DCZO101

Reg. No. | | | | | | | | |

I Semester B.Sc. Degree Examination, April - 2023

ZOOLOGY

Cytology, Genetics and Infectious Diseases

Paper : I

(NEP Scheme 2021-22 Freshers and Repeaters)

Time : 2½ Hours **Maximum Marks : 60**

Instructions to Candidates:

1. Draw neat labelled diagrams wherever necessary.
2. Answer should be completely in English.

PART - A

I. Answer the following in one word or one sentence. **(5×1=5)**

1. What is endocytosis?
2. Define apoptosis.
3. Write the genotypic ratio of monohybrid cross.
4. Give an example for sex - influenced trait.
5. _____ lives as a flagellate parasite in the small intestine of man.

PART - B

II. Answer any **Five** of the following. **(5×3=15)**

1. Write a note on microtubules.
2. Mention any three types of cell junctions.
3. Draw a neat labelled diagram of mitochondria.
4. Name any three types of DNA in Eukaryotes.
5. Explain incomplete dominance.
6. Briefly explain inheritance of multiple allelism.
7. What is X-linked recessive inheritance? Give an example.

PART - C

III. Answer any **Four** of the following. **(4×5=20)**

1. With a neat labelled diagram explain the structure of Endoplasmic reticulum.
2. Describe nucleosome model of chromatin organization with a neat labelled diagram.
3. What is cell cycle? Explain it with appropriate diagram.
4. With reference to maternal inheritance explain Kappa particles in Paramecium.
5. With a suitable example explain autosomal recessive pattern of inheritance.
6. Mention the name and disease caused by any five human pathogenic protozoans.

PART - D

IV. Answer any **Two** of the following: **(2×10=20)**

1. With a neat labelled diagram describe the fluid mosaic model of plasma membrane.
2. Describe mitotic cell division with neat labelled diagrams.
3. Describe dihybrid cross with an example.
4. Add a note on following with reference to Trypanosoma.
   a) Morphology
   b) Life cycle

OEZO111

Reg. No. | | | | | | | | |

I Semester B.Sc. Degree Examination, April - 2023
ZOOLOGY
Economic Zoology (Open Elective)
(NEP Scheme Fresher and Repeaters 2021-22 and Onwards)
Paper : I

Time : 2 ½ Hours **Maximum Marks : 60**

Instructions to Candidates:

1) *All Parts are Compulsory.*
2) *Draw neat labelled **diagrams** wherever necessary.*
3) *Answer in English or Kannada.*

PART - A

ಭಾಗ - ಎ

I. Answer any **FIVE** of the following. **(5×2=10)**

ಕೆಳಗಿನ ಯಾವುದಾದರೂ **ಐದು** ಪ್ರಶ್ನೆಗಳಿಗೆ ಉತ್ತರಿಸಿ.

1. Define Sericulture.

ರೇಷ್ಮೆ ಕೃಷಿಯನ್ನು ವ್ಯಾಖ್ಯಾನಿಸಿ.

2. Mention any two species of honey bees.

ಜೇನು ನೊಣಗಳ ಎರಡು ಪ್ರಬೇಧಗಳನ್ನು ಹೆಸರಿಸಿ.

3. Give any two examples for exotic breeds of poultry.

ಕೋಳಿ ಸಾಕಾಣಿಕೆಯ ಎರಡು ವಿದೇಶಿ ತಳಿಗಳನ್ನು ಹೆಸರಿಸಿ.

4. Mention two advantages of dairy farming.

ಹೈನುಗಾರಿಕೆಯ ಎರಡು ಅನುಕೂಲಗಳನ್ನು ತಿಳಿಸಿ.

5. What is composite fish culture ?

ಸಂಯೋಜಿತ ಮೀನು ಸಾಗಾಣಿಕೆ ಎಂದರೇನು ?

6. Mention two ornamental fishes.
ಎರಡು ಸೌಂದರ್ಯ ಮೀನುಗಳನ್ನು ಹೆಸರಿಸಿ.

7. Write any two benefits of vermiculture.
ಎರೆಹುಳು ಸಾಕಾಣಿಕೆಯ ಯಾವುದಾದರೂ ಎರಡು ಪ್ರಾಮುಖ್ಯತೆಯನ್ನು ತಿಳಿಸಿ.

PART - B
ಭಾಗ - ಬಿ

II. Answer any **FIVE** of the following. (5×4=20)
ಕೆಳಗಿನ ಯಾವುದಾದರೂ **ಐದು** ಪ್ರಶ್ನೆಗಳಿಗೆ ಉತ್ತರಿಸಿ.

8. Briefly explain the silkworms rearing techniques.
ರೇಷ್ಮೆ ಹುಳುಗಳ ಸಾಕಾಣಿಕೆಯ ತಂತ್ರಗಾರಿಕೆಯನ್ನು ಸಂಕ್ಷಿಪ್ತವಾಗಿ ವಿವರಿಸಿ.

9. Mention the products of apiculture and their uses.
ಜೇನು ಕೃಷಿಯ ಉತ್ಪನ್ನಗಳನ್ನು ಹೆಸರಿಸಿ ಮತ್ತು ಉಪಯೋಗಗಳನ್ನು ತಿಳಿಸಿ.

10. Write a note on dairy management.
ಹೈನುಗಾರಿಕೆ ನಿರ್ವಹಣೆಯ ಬಗ್ಗೆ ಟಿಪ್ಪಣಿ ಬರೆಯಿರಿ.

11. Comment on pearl culture.
ಮುತ್ತಿನ ಹುಳು ಸಾಕಾಣಿಕೆ ಕುರಿತು ಟಿಪ್ಪಣಿ ಬರೆಯಿರಿ.

12. Give an account on preservation and processing of prawns.
ಸೀಗಡಿಗಳ ಸಂರಕ್ಷಣೆ ಮತ್ತು ಸಂಸ್ಕರಣೆಯ ಬಗ್ಗೆ ಖಾತೆಯನ್ನು ನೀಡಿ.

13. Write a note on methods of Lac Cultivation.
ಲಾಕ್ ಅಂಟು ಹುಳುವಿನ ಕೃಷಿಯ ವಿಧಗಳನ್ನು ತಿಳಿಸಿ.

PART - C

ಭಾಗ - ಸಿ

III. Answer any **THREE** of the following. (3×10=30)

ಕೆಳಗಿನ ಯಾವುದಾದರೂ **ಮೂರು** ಪ್ರಶ್ನೆಗಳಿಗೆ ಉತ್ತರಿಸಿ.

14. Describe the life cycle honey bee.

ಜೇನು ಹುಳುವಿನ ಜೀವನ ಚಕ್ರವನ್ನು ವಿವರಿಸಿ.

15. Write notes on:

ಕೆಳಗಿನವುಗಳನ್ನು ವಿವರಿಸಿ.

a) Milk Products

ಹಾಲಿನ ಉತ್ಪನ್ನಗಳು

b) Nutritive value of egg

ಮೊಟ್ಟೆಯಲ್ಲಿನ ಪೋಷಕಾಂಶಗಳು

16. Explain the methods of construction and maintenance of home aquarium.

ಮನೆಗಳಲ್ಲಿ ಆಕ್ವೇರಿಯಂ ಅನ್ನು ರಚಿಸುವ ಹಾಗೂ ಆಕ್ವೇರಿಯಂನಲ್ಲಿ ಮೀನು ಸಾಕಾಣಿಕೆ ವಿಧಗಳನ್ನು ವಿವರಿಸಿ.

17. Give an account of vermiculture and vermi composting.

ಎರೆಹುಳು ಸಾಕಾಣಿಕೆ ಹಾಗೂ ಎರೆಹುಳು ಗೊಬ್ಬರದ ಬಗ್ಗೆ ವಿವರಿಸಿ.

DCZO301

Reg. No. | | | | | | | | |

III Semester B.Sc. Degree Examination, April - 2023

ZOOLOGY

Molecular Biology Bioinstrumentation and Techniques in Biology

Paper : III

(NEP Scheme Fresher)

Time : 2½ Hours **Maximum Marks : 60**

Instructions ot Candidates:

1) *Answers should be written completely in english.*
2) *Draw diagrams wherever necessary.*

PART - A

I. Answer the following in One word or One sentence. **(5×1=5)**

1. Name the enzyme required for Transcription.
2. How many structural genes are present in trp-operon?
3. Which microscope is used to visualize live cells without staining?
4. What is pH value of Neutral solution.
5. _____ polymerase is used in PCR.

PART - B

II. Answer any Five of the following. **(5×3=15)**

1. Define cistron, muton and Recon.
2. With reference to genetic code, explain:
   a) Degeneracy
   b) Wobble hypothesis.
3. Comment on gene silencing.
4. Mention any three post translational modifications.
5. Define magnification and resolution of microscope.
6. State Beer - Lambert's law.
7. What is Western Blotting? Mention any two application of it.

PART - C

III. Answer any Four of the following. **(4×5=20)**

1. Mention any five differences between prokaryotic and eukaryotic transcription.
2. Explain 'capping' and 'polyadenylation' in post - transcriptioanl modification.
3. Describe the principle involved in centrifugation. Add a note on its applications.
4. List any five applications of SDS-PAGE.
5. Explain the principle of DNA. fingerprinting.
6. Write a note on RNAi.

PART - D

IV. Answer any Two of the following. **(2×10=20)**

1. Explain the major steps involved in Traslation process in Eukaryotes.
2. What is operon? Explain the regulation of lac-operon.
3. With a neat labelled diagram, explain the principle of scanning electron microscope (SEM). Add a note on it's applications.
4. Explain sanger's Dideoxy method of DNA sequencing.

11554

Reg. No. | | | | | | | | |

V Semester B.Sc. Degree Examination, March/April - 2023

ZOOLOGY

Environmental Biology and Ethology

(CBCS Scheme Fresher and Repeater 2018-19 Onwards)

Paper : V

Time : 3 Hours **Maximum Marks : 70**

Instructions to Candidates:

1. Draw a neat labelled diagram wherever necessary
2. Answer should be in English

PART - A

I. Answer the following questions in one word or one sentence. **(10×1=10)**

1) Who coined the term Ecology?
2) Define microhabitat
3) Define population density.
4) What is Bio-Transformation?
5) What are chlorinated hydro carbons?
6) Explain IPM.
7) Give an application of remote sensing
8) Define behaviour.
9) What is communication?
10) Define Altruism.

[P.T.O.

PART - B

II. Answer any Five of the following (5×3=15)

11) State the first law of thermodynamics with an example.
12) Explain hydrosere in brief.
13) Give any three causes for acid rain.
14) Write a note on Biomagnificaiton.
15) What is red data book and mention its importance.
16) Explain motivation with an example.
17) Write a note on parental care in fishes.

PART - C

III. Answer any Five of the following. (5×5=25)

18) Explain primary productivity in an ecosystem.
19) Write a note on monoclimax and polyclimax theory.
20) Explain the consequence of ozone layer depletion.
21) What are non-conventional energy resources? Mention the types and uses.
22) Discuss imprinting with an example.
23) Give the toxic effects of fungicides and herbicides.
24) Comment on echolocation in bats.

PART - D

IV. Answer any Two of the following (2×10=20)

25) Write a note on :
    a) Spatial niche.
    b) Soil as an abiotic factor.
26) Explain solid waste management.
27) What is insitu conservation? Explain the types.
28) Explain social behaviour in termites.

