanism of control of gene expression in phages.

15. (a) Explain the methods and applications of twin study with examples.

Or

- (b) Distinguish gene frequency from genotype frequency and write their applications.

Part C

(3 × 10 = 30)

Answer any **three** questions.

16. Describe about the sex-linked inheritance with examples.
 17. Give an essay on Chromosomal abnormalities with examples.
 18. List and describe the various methods of gene mapping with molecular markers.
 19. Describe the genetic regulation of differentiation.
 20. Discuss the ethical issues concerned with population genetics with reference to Euthenics and Eugenics.
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F-6388

Sub. Code

7MZO3C2

M.Sc. DEGREE EXAMINATION, NOVEMBER 2021

Third Semester

Zoology

ECOLOGY

(CBCS – 2017 onwards)

Time : 3 Hours

Maximum : 75 Marks

Part A

(10 × 2 = 20)

Answer **all** questions.

Write a short note on:

1. Edge effect
2. Mortality
3. Biogeochemical cycle
4. Nitrogen fixation
5. Food web
6. Profundal zone
7. Estuarine habitat
8. Stratification
9. Bioremediation
10. Decibel

Part B

(5 × 5 = 25)

Answer **all** questions, choosing either (a) or (b).

11. (a) Write short note on population density.

Or

- (b) Give an account on animal association.

12. (a) Write note on the energy flow of an ecosystem.

Or

- (b) Comment on productivity in ecosystem.

13. (a) Write note on sulphur cycle.

Or

- (b) Comment on cycling of non essential elements.

14. (a) Give an account on freshwater habitat.

Or

- (b) Write down the biological features of coral reefs.

15. (a) Write note on the effects of climate change.

Or

- (b) Give an account on the organizations involved in environmental protection.

Part C

(3 × 10 = 30)

Answer any **three** questions.

16. Write down the biological effects of light and temperature.

17. Give a detailed note on ecological pyramid and its types.

18. Explain nitrogen cycle.
 19. Explain in detail about biotic features of marine habitat.
 20. Write an essay on water pollution.
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F-6389

Sub. Code

7MZO3C3

M.Sc. DEGREE EXAMINATION, NOVEMBER 2021

Third Semester

Zoology

EVOLUTION

(CBCS – 2017 onwards)

Time : 3 Hours

Maximum : 75 Marks

Part A

(10 × 2 = 20)

Answer **all** questions.

Write short note on:

1. Cosmozoic Theory
2. Modern Synthetic Theory
3. Archaeopteryx
4. Biogenetic Law
5. Recombination
6. Stabilizing selection
7. Deme
8. Protective Colouration
9. Radiometry
10. Molecular clock

Part B

(5 × 5 = 25)

Answer **all** questions, choosing either (a) or (b).

11. (a) List out the salient features of mutation theory of De Vries.

Or

- (b) Give an account on Neo-Lamarckism.

12. (a) Explain any five physiological evidences.

Or

- (b) Write about Paleontological evidences of evolution.

13. (a) Write in detail about progressive natural selection.

Or

- (b) Differentiate somatic and germinal variations.

14. (a) Write about morphological and genetic species concept.

Or

- (b) Comment on adaptive radiation in Darwin finches.

15. (a) Brief a note on Geological time scale.

Or

- (b) Give an account on cultural evolution of man.

Part C

(3 × 10 = 30)

Answer any **three** questions.

16. Write an essay on Darwinism.
 17. Explain morphological evidences for evolution with suitable example.
 18. Discuss isolating mechanism and its role in evolution.
 19. Give an account on Batesian and Mullerian mimicry.
 20. Describe evolution of man as seen in fossil record.
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F-6390

Sub. Code

7MZO3E2

M.Sc. DEGREE EXAMINATION, NOVEMBER 2021

Third Semester

Zoology

Elective : ANIMAL CELL CULTURE TECHNOLOGY

(CBCS – 2017 onwards)

Time : 3 Hours

Maximum : 75 Marks

Part A

(10 × 2 = 20)

Answer **all** questions.