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DCZO201

Reg. No. | | | | | | | | |

II Semester B.Sc. Degree Examination, September - 2023

ZOOLOGY

Biochemistry And Physiology

(Semester NEP Scheme Freshers and Repeaters)

Paper : II

Time : 2½ Hours **Maximum Marks : 60**

Instructions to Candidates:

1. Draw neat labelled diagrams wherever necessary
2. Answer should be completely in English.

PART - A

I. Answer the following. (5×1=5)

1. Define conjugated protein.
2. What are tripeptide linkages?
3. Give the normal blood pressure of adult healthy human.
4. Enzyme produced by salivary gland is _____
5. Name the functional unit of skeletal muscle.

PART - B

II. Answer any **Five** of the following. (5×3=15)

1. Differentiate between saturated and unsaturated fatty acids.
2. Write the structural formula of isoleucine and glycine.
3. What are isozymes? Mention two clinical uses.
4. Briefly explain deamination.
5. Write a note on pulmonary ventilation.
6. Mention the components of blood.
7. List the types of synapses.

PART - C

III. Answer any **Four** of the following. **(4×5=20)**

1. Write a note on classification of enzymes.
2. Explain glycolysis.
3. With a schematic representation explain urea cycle.
4. Give an account on transport of oxygen.
5. Draw a neat labelled diagram of multipolar neuron.
6. Write notes on :
   a. Muscle twitch.
   b. Motor unit.

PART - D

IV. Answer any **Two** of the following. **(2×10=20)**

1. What are enzyme inhibitors? Discuss competitive, non - competitive and uncompetitive inhibitors.
2. Write notes on :
   a. Biosynthesis of palmitic acid.
   b. Gluconeogenesis.
3. Describe chemical digestion of carbohydrates.
4. Give a detailed account on molecular and chemical basis of muscle contraction.

DCZO201

Reg. No. | | | | | | | | |

II Semester B.Sc. (NEP) Degree Examination, ~~October - 2022~~ Aug/Sep - 2023

ZOOLOGY

Biochemistry and Physiology

(2021-22 Scheme)

Paper: II

Time : 2½ Hours **Maximum Marks : 60**

Instructions to Candidates:

i) **Draw neat labelled diagrams wherever necessary**

ii) **Answer should be completely in English.**

PART - A

I. Answer the following **(5×1=5)**

1. What is peptide linkage?
2. Define gluconeogenesis
3. Which disease is associated with Rh factor.
4. Name the structural and functional unit of kidney.
5. Mention any one hormone secreted by posterior pituitary gland.

PART - B

II. Answer any Five of the following **(5×3=15)**

1. Define monosaccharide. Give the structure of glucose
2. Write a note on simple proteins.
3. Define allosteric enzymes? Give an example.
4. What are unsaturated fatty acid? Give an example.

[P.T.O.

5. Define
   a) Cardiac cycle
   b) Blood pressure
   c) Expiration
6. Write a note on Best and Taylor's theory of blood clotting.
7. Briefly explain tetanus

PART - C

III. Answer any FOUR of the following **(4×5=20)**

1. List biological importance of lipids
2. Explain glycolysis
3. Give the schematic representation of urea cycle.
4. Explain chemical digestion of carbohydrates in gastrointestinal tract of man.
5. Describe the structure of multipolar neuron.
6. Name the hormones secreted by thyroid gland and mention their functions.

PART - D

IV. Answer any TWO of the following **(2×10=20)**

1. Explain
   a) The general properties of α - amino acids
   b) The theories on mechanism of enzyme action
2. Give an account on
   a) β oxidation of saturated fatty acids with odd number of amino acids.
   b) Transamination
3. Describe the structure of human lung.
4. Explain the molecular and chemical basis of muscle contraction.

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DCZO401

Reg. No. | | | | | | | | |

IV Semester B.Sc. Degree Examination, September - 2023

ZOOLOGY

Gene Technology , Immunology and Computational Biology

Paper : IV

(NEP Scheme Semester Freshers)

Time : 2½ Hours **Maximum Marks :60**

***Instructions to Candidates*:**

1) Draw neat labelled **diagrams** wherever necessary.
2) Answers should be completely in English only.

PART - A

I. Answer the following in One word or One sentence. **(5×1=5)**

1. Which vector is used in SCID gene therapy?
2. Mention the function of Von kupffer cells.
3. Define isograft.
4. Expand ANOVA
5. Find the mode of the given data:
   12, 8, 4, 8, 1, 8, 9, 11, 9, 10, 12, 8

PART - B

II. Answer any FIVE of the following **(5×3=15)**

1. Mention the function of the following enzymes in gene cloning.
   a) Restriction enzyme
   b) DNA ligase
   c) Alkaline phosphatase.
2. Write a note on lipofection.
3. What are Biosensors? Mention any two applications of it.

[P.T.O.

4. Write a note on APC cells in Immunity.
5. Define vaccine. Mention any two types.
6. List any three applicaitons of Bioinformatics.
7. A bag contains 4 red balls and 6 yellow balls. 3 balls are drawn at random. What is the probability of getting a red ball?

PART - C

III. Answer any FOUR of the following. **(4×5=20)**

1. Explain the steps involved in recombinant. DNA technology.
2. What are antigens? Explain its properties.
3. Describe the structure of IgG antibody with a neat labelled diagram.
4. Describe immunity against bacterial infection.
5. What is a histogram? Prepare a histogram from the following data recorded on number of tillers of wheat variety.

No.of tillers per plant	0-6	6-12	12-18	18-24	24-30	30-36
No.of. Plants	4	8	15	20	12	6

6. Calculate arithmetic mean from the following data.

No.of seeds per plant	100-200	200-300	300-400	400-500	500-600	600-700
Number of plants	8	18	20	26	30	28

PART - D

IV. Answer any TWO of the following. **(2×10=20)**

1. Explain the production of monoclonal antibodies with a neat labelled diagram.
2. Describe the structure of MHC-I and MHC-II complex.
3. Explain :
   a) Graft rejection mechanism
   b) Sequence alignment - FASTA.
4. Calculate the mean, median , variance and standard deviation from the following data, recorded on the number of clusters in a variety of blackgram:

   No. of Clusters: 8, 10, 10, 10, 12, 13, 15, 15, 17, 20.

11656

Reg. No. | | | | | | | | |

VI Semester B.Sc. (Theory) Degree Examination, August/September - 2023

ZOOLOGY

Developmental Biology and Organic Evolution

(CBCS Scheme Freshers and Repeaters 2020-21 Onwards)

Paper : VII

Time : 3 Hours **Maximum Marks : 70**

Instructions to Candidates:

1. Draw diagram wherever necessary.
2. Answer should be in English.

PART-A

I. Answer the following in **one** word or **one** sentence. (10×1=10)

1. State epigenetic theory.
2. What is a regulative egg?
3. Define holoblastic cleavage.
4. Define cell lineage.
5. What is archenteron?
6. Define metamorphosis.
7. What is epimorphosis?
8. Define gene frequency.
9. What is allopatric speciation.
10. What are moulds.

PART - B

II. Answer any **five** of the following. (5×3=15)

11. Mention the significance of cleidoic egg.
12. What is viviparity? Give an example.
13. Draw a diagram showing the fate map of chick.

[P.T.O.

14. Describe chorio - allantoic placenta with an example.
15. What is thelytoky? Explain with an example.
16. State Hardy - wein berg's law and mention its significance.
17. Write a note on fission track method of fossil dating.

PART - C

III. Answer any **five** of the following questions. **(5×5=25)**

18. Classify the eggs based on amount of yolk with an example each.
19. With reference to polyspermy explain fast block and slow block.
20. With a neat labelled diagram. Explain blastula in frog.
21. Write a note on chemistry of organizer.
22. Explain the formation, structure and function of chorion in chick.
23. Give an account on post - zygotic isolating mechanisms.
24. Explain analogous organs as evidence for evolution with an example.

PART - D

IV. Answer any **two** of the following. **(2×10=20)**

25. Explain the menstrual cycle and its hormonal regulation.
26. Describe gastrulation in amphioxus with neat labelled diagram.
27. Explain histological types of placenta with example.
28. Explain the salient features of
    a. Neanderthal man.
    b. Cromagnon man.

11657

Reg. No. | | | | | | | | |

VI Semester B.Sc. Degree Examination, August/September - 2023

ZOOLOGY

Animal Physiology and Techniques in Biology

(CBCS Scheme Fresher and Repeater 2020-21 onwards)

Paper : VIII

Time : 3 Hours **Maximum Marks : 70**

Instructions to Candidates :

Draw neat labelled diagrams wherever necessary.

Answer should be completely in English.

PART - A

I. Answer **ALL** the questions in **ONE** word or **ONE** sentence. (10×1=10)

1. Expand GIP hormone.
2. Name the metalic ion present in haemocyanin.
3. Give an example for uricotelism.
4. What is the function of ear ossicles?
5. Name the birth hormone.
6. What is anaemia?
7. Give an example for catadromous migratory fish.
8. Mention the role of alcohol in microtechnique.
9. Define fractionation.
10. What is resolution?

PART - B

II. Answer any **FIVE** of the following. (5×3=15)

11. Write a note on Fuld and spiro's theory of blood clotting.
12. Explain Bohr's effect?
13. Write a note on neurotransmitters.
14. What is negative feedback mechanism? Give an example.
15. List any three causes of renal failure.
16. Give the applications of Electrophoresis.
17. What is autoradiography? Mention any two applications.

[P.T.O.

PART - C

III. Answer any **FIVE** of the following. **(5×5=25)**

18. Explain symbiotic digestion in Ruminants.
19. Explain oxygen transport in blood.
20. Explain synoptic transmission of nerve impulse.
21. Discuss the hormonal control of metamorphosis in insects.
22. Give the cause, symptoms and prevention of diabetes mellitus.
23. Write the principle and applications of immunoassay.
24. What is endoscopy? Mention it's applications.

PART - D

IV. Answer any **TWO** of the following. **(2×10=20)**

25. Explain the sliding filament theory of muscle contraction.
26. Give an account of the anterior pituitary gland hormones and mention their functions.
27. With refereance to thermoregulation, explain the role of hypothalamus.
28. Explain:
    a) Ornithine cycle
    b) Fluorescent microscopy

OEZO111

Reg. No. | | | | | | | | |

I Semester B.Sc. Degree Examination, May/June - 2022

ZOOLOGY (Open Elective)

Economic Zoology

(NEP Scheme - 2021-22)

Time : 2½ Hours **Maximum Marks : 60**

Instructions to Candidates:

1. All Parts are compulsory.
2. Draw neat labelled diagrams wherever necessary.

PART - A

I. Answer any **Five** of the following. **(5×2=10)**

1. Name any two silkworm diseases.
2. Mention any two castes of honey bee.
3. Define dairy.
4. Define pearl culture.
5. What is composite fish farming.
6. Name two species of earthworms.
7. Write two uses of lac.

PART - B

II. Answer any **Five** of the following. **(5×4=20)**

1. Sketch and lable the life cycle of Bombyx mori.
2. List the uses of honey.
3. Give nutritive value of egg.

[P.T.O.

4. Name any two causative agents and symptoms of cattle diseases.
5. Give an account on methods of prawn preservation.
6. Mention the advantages of vermicomposting.

PART - C

III. Answer any **Three** of the following. **(3×10=30)**

1. Describe silkworm rearing.
2. Write note on :
   a) Pondeulture.
   b) Ornamental fish culture.
3. Give a descriptive account of dairy management.
4. Explain the method of beekeeping.

DCZO101

Reg. No. | | | | | | | | |

I Semester B.Sc. Degree Examination, May/June - 2022

ZOOLOGY

Cytology Genetics and Infectious Diseases

(NEP Scheme 2021-22)

Paper : I

Time : 2½ Hours **Maximum Marks : 60**

Instructions to Candidates:

1. Draw neat labelled diagrams wherever necessary
2. Answer should be completely in English.

PART - A

I. Answer the following. **(5×1=5)**

1. Define Exocytosis.
2. Mention the nitrogen base present only in DNA.
3. Write the phenotypic ratio of Mendel's dihybrid cross.
4. What are multiple alleles?
5. Name the causative agent of sleeping sickness.

PART - B

II. Answer any **Five** of the following. **(5×3=15)**

1. Mention the cytoskeletal elements of animal cell.
2. List any three functions of endoplasmic reticulum.
3. Describe the structure of peroxisome.
4. Mention the types of RNA present in a cell.
5. Write a note on sex influenced characteristics.

6. Write a note on hypertrichosis.
7. Define :
   a. Karyotype.
   b. Pedigree.
   c. Translocation.

PART - C

III. Answer any **Four** of the following. **(4×5=20)**

1. Describe the structure of mitochondrion with a diagram.
2. Explain metaphase with a neat labelled diagram.
3. Explain signal transduction with reference to G-protein linked receptors.
4. Explain Mendel's monohybrid cross with a suitable example.
5. Describe autosomal dominant pattern of inheritance with an example.
6. Give the diagrammatic representation of life cycle of Giardia.

PART - D

IV. Answer any **Two** of the following. **(2×10=20)**

1. Explain :
   a. Fluid mosaic model of plasma membrane.
   b. Structure of Ribosome.
2. Describe the structure of Eukaryotic chromosome with a neat labelled diagram. Mention its types.
3. Define Gene Interaction. Explain the inheritance of comb pattern in fowls.
4. a. What is numerical chromosomal aberration? Explain it with a suitable example.
   b. Give the occurrence, disease caused, mode of transmission and symptoms of Wuchereria.

11333

Reg. No. | | | | | | | | |

III Semester B.Sc. Degree Examination, March/April - 2022

ZOOLOGY

Chordata

(CBCS Scheme Freshers & Repeaters 2018-2019 Onwards)

Paper : III

Time : 3 Hours **Maximum Marks : 70**

Instructions to Candidates:

1. Draw a neat labelled diagrams wherever necessary.
2. Answers should be completely in English.

PART - A

I. Answer the following in one word or one sentence each : **(10×1=10)**

1. Give an example for Urochordata.
2. Name the class to which Petromyzon belongs.
3. What is amphicoelous vertebra?
4. How many pairs of cranial nerves are present in Reptilia?
5. What are temporal fossae?
6. Name the fused caudal vertebrae in birds?
7. Which group of animals possess pneumatic bones?
8. What is diaphragm?
9. Give the dental formula of Rat.
10. Name the organism which causes fowl cholera.

PART - B

II. Answer any **Five** of the following : **(5×3=15)**

11. Mention any three basic characters of chordata.
12. List any three differences between chondrichthyes and osteichthyes.
13. Assign the following animals to their respective orders.

    a) Bufo. b) Ambystoma. c) Ichthyophis.

P.T.O.

14. Give any six general characters of the class Reptilia.
15. Mention any three Avian characters of Archaeopteryx.
16. What are Eutherian mammals? Give two examples.
17. Mention any three exotic breeds of Poultry.

PART - C

III. Answer any **Five** of the following : (5×5=25)

18. With a neat labelled diagram, explain the external structure of Herdmania.
19. Describe the structure of Ammocoete larva.
20. Explain the pelvic girdle of frog with a neat labelled diagram.
21. Describe the Diapsid skull of Reptiles with a neat labelled diagram.
22. Explain any two types of migration in birds.
23. Mention any five salient features of the class mammalia.
24. Give an account on Artificial insemination in improvement of cattle breeding.

PART - D

IV. Answer any **Two** of the following : (2×10=20)

25. Describe the externals of Amphioxus with a neat labelled diagram.
26. Explain.
    a) Interesting features of sphenodon.
    b) Anatomical flight adaptations in birds.
27. With a neat labelled diagram, describe the female urinogenital system of Rat.
28. Explain :
    a) Fish preservation.
    b) Composite fish farming.

DCZO201

Reg. No. | | | | | | | | |

II Semester B.Sc. (NEP) Degree Examination, October - 2022

ZOOLOGY

Biochemistry and Physiology

(2021-22 Scheme)

Paper: II

Time : 2½ Hours **Maximum Marks : 60**

Instructions to Candidates:

i) **Draw neat labelled diagrams wherever necessary**

ii) **Answer should be completely in English.**

PART - A

I. Answer the following **(5×1=5)**

1. What is peptide linkage?
2. Define gluconeogenesis
3. Which disease is associated with Rh factor.
4. Name the structural and functional unit of kidney.
5. Mention any one hormone secreted by posterior pituitary gland.

PART - B

II. Answer any Five of the following **(5×3=15)**

1. Define monosaccharide. Give the structure of glucose
2. Write a note on simple proteins.
3. Define allosteric enzymes? Give an example.
4. What are unsaturated fatty acid? Give an example.

[P.T.O.

5. Define
   a) Cardiac cycle
   b) Blood pressure
   c) Expiration
6. Write a note on Best and Taylor's theory of blood clotting.
7. Briefly explain tetanus

PART - C

III. Answer any FOUR of the following **(4×5=20)**

1. List biological importance of lipids
2. Explain glycolysis
3. Give the schematic representation of urea cycle.
4. Explain chemical digestion of carbohydrates in gastrointestinal tract of man.
5. Describe the structure of multipolar neuron.
6. Name the hormones secreted by thyroid gland and mention their functions.

PART - D

IV. Answer any TWO of the following **(2×10=20)**

1. Explain
   a) The general properties of α - amino acids
   b) The theories on mechanism of enzyme action
2. Give an account on
   a) β oxidation of saturated fatty acids with odd number of amino acids.
   b) Transamination
3. Describe the structure of human lung.
4. Explain the molecular and chemical basis of muscle contraction.

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Reg. No. | | | | | | | | |

II Semester B.Sc. Degree Examination, September/October - 2022

ZOOLOGY

Non - Chordata - II

(CBCS Repeater Scheme)

Paper - II

Time : 3 Hours **Maximum Marks : 70**

Instructions to Candidates :

1. ***Draw diagrams wherever necessary.***
2. ***Answer should be completely in English.***

PART - A

I. Answer the following in one word or one sentence each. **(10 × 1= 10)**

1) What is cephalothorax?
2) In which animal book lung is present?
3) What is the function of statocyst?
4) Name the molluscs in which shell is absent.
5) Mention the function of ctenidium.
6) What are pedicellaria ?
7) Name an Echinoderm larva.
8) Give an example for Hemichordata.
9) Name a by-product of sericulture.
10) Give the scientific name of a silkmoth.

PART- B

II. Answer any FIVE of the following. **(5× 3 = 15)**

11) Sketch and label the chelate leg of prawn.
12) Mention any Three annelidan features of Peripatus.

[P.T.O.

13) Describe the structure of trachea in Arthropods.

14) List any three distinct characters of Mollusca.

15) Mention the functions of tube feet.

16) Draw a neat labelled diagram of Balanoglossus.

17) Mention any three species of honey bee.

PART- C

III. Answer any FIVE of the following. **(5 × 5 = 25)**

18) Define metamorphosis. Mention the different types with examples.

19) With the help of a neat labelled diagram describe the female reproductive system of palaemon.

20) Mention any five classes of phylum mollusca with an example each.

21) Sketch and label Glochidium larva.

22) Describe the Tornaria larva.

23) Explain the rearing process of silkworms.

24) Write a note on Pearl culture.

PART- D

IV. Answer any TWO of the following **(2 × 10 = 20)**

25) With a neat labelled diagram, explain the external features of prawn.

26) Give an account of Digestive system in Unio.

27) Enumerate the general characters of phylum Echinoderma Mention its classes with an example each.

28) Give an account on the various methods of prawn culture.

OEZO211

Reg. No. | | | | | | | | |

II Semester B.Sc. Degree Examination, October - 2022

(Open Elective) ZOOLOGY

Parasitology

(NEP 2021-22 Scheme)

Time : 2½ Hours **Maximum Marks : 60**

***Instructions to Candidates*:**

i) Draw neat labelled diagrams wherever necessary

ii) Answer should be completely in English.

PART - A

I. Answer any **Five** of the following: **(5×2=10)**

1. Define host.
2. Name the disease caused by Schistosoma haematobium.
3. List any two control measures of Trypanosoma gambiense.
4. Give the mode of transmission of Ancylostoma duodenale.
5. Wuchereria bancrofti is a digenetic parasite. Justify.
6. Give the occurrence of Trichinella spiralis.
7. Expand RIA.

PART - B

II. Answer any **Five** of the following. **(5×4=20)**

1. Differentiate between mutualism and parasitism.
2. Sketch and Label Taenia solium.

[P.T.O.

3. Mention the mode of infection, disease caused, and control measures of Ascaris lumbricoides.
4. Write a note on gall formation in plants.
5. List the advantages of Molecular diagnosis.
6. Explain Counter Current Immuno electrophoresis.

PART - C

III. Answer any **Three** of the following. (3×10=30)

1. Explain the life cycle of Entamoeba histolytica.
2. Mention the control measures of the following:
   a) Ticks
   b) Mites
   c) Flea
   d) Bug
   e) Wasps.
3. Give an account on
   a) PCR technique.
   b) Molecular Markers.
4. Explain :
   a) Parasitic adaptations in leech.
   b) Parasitic behaviour in Cookicutter Shark.

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Reg. No. | | | | | | | | |

VI Semester B.Sc. Degree Examination, September/October - 2022

ZOOLOGY

Comparative Anatomy, Human Anatomy, Cell Biology & Histology

(CBCS Scheme Freshers & Repeaters 2019-20 & onwards)

Paper : IV

Time : 3 Hours Maximum Marks : 70

Instructions to Candidates :

1. Draw labelled diagrams wherever necessary
2. Answers should be completely in English.

PART - A

I. Answer All the questions in One word or One sentence each. (10 × 1 = 10)

1. What are swim bladders?
2. Define Venous heart.
3. What type of kidney is found in mammals.
4. Name the structure which connects the cerebral hemispheres in rabbit.
5. What is active immunity?
6. Name the only movable bone of the skull
7. What is pinocytosis?
8. Define apoptosis.
9. Mention the cells present between the thyroid follicles.
10. Name the connective tissue capsule which covers the liver.

PART - B

II. Answer any FIVE of the following (5 × 3 = 15)

11. Write a note on airsacs in birds.
12. Name the layers of meninges.

[P.T.O.

13. Draw a neat labelled diagram of atlas vertebra.
14. List any three functions of golgi complex.
15. With respect to cancer, explain gene therapy.
16. What are leydig cells? Mention the function.
17. Mention the zones of adrenal cortex.

PART - C

III. Answer any FIVE of the following. **(5 × 5 = 25)**

18. Describe the structure of amphibian lung.
19. List any five differences between the brain of fish and frog.
20. Explain the structure of humerus bone.
21. Describe the ultra structure of mitochondria.
22. Write a note on myasthenia gravis.
23. Describe the histology of Islets of langerhans.
24. With a neat labelled diagram, describe the histological structure of a graafian follicle.