Write a short note on:

1. Golgi complex
2. Culture medium
3. Serum free medium
4. Function of CO_2 in a culture medium
5. Cytotoxicity
6. Primary culture
7. Embryonic stem cell
8. Factors in Scaling-Up
9. Programmed cell death
10. What is cloning process?

Part B

(5 × 5 = 25)

Answer **all** questions, choosing either (a) or (b).

11. (a) Write short note on animal cell culture.

Or

- (b) Briefly write about the simple growth medium.

12. (a) Explain the metabolic functions of a culture medium.

Or

- (b) Give a short note on roll of serum in a culture medium.

13. (a) Describe the basic technique of mammalian cell culture.

Or

- (b) What are the methods of maintenance of the cell culture?

14. (a) Give an account on application of animal cell culture.

Or

- (b) Write short note on the cell synchronization.

15. (a) What are the basic types of organ culture?

Or

- (b) Give a note on mass cell cultivation.

Part C

(3 × 10 = 30)

Answer any **three** questions.

16. Write about the established cell line culture.
 17. Explain the application of serum and protein free medium.
 18. Give an account on biology and characterization of the cultured cell.
 19. Explain the process of somatic cell genetics.
 20. Write the principle and application of cell preservation.
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F-6391

Sub. Code

7MZO3E4

M.Sc. DEGREE EXAMINATION, NOVEMBER 2021

Third Semester

Zoology

Elective : TRANSGENIC TECHNOLOGY

(CBCS – 2017 onwards)

Time : 3 Hours

Maximum : 75 Marks

Part A

(10 × 2 = 20)

Answer **all** questions.

Write short note on:

1. Transgenic mice
2. Cryopreservation
3. Cytogenetics
4. RNA - Functions
5. Additive gene action
6. Disease resistance
7. Clones
8. Super ovulation
9. ELISA
10. Totipotent

Part B

(5 × 5 = 25)

Answer **all** questions, choosing either (a) or (b).

11. (a) Give a brief outline about Transgenic technology.

Or

- (b) Describe about the remedial practices for Sterility.

12. (a) Write the Chemical Nature of DNA.

Or

- (b) Explain the methods involved in Embryo-transfer.

13. (a) What are the types of Gene actions?

Or

- (b) What are the advantages of breeding of disease resistant animals? Explain with examples.

14. (a) What are the types of DNA technology? Explain.

Or

- (b) Describe the process of cloning with reference to Cattle breeding.

15. (a) What is Cell technology? Explain.

Or

- (b) Write about the importance of stem cell research.

Part C

(3 × 10 = 30)

Answer any **three** questions.

16. What are Transgenic animals? Explain the methods of transgenic animal production.
 17. Describe in details about the chemical nature of RNA and explain their functions.
 18. Write an essay on the genetic improvement strategies in poultry farming.
 19. What is *in-vitro* fertilization? Explain the procedures involved with reference to animals.
 20. Write an explanatory notes on the Identification and purification of stem cells and its storage procedures.
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F-6531

Sub. Code

7MZO1E1

M. Sc. DEGREE EXAMINATION, NOVEMBER 2021.

First Semester

Zoology

Elective: **BIOSTATISTICS**

(CBCS – 2017 onwards)

Time : 3 Hours

Maximum : 75 Marks

Part A

(10 × 2 = 20)

Answer **all** questions.

Write short note on:

1. Bar diagram
2. Frequency polygon
3. Standard error
4. Mean deviation
5. ANOVA
6. Bell shaped curve
7. Z-test
8. Aposteriori probability
9. Null hypothesis
10. Linear correlation

Part B

(5 × 5 = 25)

Answer **all** questions, choosing either (a) or (b).

11. (a) Discuss the types of collection of data.