PART - D

IV. Answer any TWO of the following. **(2 × 10 = 20)**

25. Trace the evaluationary trends in the development of aortic arches in reptiles and mammals.
26. Explain :
    a) Mesonephric kidney.
    b) Histology of mammalian stomach.
27. Describe the structure of human brain with a neat labelled diagram.
28. Explain
    a) Fluid mosaic model of plasma membrane.
    b) Properties of cancer cells.

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Reg. No. | | | | | | | | | |

VI Semester B.Sc. Degree Examination, September/October - 2022

ZOOLOGY

Developmental Biology and Organic Evolution

(CBCS Scheme F+R 2020-21 Onwards)

Paper : VII

Time : 3 Hours Maximum Marks : 70

Instructions to Candidates :

1. Draw neat labelled diagrams wherever necessary.
2. Answer should be completely in English.

PART - A

I. Answer the following with ONE word or ONE sentence each. (10 × 1 = 10)

1. What is amphimixis?
2. What is teleolecithal egg?
3. Define radial cleavage.
4. Define metamorphosis
5. Name the foetal membrane in chick that helps in nutrition.
6. Give an example for deciduate placenta.
7. Define regeneration
8. What is gene pool?
9. What is sympatric speciation?
10. What is atavism?

PART - B

II. Answer any FIVE of the following (5× 3 = 15)

11. Explain briefly viviparity with an example.
12. Sketch and label the V.S of blastula of amphioxus.

[P.T.O.

13. What are fate maps? Mention any two methods of construction.
14. Explain arhenotoky with an example.
15. What is morphollaxis? Give an example.
16. With reference to speciation explain mutation.
17. What are fossils? Explain casts.

PART - C

III. Answer any FIVE of the following. **(5 × 5 = 25)**

18. Sketch and label the Hen's egg.
19. What is polyspermy. Explain with an examples.
20. Explain the planes of cleavage.
21. Describe the gastrula of frog with a neat labelled diagram.
22. Write a note on yolk sac placenta
23. Homologous organs are evidences of evolution substantiate.
24. List the salient features of Neanderthal Man

PART - D

IV. Answer any TWO of the following. **(2 × 10 = 20)**

25. Explain the mechanism of fertilization.
26. What is cell lineage? Explain with reference to Nereis.
27. Describe the transplantation experiments of spemann and mangold
28. What is isolation? Explain Premating mechanism.

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Reg. No. | | | | | | | | |

VI Semester B.Sc. Degree Examination, September/October - 2022

ZOOLOGY

Animal Physiology and Techniques in Biology

(CBCS Scheme F+R 2020-21 Onwards)

Paper : VIII

Time : 3 Hours **Maximum Marks : 70**

Instructions to Candidates :

1. **Answer should be completely in English**
2. **Draw diagrams wherever necessary.**

PART - A

I. **Answer the following in one word or one sentence.** **(10 × 1 = 10)**

1. What are cud - chewing animals called?
2. Which group of animals possess Haemocyanin Pigment?
3. What is 'Sarcomere'?
4. Name the Pigment present in rods.
5. Which disorder is caused by hypothyroidism in man?
6. What are homeothermic animals?
7. Which hormone is responsible for diabetes mellitus?
8. What is differential staining?
9. Expand 'ELISA'.
10. Define 'Endoscopy'.

[P.T.O.

PART - B

II. Answer any FIVE of the following **(5× 3 = 15)**

11. With reference to Haemoglobin answer the following.
    a) Metallic element
    b) Function
    c) Example.
12. Explain transport of oxygen in blood.
13. What is Ornithine cycle? Where does it occur?
14. Define positive feedback mechanism. Give an example.
15. Mention any three methods of heat loss in homeotherms.
16. List any three applications of TEM.
17. Explain the principle of chromatography.

PART - C

III. Answer any FIVE of the following. **(5 × 5 = 25)**

18. Explain hormonal control of digestive secretion.
19. Define oxygen dissociation curve. Explain any two factors affecting it.
20. Sketch and label ultrastructure of skeletal muscle.
21. Explain 'Haemodialysis'.
22. Write a note on hormonal control of metamorphosis in Amphibia.
23. Explain the principle and applications of centrifugation.
24. Comment on 'Fixation' and 'embedding' in microtechnique.

PART - D

IV. Answer any TWO of the following. **(2 × 10 = 20)**

25. Give a detailed account on axonal transmission of Nerve impulse.
26. Name the hormones secreted by the adrenal gland and mention two functions for each.
27. Explain osmoregulatory mechanisms in migratory fishes.
28. Write short notes on:
    a) Visual cycle
    b) Fractionation.

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Reg. No. | | | | | | | | |

V Semester B.Sc. Degree Examination, March/April - 2022

ZOOLOGY

Genetics and Biotechnology

(CBCS Scheme Freshers & Repeaters 2021 onwards)

Paper: VI

Time : 3 Hours **Maximum Marks : 70**

***Instructions to Candidates*:**

i) Answer should be completely in English.

ii) Draw labelled diagrams wherever necessary.

PART - A

I. Answer the following questions in one word or one sentence. **(10×1=10)**

1. Define phenocopy
2. Name the cross in which F_1 offspring is crossed with recessive parent.
3. What are kappa particles?
4. Write the chromosomal complement of Down's syndrome.
5. What are allosomes?
6. Define artificial insemination.
7. Define Transgenesis.
8. What is somatic cell genetherapy?
9. What is the extra chromosomal DNA in bacteria called?
10. Expand RAPD.

[P.T.O.

PART - B

II. Answer any five of the following (5×3=15)

11. Write a note on Norm of Reaction.
12. Explain Y-linked inheritance with an example.
13. Write a brief note on Albinism.
14. Distinguish between Euthenics and Euphenics.
15. Mention the role of the following molecular tools.
    a) Restriction enzymes.
    b) DNA ligase
    c) Alkaline phosphatase.
16. What are Bioreactors? Mention any two applications of it.
17. List any three applications of Monoclonal antibodies.

PART - C

III. Answer any five of the following: (5×5=25)

18. Define Multiple alleles? Give the genotypes of ABO Blood groups.
19. Note: Haemophilia is a X-linked recessive disease.

    A man whose father was haemophilic marries a normal woman whose father was also haemophilic. What is the chance of haemophilia among their children?

    Construct a Pedigree chart.
20. Write a note on kline felter's syndrome.
21. What are mutagens? Explain physical mutagens.
22. Give an account on polytene chromosomes.
23. What are stem cells? Explain its types.
24. Explain Knock- in technology in Mice.

PART - D

IV. Answer any two of the following: **(2×10=20)**

25. Explain the law of independent assortment with a suitable example.

26. Write a note on inheritance of :

    a) Colour blindness in Man

    b) Shell coiling in snail.

27. Define sex-determination. Explain different types of sex-determination.

28. Describe the steps involved in DNA finger printing. Add a note on its applications.

11554

Reg. No. | | | | | | | | |

V Semester B.Sc. Degree Examination, March/April - 2022

ZOOLOGY

Environmental Biology and Ethology

(CBCS Scheme Freshers & Repeaters 2020-2021 onwards)

Paper: V

Time : 3 Hours **Maximum Marks : 70**

***Instructions to Candidates*:**

i) Answer should be completely in English.

ii) Draw neat labelled diagrams wherever necessary.

PART - A

I. Answer the following questions in one word or one sentence each. **(10×1=10)**

1. Define synecology.
2. State the first law of thermodynamics
3. Name any two gases that cause global warming.
4. What are carbamates?
5. Define biomagnification.
6. What is nuclear energy?
7. What is remote sensing?
8. Define motivation.
9. What is acquired behaviour?
10. Define biological rhythm.

[P.T.O.

PART - B

II. Answer any five of the following (5×3=15)

11. Define ecological niche. Mention any two types.
12. Write a note on polyclimax theory.
13. Differentiate between natality and mortality.
14. What are endangered species.
15. Write any three applications of remote sensing.
16. Give the components of reflex arc.
17. Write a note on bioluminescence.

PART - C

III. Answer any five of the following. (5×5=25)

18. Explain multidimensional niche with example.
19. What is xerosere explain with example.
20. Give an account on acid rain and its impact on terrestrial environment and built environment.
21. Write a note on landfill.
22. Give an account on Physical and biological approaches of integrated pest management.
23. Explain trial and error method of learning.
24. Honey bees are social insects. Justify.

PART - D

IV. Answer any Two of the following. (2×10=20)

25. Light is an abiotic factor. Discuss
26. Explain
    a) Any two negative interspecific interaction with example.
    b) The Applications of GIS.

27. Discuss exsitu conservation of wildlife.

28. Write notes on

a) Pheromones in vertebrates

b) Courtship behaviour.

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Reg. No. | | | | | | | | |

I Semester B.Sc. Degree Examination, August - 2021

ZOOLOGY

Non -Chor Data - I

(CBCS Scheme : 2018 - 19 and Onwards Freshers and Repeaters)

Paper : I

Time : 3 Hours **Maximum Marks : 70**

Instructions to Candidates :

1) Draw neat labelled diagrams wherever necessary.
2) Answer should be completely in English.

PART - A

I. Answer the following in **one** word or **one** sentence each. **(10×1=10)**

1) Name the phylum which exhibits cellular grade of body organization.
2) Define metamerism.
3) Give an example for saprozoic nutrition.
4) What is the internal bud of sponges called?
5) Mention any one function of nematocysts.
6) In which phylum ladder type of nervous system present.
7) Where do you find typhlosole?
8) Give an example for ectoparasite.
9) Name the vector of Leishmania donovani.
10) Mention the anti - coagulant secreted by leech.

PART - B

II. Answer any **Five** of the following. **(5×3=15)**

11) What is symmetry? Mention any two types.
12) Define
    i) acoelom ii) pseudocoelom iii) eucoelom.
13) Sketch and label the externals of Sycon.
14) Distinguish between polyp and medusa.
15) Assign the following to their resplective class:
    i) Hirudinaria ii) Pheretima iii) Nereis.
16) Mention any three important stages in the life cycle of Entamoeba.
17) Give the preventive measures of Taenia solium.

[P.T.O.

PART - C

III. Answer any **Five** of the following. **(5×5=25)**

18) Differentiate between diploblastic and triploblastic condition with an example each.

19) Write notes on:

a) Significance of conjugation.

b) Pharyngeal nephridia.

20) Name any five types of mesenchymal cells of Sycon. Mention one function each.

21) Draw a neat labelled diagram of the aboral view of Aurelia.

22) Explain the externals of Planaria.

23) List any five interesting features of Phylum nematoda.

24) Give an account of vermicomposting.

PART - D

IV. Answer any **Two** of the following. **(2×10=20)**

25) Enumerate the general characters of Phylum protozoa. Classify the phylum up to classes with a suitable example.

26) Explain:

a) Syconoid canal system.

b) Polymorphism in Halistemma.

27) With a neat labelled diagram describe the digestive system of Pheretima.

28) Explain the life cycle of Wuchereria bancrofti.

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Reg. No. | | | | | | | | |

III Semester B.Sc. Degree Examination, March - 2021

ZOOLOGY

Chordata

(Freshers and Repeaters) (CBCS Scheme) (2019-20 On Words)

Paper : III

Time : 3 Hours **Maximum Marks : 70**

Instructions to Candidates:

1. Draw a neat labelled diagrams wherever necessary.
2. Answers should be completely in English.

PART - A

I. Answer the following in one word or one sentence each : **(10×1=10)**

1. In which subphylum of chordata notochord is restricted to tail region only.
2. Give an example for Agnatha.
3. Tailless amphibians belong to which order?
4. Name the reptilian skull in which temporal fossa is absent.
5. Name the extinct flying reptile.
6. Mention any one type of flight muscles.
7. In birds only right ovary is present true or false.
8. Give an example for marsupial.
9. How many cervical vertebrae are present in mammals?
10. Mention the causative organism of fowl pox disease.

PART - B

II. Answer any **Five** of the following : **(5×3=15)**

11. With reference to Amphioxus give the functions of :
    a. Velum
    b. Endostyle
    c. Oral cirri

12. List three representatives of Dipnoi.
13. Sketch and label urostyle of frog.
14. List any three interesting features of sphenodon.
15. Enumerate any three reptilian characters of Archaeopteryx.
16. Name any three cranial nerves of rat.
17. Differentiate indigenous and exotic breeds of cattle.

PART - C

III. Answer any **Five** of the following : (5×5=25)

18. Give an account of origin of amphibia.
19. Draw a neat labelled diagram of externals of Amphioxus.
20. Explain catadromous migration in fishes.
21. Distinguish ratitae from carinatae with an example for each.
22. Describe the female urinogenital system of rat with a neat labelled diagram.
23. Enumerate the general characters of class reptilia.
24. Briefly explain methods of fish preservation.

PART - D

IV. Answer any **Two** of the following : (2×10=20)

25. What is rectrogressive metamorphosts? Explain the same with reference to tadpole of Herdmania.
26. a) Describe diapsid skull of reptiles.
    b) List the advantages and disadvantages of bird migration.
27. With a neat labelled diagram describe digestive system of rat.
28. Write notes on by - products of :
    a. Poultry
    b. Milk.

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Reg. No. | | | | | | | | |

V Semester B.Sc. Degree Examination, March - 2021

ZOOLOGY-V

Environmental Biology and Ethology

(CBCS 2020-21 Onwards Scheme)

Time : 3 Hours **Maximum Marks : 70**

Instructions to Candidates:

1) Answer should be completely in English.
2) Draw neat labelled diagrams wherever necessary.

PART - A

I. Answer the following questions in one word or **One** sentence each. **(10×1=10)**

1. What is the natural residence of an organism called?
2. Define autecology.
3. What is primary productivity?
4. Name the gases which causes acid rain.
5. Define rodenticide with an example.
6. Expand IPM.
7. List any two applications of remote sensing.
8. Define habituation.
9. Name the daily cycle of activity that occurs over a 24 hours period of time.
10. What is altruism?

PART - B

II. Answer any **Five** of the following. **(5×3=15)**

11. State the laws of thermodynamics.
12. Write a note on polyclimax theory.
13. Comment on biological magnification.
14. Give any three demerits of wind energy.

[P.T.O.

15. Incineration is one of the methods of solid waste management. Justify.
16. Write a note on round dance in honey bees.
17. Write a note on courtship behaviour.

PART - C

III. Answer any **Five** of the following. **(5×5=25)**

18. Define ecological niche explain spatial and trophic niche with examples.
19. Write notes on:
    a) Antibiosis
    b) Commensalism
20. List the advantages and disadvantages of nuclear reactors.
21. Write short notes on:
    a) Seed banks
    b) Zoological gardens
22. Explain kinesis with a suitable example
23. "Termites are social insects". Justify.
24 Citing any two examples explain parental care in amphibians.

PART -D

IV. Answer any **Two** of the following. **(2×10=20)**

25. Temperature is an abiotic factor. Discuss.
26. Write a note on :
    a) Global Warming
    b) Consequences of Ozone layer depletion
27. Discuss in-situ conservation of wild life
28. What are pheromones? Explain its role in insects.

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Reg. No. | | | | | | | | |

V Semester B.Sc. Degree Examination, March - 2021

ZOOLOGY

Genetics and Biotechnology

(CBCS) (2021 Onwards)

Paper : VI

Time : 3 Hours **Maximum Marks : 70**

***Instruction to Candidates*:**

1) Draw neat labelled diagrams wherever necessary.
2) Answers should be completely in english.

PART - A

I. Answer the Following in **One** word or **One** sentence. **(10×1=10)**

1. What type of twins are produced when a zygote splits into two cells?
2. Write the Phenotypic ratio of Mendel's dihybrid cross.
3. What are alleles?
4. Mention two types of gynandromorphs.
5. Give any two methods of negative eugenics.
6. What are cosmids?
7. List any two types of bioreactors.
8. Mention two types of host cells used in rDNA technology.
9. Define artificial insemination.
10. Expand AFLP.

PART - B

II. Answer any **Five** of the following. **(5×3=15)**

11. State the law of segregation.
12. What is hypertrichosis? Name the chromosome involved in it.
13. Define:
    a) Cistron
    b) Muton
    c) Recon
14. Write a note on Physical mutagens.

[P.T.O.

15. List the steps involved in embryo transfer.

16. What is gene therapy? Mention any two types.

17. List any three applications of DNA finger printing.

PART - C

III. Answer any **Five** of the following. **(5×5=25)**

18. Write a note on erythroblastosis foetalis.

19. Explain cytoplasmic inheritance with reference to Kappa particles in Paramecium.

20. Describe the structure of Lampbrush chromosomes.

21. With reference to sex determination explain the
    a) XX - XY
    b) ZZ - ZW

22. Explain genic balance theory of Bridge's.

23. Write notes on:
    a) Electroporation.
    b) Micro injection.

24. Define PCR technique Mention its applications.

PART - D

IV. Answer any **Two** of the following. **(2×10=20)**

25. What are supplementary genes? With reference to inheritance of comb shape in poultry fowls workout the following crosses:
    a) Rose Comb (RR pp) × Single Comb (rr pp)
    b) Pea Comb (rr PP) × Single Comb (rr pp)
    c) Rose Comb (RR pp) × Pea Comb (rr PP)

    Workout F_1 and F_2 generation.

26. Explain the inheritance of :
    a) ABO blood groups in man.
    b) Haemophilia

27. Write notes on:
    a) Klinefelters syndrome
    b) Cystic fibrosis.

28. What are stem cells? Explain the types, sources and their applications.

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Reg. No. | | | | | | | | |

II Semester B.Sc. Degree Examination, September - 2021

ZOOLOGY

Non-Chordata

CBCS Scheme 2018-19 Onwards (Freshers & Repeaters)

Paper-II

Time : 3 Hours **Maximum Marks : 70**

Instructions to Candidates:

1. **Answer should be completely in English.**
2. **Draw neat labelled diagrams wherever necessary.**

PART - A

I. Answer the following in **one** word or one sentence each. **(10×1=10)**

1. Define haemocoel.
2. What are biramous appendages?
3. What is ocellus?
4. Mention the function of ctenidium.
5. Give an example for scaphopoda.
6. Define autotomy.
7. Give scientific name of Sea star.
8. Name the larva of Balanoglossus.
9. Give any one biproduct of Sericulture.
10. What is Pearl culture?

PART - B

II. Answer any **Five** of the following. **(5×3=15)**

11. List out any three arthropodan characters of Peripatus.
12. Briefly explain bookgills.
13. Explain ametabola with an example.
14. Sketch and label sectional view of shell of Unio.
15. Give any two classes of Echinodermata.
16. Name the trunk divisions of Balanoglossus.
17. Write a short note on Pests of Silkworms.

[P.T.O.

PART - C

III. Answer any **Five** of the following. **(5×5=25)**

18. Write a note on concept of serial homology in Palaemon.
19. With appropriate diagram describe the structure of ommatidium.
20. Enumerate the general characters of Phylum mollusca.
21. Describe the structure of Glochidium larva with a neat labelled diagram.
22. Write notes on:
    a) Bipinnaria larva
    b) Systemic position of Hemichordata.
23. List out biproducts of Apiculture.
24. Explain methods of prawn preservation.

PART - D

IV. Answer any **Two** of the following. **(2×10=20)**

25. Enumerate the general characters of phylum Arthropoda and classify it upto classes with one example for each.
26. With the help of suitable diagram explain the digestive system of Unio.
27. Describe water vascular system of sea-star with a neat labelled diagram.
28. Give an account of bee-keeping and management practices.

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VI Semester B.Sc. Degree Examination, September - 2021

ZOOLOGY

Developmental Biology and Organic Evolution

(CBCS Scheme Freshers 2021 Onwards)

Paper : VII

Time : 3 Hours **Maximum Marks : 70**

Instructions to Candidates:

1. Draw neat labelled diagrams wherever necessary.
2. Answer should be completely in English

PART - A

I. Answer **ALL** the questions **in one word or one sentence each.** **(10×1=10)**

1. What is Bilateral Cleavage?
2. Name the gamete which produces fertilizin.
3. Give an example for Cleidoic egg.
4. Mention the type of blastula present in Amphioxus.
5. Define Neurulation.
6. What is Polyspermy?
7. Give an example for Zonary Placenta.
8. Define Genetic Grift.
9. Name the term used for re-appearance of ancestral characters.
10. Mention any one method of dating of fossils.

PART - B

II. Answer any **FIVE** of the following : **(5×3=15)**

11. State epigenetic theory. Who proposed it?
12. Write a note on Oviparity. Give an example.

[P.T.O.

13. What are foetal membranes? Mention any two types.
14. Sketch and label the fate map of Frog.
15. What is Parthenogenesis? Mention the types of natural Parthenogenesis.
16. State Hardy - Weinberg Law.
17. Write a note on Sympatric speciation.

PART - C

III. Answer any **FIVE** of the following. **(5×5=25)**

18. Classify the eggs based on the amount of yolk.
19. With reference to fertilization explain acrosomal reaction.
20. Compare the blastula of Amphioxus with Frog.
21. Explain Axial gradient theory of child.
22. Write a note on :
    a. Chorio - allantoic placenta.
    b. Atavism.
23. Explain the role of mutation in speciation.
24. List the salient features of cro - magnon man.

PART - D

IV. Answer any **TWO** of the following. **(2×10=20)**

25. Give an account of gastrulation in Frog with neat labelled diagrams.
26. Explain menstrual cycle and their hormonal regulation.
27. Explain
    a. External gill stage of tadpole.
    b. Zygotic mortality and hybrid sterility.
28. What are fossils? Explain the types of fossil formation.

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VI Semester B.Sc. Degree Examination, September - 2021

ZOOLOGY

Animal Physiology and Techniques in Biology

(CBCS Scheme Freshers 2020-21 Onwards)

Paper : VIII

Time : 3 Hours **Maximum Marks : 70**

Instructions to Candidates:

1. Draw neat labelled diagrams wherever necessary.
2. Answer should be completely in English

PART - A

I. Answer the following **in one word or one sentence.** **(10×1=10)**

1. Expand CCK.
2. Name the metalic ion present in Haemoglobin.
3. What is Deamination?
4. Name any one ear ossicle.
5. Name the birth hormone.
6. What is anaemia?
7. Give an example for anadromous migratory fish.
8. Mention any two fixative used in microtechnique.
9. Define Fractionation.
10. What is magnification power?

PART - B

II. Answer any **FIVE** of the following : **(5×3=15)**

11. Write a note on haemocyanin.
12. Classify the animals based on the type of main nitrogenous waste product.

[P.T.O.

13. Define Homeostasis citing a suitable example.
14. What is neuro-secretion? Give an example.
15. Briefly Explain haemodialysis.
16. Give the principle of centrifugation.
17. What is endoscopy? Give any two applications.