Or

- (b) Draw a pie diagram for the following data of mammals in reserve forest in Tamilnadu.

Mammals	Deers	Monkeys	Fox	Leopards	Tigers	Others
Populations	105	65	50	35	20	25

12. (a) Calculate the median and mode for the distribution of the weights of 150 sheep from the data given below

weight in Kg	30-40	40-50	50-60	60-70	70-80	80-90
frequency	18	37	45	27	15	8

Or

- (b) Obtain quartile deviation from the following data

No. of Wasp per colony	8	10	13	15	19	21	25
No. of colonies	4	5	9	2	7	3	1

13. (a) Discuss the importance of hypothesis testing in biology. Add notes on the types of errors in hypothesis testing

Or

- (b) Write a brief account on Normal distribution.

14. (a) A woman has a haemophilic brother. She is married to a normal man. Her parents were normal. What is probability that any son born to her will be haemophilic.

Or

- (b) The systolic pressure of 10 persons in the age group of 45-50 is given below. 148,128, 147,127,150,145 124,140,142, 149.(Critical value for 't' at $p < 0.05$ and $df = 9 = 2.26$)

15. (a) What is regression analysis? Explain the regression equation and its applications.

Or

- (b) Find the coefficient of correlation for the following data of length and weight of the given fish

Length(mm) 62 61 60 59 58 55 53 52 50

Weight(gm) 23 21 19 18 17 15 14 12 11

Part C (3 × 10 = 30)

Answer any **three** questions.

16. Give an account detailed account on collection and classification of data.

17. Serum lipid peroxide(SLP) levels of ten adults undergoing treatment for diabetes mellitus were recorded to be

No. of patient	1	2	3	4	5	6	7	8	9	10
SLP value	5.85	6.17	6.09	7.7	3.17	3.83	5.17	4.31	3.09	5.24

Compute the mean, variance, standard deviation.

18. Apply one way analysis of variance test to the following data and find out whether the variance in the growth of fish (g /kg fish/week) in four different ponds

A	B	C	D
1.8	3.6	7.5	10.4
2.4	4.8	8.7	10.9
3.2	5.1	9.9	11.7
3.4	6.5	10.9	12.5
4.5	7.3	11.5	12.9

(Critical value 'F' at $p < 0.05$ df 3,16 = 4.08)

19. A cross between black male and gray female drosophila the off-springs obtained were 70 black and 100 gray. Calculate χ^2 and give your inference on the ratio of black and gray off- springs. Expected number is calculate from the fact that gray colour is dominant and expected ratio of this nature is 1:1. (Table value $\chi^2 =$ at 0.05 LS =3.841).

20. Following are the data on soil nitrogen content(X) and grain yield (Y) in different fields. Obtain regression equation Y on X for the relation between two variable.

Soil Nitrogen	15	18	20	25	28	30	32	34
(mg/kg soil)								
Grain yield	20	24	28	35	38	45	48	53
(Kg/10m ²)								

F-6532

Sub. Code

7MZO3C1

M.Sc. DEGREE EXAMINATION, NOVEMBER 2021.

Third Semester

Zoology

DEVELOPMENTAL BIOLOGY

(CBCS – 2017 onwards)

Time : 3 Hours

Maximum : 75 Marks

Part A

(10 × 2 = 20)

Answer **all** questions.

Write short notes on:

1. Sertoli cells.
2. Polarity.
3. Fate map.
4. Emboly.
5. Cell differentiation.
6. Cytogenesis.
7. Metaplasia.
8. Retrogressive metamorphosis.
9. Hypophysation.
10. Amnion.

Part B

(5 × 5 = 25)

Answer **all** questions, choosing either (a) or (b).

11. (a) Give an account on blastulation.

Or

- (b) What is cleavage? Mention different types of cleavage.

12. (a) Write an account on cellular basis of morphogenesis.

Or

- (b) Explain the presumptive organ forming areas in frog.

13. (a) Give an account on differentiation.