PART - C

III. Answer any **FIVE** of the following. **(5×5=25)**

18. Explain symbiotic digestion in ruminants.
19. Explain negative feedback mechanism with respect to thyroid gland.
20. Give an account of acromegaly.
21. Discuss the hormonal control of metamorphosis in insects.
22. Give the causes, symptoms and prevention of diabetes mellitus.
23. Write the principle and applications of immunoassay.
24. What is autoradiography? Mention the applications.

PART - D

IV. Answer any **TWO** of the following. **(2×10=20)**

25. Give any account of physico - chemical aspects of muscle contraction.
26. Explain CO_2 transport.
27. Name any five hormones of adenohypophysis and mention one function for each.
28. Give the principles and applications of :
    a. Chromatography.
    b. Micrometry.

SE – 185

VI Semester B.Sc. Degree Examination, September 2020
(CBCS) (F + R) (2016-17 and Onwards)
ZOOLOGY (Paper – VII)
Genetics and Biotechnology

Time : 3 Hours Max. Marks : 70

Instructions : *1) Draw diagrams **wherever** necessary.*
*2) Answers should be **completely** either in **English** or **Kannada**.*

PART – A

I. Answer **any five** of the following : **(5×3=15)**

1) Write a note on norm of reaction.
2) What is test crossing ? Give an example.
3) List any three applications of blood grouping test.
4) Define phenocopy. Give an example.
5) Write the function of the following molecular tools of genetic engineering :
   a) Restriction endonucleases
   b) Alkaline phosphatase
   c) DNA Ligase.
6) Differentiate between In-vivo and Ex-vivo gene therapy.
7) Mention any three applications of Monoclonal antibodies.

PART – B

II. Answer **any five** of the following : **(5×5=25)**

1) Explain the law of segregation with an example.
2) What is erythroblastosis foetalis ? Explain.
3) Explain the following :
   a) Gynandromorphs
   b) Free martins.

P.T.O.

4) What is sex linkage ? Explain with reference to haemophilia in man.
5) Explain CLB method of detection of mutation.
6) Define superovulation. Explain the steps involved in it.
7) What is transgenesis ? Explain knock-out technology in mice.

PART – C

III. Answer **any three** of the following : **(3×10=30)**

1) Write a detailed account on genic balance theory of bridges.
2) Define sex-determination. Explain the different kinds of sex-determination mechanisms with example.
3) With reference to chromosomal aberration explain Turner's syndrome and Klinefelter's syndrome.
4) Give a detailed account on positive and negative aspects of Eugenics.
5) Explain micro injection and electroporation with reference to gene transfer in animals.
6) What is DNA fingerprinting ? Explain the steps involved in it. Add a note on its applications.

SE – 186

VI Semester B.Sc. Examination, September 2020
(CBCS) (F + R) (2016 - 17 and Onwards)
ZOOLOGY – VIII
Animal Physiology and Techniques in Biology

Time : 3 Hours Max. Marks : 70

Instructions : *1) Draw labelled diagrams **wherever** necessary.*
*2) Answer should be completely either in **Kannada** or **English**.*

PART – A

I. Answer **any five** of the following. **(5×3=15)**

1) What is symbiotic digestion ? Give an example.
2) Explain Root effect.
3) Define ureotelism. Give two examples.
4) What is negative feedback mechanism ? Give an example.
5) Mention the hormones involved in insect metamorphosis. Add a note on their functions.
6) Define fixation. Give any two examples.
7) What is autoradiography ? Mention its application.

PART – B

II. Answer **any five** of the following. **(5×5=25)**

1) Explain the hormonal control of digestive glandular secretions.
2) Explain oxygen transport in blood.
3) Schematically represent the ornithine cycle.
4) Describe the visual cycle.
5) Explain positive feedback mechanism with a suitable example.
6) Elucidate the methods of heat gain in homeotherms.
7) Highlight the principle and application of endoscopy.

P.T.O.

PART – C

III. Answer **any three** of the following. **(3×10=30)**

1) Explain transport of carbon dioxide in the body.
2) Give a detailed account of axonal transmission of a nerve impulse.
3) Describe the physico-chemical changes that occur during muscle contraction.
4) Give an account of the hormones of the anterior pituitary gland and mention their functions.
5) Write short notes on Jaundice and hyper acidity.
6) Comment on :
   a) Osmoregulation in fresh-water fishes.
   b) Fluorescent microscopy.

SE – 185

VI Semester B.Sc. Degree Examination, September 2020
(CBCS) (F + R) (2016-17 and Onwards)
ZOOLOGY (Paper – VII)
Genetics and Biotechnology

Time : 3 Hours Max. Marks : 70

Instructions : *1) Draw diagrams **wherever** necessary.*
*2) Answers should be **completely** either in **English** or **Kannada**.*

PART – A

I. Answer **any five** of the following : **(5×3=15)**

1) Write a note on norm of reaction.
2) What is test crossing ? Give an example.
3) List any three applications of blood grouping test.
4) Define phenocopy. Give an example.
5) Write the function of the following molecular tools of genetic engineering :
   a) Restriction endonucleases
   b) Alkaline phosphatase
   c) DNA Ligase.
6) Differentiate between In-vivo and Ex-vivo gene therapy.
7) Mention any three applications of Monoclonal antibodies.

PART – B

II. Answer **any five** of the following : **(5×5=25)**

1) Explain the law of segregation with an example.
2) What is erythroblastosis foetalis ? Explain.
3) Explain the following :
   a) Gynandromorphs
   b) Free martins.

P.T.O.

4) What is sex linkage ? Explain with reference to haemophilia in man.
5) Explain CLB method of detection of mutation.
6) Define superovulation. Explain the steps involved in it.
7) What is transgenesis ? Explain knock-out technology in mice.

PART – C

III. Answer **any three** of the following : **(3×10=30)**

1) Write a detailed account on genic balance theory of bridges.
2) Define sex-determination. Explain the different kinds of sex-determination mechanisms with example.
3) With reference to chromosomal aberration explain Turner's syndrome and Klinefelter's syndrome.
4) Give a detailed account on positive and negative aspects of Eugenics.
5) Explain micro injection and electroporation with reference to gene transfer in animals.
6) What is DNA fingerprinting ? Explain the steps involved in it. Add a note on its applications.

SE – 186

VI Semester B.Sc. Examination, September 2020
(CBCS) (F + R) (2016 - 17 and Onwards)
ZOOLOGY – VIII
Animal Physiology and Techniques in Biology

Time : 3 Hours Max. Marks : 70

Instructions : *1) Draw labelled diagrams **wherever** necessary.*
*2) Answer should be completely either in **Kannada** or **English**.*

PART – A

I. Answer **any five** of the following. **(5×3=15)**

1) What is symbiotic digestion ? Give an example.
2) Explain Root effect.
3) Define ureotelism. Give two examples.
4) What is negative feedback mechanism ? Give an example.
5) Mention the hormones involved in insect metamorphosis. Add a note on their functions.
6) Define fixation. Give any two examples.
7) What is autoradiography ? Mention its application.

PART – B

II. Answer **any five** of the following. **(5×5=25)**

1) Explain the hormonal control of digestive glandular secretions.
2) Explain oxygen transport in blood.
3) Schematically represent the ornithine cycle.
4) Describe the visual cycle.
5) Explain positive feedback mechanism with a suitable example.
6) Elucidate the methods of heat gain in homeotherms.
7) Highlight the principle and application of endoscopy.

P.T.O.

PART – C

III. Answer **any three** of the following. **(3×10=30)**

1) Explain transport of carbon dioxide in the body.
2) Give a detailed account of axonal transmission of a nerve impulse.
3) Describe the physico-chemical changes that occur during muscle contraction.
4) Give an account of the hormones of the anterior pituitary gland and mention their functions.
5) Write short notes on Jaundice and hyper acidity.
6) Comment on :
   a) Osmoregulation in fresh-water fishes.
   b) Fluorescent microscopy.

Q.P. Code : 11133

First Semester B.Sc. Degree Examination,
November/December 2019

(CBCS – 2018-19 onwards – Freshers & Repeaters)

Zoology

Paper I – NON-CHORDATA

Time : 3 Hours] *[Max. Marks : 70*

Instructions to Candidates : Draw labeled diagrams wherever necessary.

PART – A

I. Answer the following in **1** word or **1** sentence each : **(10 × 1 = 10)**

1. Name the phylum that exhibit absolute diploblastic condition.
2. Locomotory organelles are completely absent in which class of phylum protozoa.
3. Name the flagellated cells in Poriferans.
4. What are cnidoblasts?
5. Sea gooseberries belong to which phylum?
6. Define sexual dimorphism.
7. Give the function of Clitellum in Pheretima.
8. Which parasite causes elephantiasis?
9. Name the intermediate host of Taenia solium.
10. Which is the free living larval stage of Fasciola hepatica?

PART – B

II. Answer any **FIVE** of the following : **(5 × 3 = 15)**

11. Differentiate between radial and bilateral symmetry with suitable examples.
12. Write a note on autotrophic nutrition in protozoa.

13. Draw a neat labelled diagram of amphiblastula larva.

14. Name any three zooids of Halistemma and mention their functions.

15. With the help of suitable diagram, mention the functions of flame cells.

16. Mention the occurrence, disease caused and mode of transmission of Leishmania donovani.

17. Give the scientific name of any three species of Earthworm used in Vermiculture.

PART – C

III. Answer any **FIVE** of the following : **(5 × 5 = 25)**

18. What is metamerism? Differentiate pseudometamerism and true metamerism citing suitable examples.

19. Explain euglenoid movement of locomotion in protozoa.

20. Describe rhagonoid type of canal system in sponges.

21. Give the diagramatic representation of life cycle of Aurelia.

22. (a) Enumerate the general characters of phylum nematode.
    (b) Explain the structure of pharyngeal nephridium.

23. List the parasitic adaptations in leech.

24. Explain the life cycle of Ascaris Lumbricoides.

PART – D

IV. Answer any **TWO** of the following : **(2 × 10 = 20)**

25. Explain the process of conjugation in Paramecium. Add a note on its significance.

26. Write notes on :
    (a) Microscopic structure of body wall of sycon
    (b) Digestive system of planaria.

27. Enumerate the general characters of phylum coelenterata. Classify up to classes with suitable examples.

28. (a) With the help of suitable diagrams reveal the morphology of Pheretima.

    (b) Write notes on Cercaria Larva.

Q.P. Code : 11333

Third Semester B.Sc. Degree Examination,
November/December 2019

(CBCS – 2019-20 and onwards)

Zoology

Paper III – CHORDATA

Time : 3 Hours] *[Max. Marks : 70*

Instructions to Candidates :

1) *Draw neat labeled diagrams wherever necessary*
2) *Answers should be completely in English.*

PART – A

I. Answer the following in **1** word or **1** sentence each : **(10 × 1 = 10)**

1. Where is notochord present in Chordata?
2. Name the larva of petromyzon.
3. Which vertebra of frog is amphicoelous?
4. What is a monocondylar skull?
5. Name the fish-like extinct reptile.
6. Mention the fore-limb modification of Aves.
7. Give an example for ratitae.
8. Name the partition present between the thorax and abdomen in mammals.
9. What is rutheria?
10. Mention the indegenous breed of Poultry developed in Bengaluru.