Or

- (b) Explain the development of kidney in chick.

14. (a) Write a brief account on regeneration in amphibians.

Or

- (b) What is organizer concept? Mention the types of organizer.

15. (a) Briefly explain about cryopreservation.

Or

- (b) Describe the process of artificial insemination.

Part C

(3 × 10 = 30)

Answer any **three** questions.

16. Describe in detail the process of oogenesis.
 17. Describe different types of morphogenetic movements occur during gastrulation.
 18. With a neat diagram explain the development of eye in chick.
 19. What is metamorphosis? Describe the mechanism and hormonal control of metamorphosis.
 20. Write a detailed account on foetal membranes of chick and their major functions.
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F-5452

Sub. Code

7MZO1C2

M.Sc. DEGREE EXAMINATION, NOVEMBER 2021

First Semester

Zoology

CELL AND MOLECULAR BIOLOGY

(CBCS – 2017 onwards)

Time : 3 Hours

Maximum : 75 Marks

Part A

(10 × 2 = 20)

Answer **all** questions.

Write short note on:

1. Eukaryote
2. SEM
3. Cisterna
4. G₁ – phase
5. Ligase
6. Anticodon
7. Splicing
8. Inducer
9. Receptor
10. Integrins

Part B

(5 × 5 = 25)

Answer **all** questions, choosing either (a) or (b).

11. (a) Write a note on the concept of cell theory.

Or

- (b) What is protoplasm? Explain the composition.

12. (a) Give the functions of Golgi apparatus.

Or

- (b) Explain the clinical significance of lysosome.

13. (a) Write the functions of DNA polymerase.

Or

- (b) What is semi conservative DNA replication? Explain.

14. (a) Give an account on post transcriptional modification in Eukaryote.

Or

- (b) What is the role of repressor protein? Explain.

15. (a) Explain the mechanism of action of surface receptor.

Or

- (b) Define the structure of extracellular matrix.

Part C

(3 × 10 = 30)

Answer any **three** questions.

16. Describe the ultrastructure of cell membrane.
17. Explain the mechanism of cell cycle.

18. Give a detailed account on DNA replication.
 19. Enumerate on post transcriptional modifications.
 20. Give an account on mechanism of action of Oncogens.
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F-5652

Sub. Code

7MZO3E1

M.Sc. DEGREE EXAMINATION, NOVEMBER 2021

Third Semester

Zoology

Elective — BIOPHYSICS AND INSTRUMENTATION

(CBCS – 2017 onwards)

Time : 3 Hours

Maximum : 75 Marks

Part A

(10 × 2 = 20)

Answer **all** questions.

1. Hydrogen bond.
2. Hydrophobic.
3. Fibrous protein.
4. Ramachandran plot.
5. Half life.
6. Ground state.
7. Stationary phase.
8. Isoelectric p^H.
9. Biopolymer.
10. SEM.

Part B

(5 × 5 = 25)

Answer **all** questions, choosing either (a) or (b).

11. (a) Write the characteristics of Vander Wall's forces.

Or

- (b) Write a note on hydrophobic interactions.

12. (a) Explain the primary structure of protein.

Or

- (b) How proteins are denatured? Explain.

13. (a) Give the biological applications of radioisotopes.

Or

- (b) Write about the safety aspects in handling radio active isotopes.

14. (a) Give an account on the principles and applications of preparative ultracentrifuges.

Or

- (b) Explain the advantages of pulse-field gel electrophoresis.

15. (a) How do you study the biopolymer structure? Explain.

Or

- (b) Write the applications of confocal microscope.

Part C

(3 × 10 = 30)

Answer any **three** questions.

16. Explain the significance of hydrogen bonding.
17. How proteins are organized at different levels? Explain.
18. Describe the principle and applications of G.M counter.
19. Discuss the principles and biological applications of SDS-PAGE.
20. Differentiate light and phase contrast microscopy and their functions.