PART – B

II. Answer any **FIVE** of the following : **(5 × 3 = 15)**

11. Draw a neat labeled diagram of externals of Herdmania.

12. Differentiate between catadromous and anadromous migration with suitable examples.

13. Name the orders of class amphibia with suitable examples.

14. Draw a neat labeled diagram of the Diapsid skull.

15. Mention the advantages of migration with reference to birds.

16. Write a note on the ventricles of Rat brain.

17. Mention any three diseases in Poultry and their causative agents.

PART – C

III. Answer any **FIVE** of the following : **(5 × 5 = 25)**

18. Explain the feeding mechanism in amphioxus.

19. Answer the following :

    (a) Give two salient features of agnatha with an example.

    (b) Mention two distinguishing features of Chondrichthyes with an example.

20. Give an account on the origin of amphibia.

21. Give the outline classification of class Reptilia.

22. Mention any five morphological adaptations of Aves to aerial life.

23. Give five salient characters of class mammalian.

24. Write a note on composite fish farming.

PART – D

IV. Answer any **TWO** of the following : **(2 × 10 = 20)**

25. Write short notes on :
    (a) Retrogressive metamorphosis with reference to tadpole of Herdmania
    (b) Pelvic girdle of frog.

26. Add a note on the following :
    (a) Interesting features of Sphenodon
    (b) Avian characters of Archeopteryx.

27. Explain the female Urinogenital system of rat with neat labeled diagram.

28. Explain artificial insemination and MOET.

No. of Printed Pages : **2**

GN-250

100026

V Semester B.Sc. Examination, December - 2019
(CBCS)(Freshers and Repeaters)(2016-17 and Onwards)

ZOOLOGY

PAPER-5 : ENVIRONMENTAL BIOLOGY AND ETHOLOGY

Time : 3 Hours Max. Marks : 70

Instructions : *(i) Draw neat labelled diagrams wherever* ***necessary.***
(ii) Answers should be completely in ***English*** *or* ***Kannada.***

PART - A

I. Answer **any five** of the following. **5x3=15**

1. State the laws of thermodynamics.

2. Distinguish between Microhabitat and Macrohabitat.

3. Differentiate between Hydrosere and Xerosere.

4. Mention any three applications of remote sensing.

5. Write a note on phototaxis. Give an example.

6. What is bioluminescence ? Mention its significance.

7. Write a note on Predatory mimicry.

PART - B

II. Answer **any five** of the following. **5x5=25**

1. Define ecological niche. Explain trophic niche with an example.

2. Explain age distribution with reference to population ecology.

3. What are the causes and effects of ozone layer depletion ?

4. What is biomagnification ? Explain with an example.

5. Write notes on red data book.

P.T.O.

6. Explain trial and error method of learing with suitable example.

7. Give an account on the communication in Honey bees.

PART - C

III. Answer **any three** of the following. **3x10=30**

1. "Temperature as an abiotic factor". Discuss.

2. Write notes on :
   (a) Mutualism
   (b) Parasitism

3. Give a detailed account on integrated pest management.

4. Explain ex-situ method of wild life conservation.

5. Write an essay on migration in birds.

6. Explain the role of pheromones in animal communication.

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No. of Printed Pages : **2**

GS - 348

II Semester B.Sc. Examination, May/June - 2019

ZOOLOGY - II

Non-Chordata - II

(Repeaters) (CBCS) (Prior to 2018-19) (2014-15 & onwards)

Time : 3 Hours Max. Marks : 70

Instructions : *1. Draw labelled diagrams wherever necessary.*
2. Answers should be completely either in Kannada or English.

PART - A

I. Answer **any five** of the following : **5x3=15**

1. Mention the function of :
(a) Malphigian tubule
(b) Antenna
(c) Gills

2. Name any three cephalic appendages of prawn.

3. Write a note on book gills.

4. Draw a neat labelled diagram of the externals of the shell of unio.

5. Mention the functions of tube feet.

6. List any three affinities of hemichordata with chordata.

7. Mention the bee-products.

PART - B

II. Answer **any five** of the following : **5x5=25**

1. 'Peripatus is considered to be the connecting link between phylum annelida and arthropoda' - Justify.

2. With a neat labelled diagram, explain the male reproductive system of prawn.

P.T.O.

3. Describe the simple eye of arthropoda with a neat labelled diagram.

4. Sketch and label the digestive system of unio.

5. Classify phylum echinodermata upto classes, giving one example each.

6. With a neat labelled diagram, explain the externals of Balanoglossus.

7. Write a note on the steps involved in pearl culture.

PART - C

III. Answer **any three** of the following : **3x10=30**

1. Enumerate the general characters of phylum arthropoda. Classify upto classes with an example each.

2. Describe any two larval stages of prawn with labelled diagrams.

3. Give an account of :
   (a) Holometabola (b) Trachea

4. With appropriate diagrams, describe the externals of starfish.

5. Elaborate on the various methods of prawn preservation.

6. Write notes on :
   (a) Byproducts of silk industry
   (b) Scientific method of bee-keeping

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100984

No. of Printed Pages : **2**

GS-349

IV Semester B.Sc. Examination, May/June 2019
(CBCS) (Freshers+Repeaters) (2015-16 & onwards)

ZOOLOGY - IV

Comparative Anatomy, Cell Biology Immunology and Histology

Time : 3 Hours Max. Marks : 70

Instructions : *1. Draw labelled diagrams wherever necessary.*
2. Answers should be completely either in Kannada or English.

PART - A

I. Answer **any five** of the following : **5x3=15**

1. Name the types of scales in fishes.

2. Mention respiratory organs in amphibia.

3. Distinguish between pronephros and mesonephros.

4. Define : (a) Osmosis
(b) Active transport
(c) Phagocytosis

5. What are gaint chromosomes ? Mention the types.

6. Sketch and label taste bud.

7. Mention any three secretory cells of gastric gland with one function each.

PART - B

II. Answer **any five** of the following : **5x5=25**

1. Give an account of swim bladders in fishes.

2. Sketch and label the basic plan of aortic arches in vertebrates.

3. Explain V.S. of mammalian skin.

P.T.O.

4. With an appropriate diagram, describe the structure of Golgi apparatus.

5. Write notes on : (a) Physical Carcinogens
(b) Cell Senescene

6. With a neat labelled diagram. Explain the histology of thyroid gland.

7. Write an explanatory note on arrhenotoky.

PART - C

III. Answer **any three** of the following : 3x10=30

1. Compare and comment on the heart of amphibian with that of mammal, with a neat labelled sketches.

2. Brain of bird is comparatively better evolved than the brain of fish. Substantiate.

3. Discuss the first line of body defence.

4. Elaborate on the general properties of cancer cell.

5. Give an account of :
(a) Anatomical features of mammalian ear
(b) Cell inclusions

6. Describe the histological features of pancreas, with the help of labelled diagrams.

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No. of Printed Pages : **2**

GS-353

IV Semester B.Sc. Examination, May/June - 2019
(Repeaters) (NS) (2012-13 & onwards) (Prior to 2015-16)

ZOOLOGY - IV

Comparative Anatomy, Cell Biology, Immunology and Histology

Time : 3 Hours Max. Marks : 70

Instructions : *1. Draw labelled diagrams wherever necessary.*
2. Answers should be completely either in Kannada or in English.

PART - A

I. Answer **any five** of the following : **5x3=15**

1. Write a note on placoid scale.
2. List the respiratory organs in amphibia.
3. Sketch and label mitochondrion.
4. Give a brief account of apoptosis.
5. Mention the surface barriers.
6. Name any three cells of gastric gland.
7. What are neutral stains ? Give an example.

PART - B

II. Answer **any five** of the following : **5x5=25**

1. Draw a neat labelled diagram of V.S. of mammalian heart.
2. Give an account of swim bladder in fishes.
3. List the differences between pronephros and mesonephros.
4. Describe the structure of lampbrush chromosome.
5. Discuss the general properties of cancer cell.

P.T.O.

6. Give the histological details of thyroid follicle.

7. Highlight the histopathological changes noticed in nephrosis.

PART - C

III. Answer **any two** of the following : 2x10=20

1. Compare and comment on the amphibian and mammalian skin.

2. With appropriate labelled diagrams, compare the aortic arches of fishes and aves.

3. Write notes on :
   (a) Chemical composition of plasma membrane
   (b) Artificial parthenogenesis

4. With neat labelled diagrams, describe the histological details of pancreas.

PART - D

IV. Answer **any one** of the following : 1x10=10

1. Compare the brain of frog and bird, with neat labelled diagrams.

2. Write notes on :
   (a) Role of B-Cells
   (b) Graafian follicle

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No. of Printed Pages : **2**

GN-251

100901

V Semester B.Sc. Examination, December - 2019
(CBCS) (F+R) (2016-17 and Onwards)
ZOOLOGY PAPER - VI

Developmental Biology And Organic Evolution

Time : 3 Hours | Max. Marks : 70

Instructions : *(i) Draw neat labelled diagrams wherever necessary.*
(ii) Answers should be completely in ***English*** *or* ***Kannada.***

PART - A

I. Answer **any five** of the following : **5x3=15**

(a) State Preformation Theory.

(b) Define Viviparity. Give an example.

(c) Write a note on primary organizer.

(d) What is deciduate placenta ? Give an example.

(e) Write a note on genetic drift.

(f) Define Sympatric Speciation. Give an example.

(g) What are :
(i) moulds
(ii) casts

PART - B

II. Answer **any five** of the following : **5x5=25**

(a) Classify eggs based on the amount of yolk.

(b) With reference to hydroid coelenterates, explain child's axial gradient theory.

(c) Differentiate between Determinate and Indeterminate cleavage giving examples.

(d) Compare blastulation in Amphioxus and frog.

(e) Write a note on the fate map of frog.

(f) Define placenta. Differentiate between Yolk sac and Chorio-allantoic placenta.

(g) Explain the carbon method of dating fossils.

P.T.O.

PART - C

III. Answer **any three** of the following : **3x10=30**

(a) Explain the process of oogenesis with illustrations.

(b) Explain the mechanism of regeneration.

(c) What is cell lineage ? Explain with reference to Nereis.

(d) Describe the extra-embryonic membranes of chick. Add a note on its functions.

(e) Natural selection is an evolutionary force. Explain.

(f) Write notes on :

(i) Homo erectus

(ii) Neanderthal man

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No. of Printed Pages : **2**

GS-350

VI Semester B.Sc. Examination, May/June 2019

ZOOLOGY-VII
GENETICS AND BIO-TECHNOLOGY

(CBCS) (F+R) (2016-17 & Onwards)

Time : 3 Hours Max. Marks : 70

Instructions : *(i) Draw labelled diagrams wherever necessary.*
(ii) Answers should be completely either in Kannada or in English.

PART - A

I. Answer **any five** of the following : **5x3=15**

1. Write a note on phenocopy.

2. Mention the Mendel's monohybrid.
(a) Phenotypic ratio.
(b) Genotypic ratio.
(c) Test cross ratio.

3. What are gynandromorphs ? Mention the types.

4. Differentiate between spontaneous and induced mutations.

5. Give the significance of transgenesis.

6. Define hybridoma technology. Who proposed it ?

7. List any three applications of DNA fingerprinting.

PART - B

II. Answer **any five** of the following : **5x5=25**

1. With reference to the inheritance of comb shape in fowls, a rose comb crossed with walnut comb produces offsprings of which 3/8 are rose comb, 3/8 walnut comb, 1/8 pea comb and 1/8 single comb. Determine the genotype of parents.

P.T.O.

2. Explain multiple factor inheritance with reference to the inheritance of skin colour in man.

3. Write notes on :
   (a) Erythroblastosis foetalis
   (b) Free martins

4. Lac Operon is called inducible operon. Substantiate.

5. Explain the cytoplasmic inheritance of kappa particles in paramoecium.

6. List out the differences between surgical and non-surgical embryo transfer.

7. Write notes on :
   (a) Microinjection.
   (b) Electroporation.

PART - C

III. Answer **any three** of the following : **3x10=30**

1. What is sex-linked inheritance ? Explain it with reference to eye colour in Drosophila.

2. Write notes on :
   (a) Down's syndrome
   (b) Phenylketonuria

3. Give an account of physical and chemical mutagens.

4. Explain the positive and negative aspects of eugenics.

5. Explain :
   (a) Artificial insemination
   (b) In-vivo gene therapy

6. What are stem cells ? Explain the types, sources and their applications.

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No. of Printed Pages : **2**

GS-354

VI Semester B.Sc. Examination, May/June 2019

ZOOLOGY-VII
GENETICS AND BIO-TECHNOLOGY

(NS 2013-14 & Onwards) (Repeaters) (Prior to 2016-17)

Time : 3 Hours | Max. Marks : 70

Instructions : *(i) Draw diagrams wherever necessary.*
(ii) Answers should be completely either in Kannada or in English.

PART - A

I. Answer **any five** of the following : **5x3=15**

1. Define norm of reaction, citing suitable example.
2. What is erythroblastosis foetalis ?
3. Define mutation. Mention the types.
4. Write a note on genetic counselling.
5. What are bioreactors ?
6. Give the significance of transgenesis.
7. Mention any three applications of bioinformatics.

PART - B

II. Answer **any five** of the following : **5x5=25**

1. With respect to the inheritance of comb shape in fowls, homozygous rose comb is crossed with single comb. What will be the phenotype and genotype in F_1 and F_2 generations ?
2. What is multiple factor inheritance ? Explain it with reference to skin colour in man.
3. Explain the cytoplasmic inheritance of kappa particles in paramecium.
4. Write the chromosomal complement and diagnostic features of Turner's syndrome.

P.T.O.

5. Describe CLB method of detection of mutations.

6. Give an account of phenylketonuria.

7. Write notes on :
   (a) Shuttle vectors
   (b) Applications of DNA fingerprinting

PART - C

III. Answer **any two** of the following : **2x10=20**

1. State the law of independent assortment. Explain it with a suitable example.

2. Explain sex-linked inheritance with reference to eye colour in Drosophila.

3. Give an account of genic balance theory of sex determination.

4. Write an explanatory note on :
   (a) Artificial insemination
   (b) In-vivo gene therapy

PART - D

IV. Answer **any one** of the following : **1x10=10**

1. Describe Lac operon concept with appropriate illustrations.

2. What are stem cells ? Explain various types, sources and their applications.

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100615

No. of Printed Pages : **2**

GS-351

VI Semester B.Sc. Examination, May/June - 2019

ZOOLOGY-VIII

Animal Physiology and Techniques in Biology

CBCS (F+R) 2016-17 & Onwards

Time : 3 Hours Max. Marks : 70

Instructions to Candidates :

(1) Draw labelled diagrams wherever necessary.
(2) Answer should be completely either in Kannada or English.

PART - A

I. Answer **any five** of the following : **5x3=15**

1. Mention the metalic ion present in the following pigments :
(a) Haemoglobin
(b) Haemocyanin
(c) Chlorocruorin

2. Briefly explain Bohr's effect.

3. What are uricotelic animals ? Give an example.

4. Write a note on acromegaly.

5. Enumerate any three symptoms of hypertension.

6. Give the principle of centrifugation.

7. List any three applications of fractionation.

PART - B

II. Answer **any five** of the following : **5x5=25**

1. Discuss symbiotic digestion in ruminants.

2. Explain ornithine cycle.

P.T.O.

3. With respect to parathyroid secretion explain the negative feedback mechanism.

4. Explain osmoregulation in Salmon.

5. Give an account of jaundice.

6. Give the principle and applications of light microscopy.

7. Write notes on :
   (a) Uses of alcohol in micro-technique
   (b) Differential staining

PART - C

III. Answer **any three** of the following : **3x10=30**

1. Explain the physico-chemical aspects of muscle contraction.

2. Give an account of :
   (a) CO_2 transport
   (b) Hormonal control of metamorphosis in amphibia

3. List the hormones of adrenal gland with one function each.

4. With reference to thermoregulation, explain the role of hypothalamus.

5. Explain the physiology of hearing.

6. Give an account of :
   (a) Neurotransmitters
   (b) Endoscopy

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560

I Semester B.Sc. Examination, December 2018
(CBCS 2018-19 and Onwards)
ZOOLOGY
Non-Chordata

Time : 3 Hours Max. Marks : 70

Instruction : *Draw labelled diagrams* ***wherever*** *necessary.*

PART – A

I. Answer the following in **one** word or **one** sentence **each** : **(10×1=10)**

1. Define eucoelom.
2. Mention the function of contractile vacuole.
3. Mention any two types of cells found in sycon.
4. What is metagenesis ?
5. What are colloblasts ?
6. Which type of body organization is found in nematodes ?
7. What are setae ?
8. Name the disease caused by entamoeba histolytica.
9. In humans, where does the filarial worm reside ?
10. Give the name of vector which transmits Leishmania.

PART – B

II. Answer **any five** of the following : **(5×3=15)**

1. Define body symmetry. Mention any two types with examples.
2. Define conjugation. Mention its significance.
3. State the functions of :
   a) Archeocytes.
   b) Scleroblasts.
   c) Choanocytes.

P.T.O.

4. What are coral reefs ? Mention any two types with examples.
5. Mention the occurrence, disease caused and mode of transmission of Fasciola hepatica.
6. Give the economic importance of leech.
7. Enumerate any six parasitic adaptations of flat worms.

PART – C

III. Answer **any five** of the following : **(5×5=25)**

1. What are germ layers ? Explain the types based on the number of germ layers with examples.
2. Explain sol-gel theory of locomotion in amoeba.
3. Describe syconoid type of canal system in sponges.
4. Describe the structure of ephyra larva.
5. a) Enumerate any five general characters of phylum Platyhelminthes.
   b) Explain food and feeding mechanism in pheretima.
6. Write a note on vermicompost.
7. Give an account of life cycle of taenia solium.

PART – D

IV. Answer **any two** of the following : **(2×10=20)**

1. Enumerate the general characters of phylum protozoa. Classify up to class with an example each.
2. a) Explain sexual reproduction in sycon.
   b) Describe the nervous system of planaria with a neat labelled diagram.
3. What is polymorphism ? Describe the phenomenon with reference to Halistemma.
4. Explain the structures of :
   a) Septal nephridium of pheretima.
   b) Miracidium larva.

SS – 370

I Semester B.Sc. Examination, November/December 2018
(CBCS) (2014 – 15 & Onwards) (Repeaters)
(Prior to 18 – 19)
ZOOLOGY (Paper – I)
Non-Chordata – I

Time : 3 Hours Max. Marks : 70

Instructions : 1) *Draw* ***neat*** *labelled diagrams* ***wherever*** *necessary.*
2) *Answers should be* ***completely*** *in* ***Kannada*** *or* ***English***.

PART – A

I. Answer **any five** of the following : **(5×3=15)**

1) What is symmetry ? Mention any two types.
2) Define true metamerism citing a suitable example.
3) Name the locomotory organelles in protozoa.
4) Draw a neat labelled diagram of the externals of sycon.
5) Mention any three unique characters of ctenophora.
6) Name the disease caused by the following parasites :
   a) Plasmodium vivax.
   b) Ascaris lumbricoides.
   c) Wuchereria bancrofti.
7) Write a note on vermicompost.

PART – B

II. Answer **any five** of the following : **(5×5=25)**

1) What is coelom ? Differentiate between pseudocoelom and eucoelom with examples.
2) Write a note on holozoic nutrition in protozoa.
3) Name any five types of cells found in Sycon and mention their function.

P.T.O.

4) What are coral reefs ? Explain any one type of coral reef.

5) Describe the externals of planaria with a neat labelled diagram.

6) Explain the digestive system of earthworm with a neat labelled diagram.

7) Give the occurrence, mode of transmission, disease caused and preventive measures of Entamoeba histolytica.

PART – C

III. Answer **any three** of the following : **(3×10=30)**

1) Enumerate the general characters of phylum protozoa. Classify upto classes with an example each.

2) With reference to sponges, explain syconoid and rhagonoid canal systems.

3) Write notes on :
   a) Feeding and digestion in Hydra.
   b) Polymorphism in Halistemma.

4) With a neat labelled diagram, explain the male reproductive system of earthworm.

5) Explain the life cycle of Taenia solium.

6) Write notes on :
   a) Economic importance of leech.
   b) Parasitic adaptations in flatworms.

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SS – 371

III Semester B.Sc. Examination, November/December 2018
(CBCS) (Freshers + Repeaters) (2015-16 and Onwards)
ZOOLOGY (Paper – III)
Chordata

Time : 3 Hours Max. Marks : 70

Instructions : *1) Draw **neat** labelled diagrams **wherever** necessary.*
*2) Answers should be **completely** in **English** or **Kannada.***

PART – A

I. Answer **any five** of the following : **(5×3=15)**

1) Assign the following to their respective sub-phylum :
   a) Ascidian
   b) Amphioxus
   c) Petromyzon.
2) Draw a neat labelled diagram of externals of Ascidian.
3) Write a note on ampulla of Lorenzini.
4) Highlight the interesting features of Sphenodon.
5) List any three differences between Perissodactyla and Artiodactyla.
6) Mention any three methods of fish preservation.
7) Write a note on birds of American class.

PART – B

II. Answer **any five** of the following : **(5×5=25)**

1) Enumerate the general characters of agnatha.
2) Sketch and label the externals of Scoliodon.
3) Write a note on origin of amphibia.
4) Give an account of diapsid skull.
5) Archaeopteryx is a connecting link between reptiles and birds. Substantiate.

P.T.O.

6) List the interesting features of order Chiroptera.

7) Give an account of :

   a) Bi-products of poultry

   b) Composite fish farming.

PART – C

III. Answer **any three** of the following : **(3×10=30)**

1) Explain the filter feeding mechanism in Amphioxus.

2) With supporting diagrams, describe the structure of the brain of Shark.

3) Enumerate the general characters of class reptilia. Classify the modern reptiles upto order level with examples.

4) Give an account of morphological and anatomical flight adaptations in birds.

5) Highlight the salient features of :

   a) carnivora

   b) proboscidea.

6) Write notes on artificial insemination and MOET.

Paper Code : 10329

III Semester B.Sc. Examination, November/December 2018
ZOOLOGY – III
Chordata (CBCS)

Time : 3 Hours Max. Marks : 70

Instructions *:1) Write diagrams* ***wherever*** *necessary.*
2) Answer ***all*** *questions.*

PART – A

I. Answer the following. **(1×10=10)**

1) What are myotomes ?
2) Define retrogressive metamorphosis.
3) Name two orders of the class Amphibia.
4) What are chondrichthyes ? Give an example.
5) Define cleidoic eggs.
6) What are pneumatic bones ?
7) Define Perissodactyla.
8) What are fishing crafts ?
9) Give any two exotic birds.
10) What is pasteurization ?

PART – B

II. Answer **any five** of the following. **(3×5=15)**

1) Draw a neat labelled diagram of Ammocoete larva and mention its significance.
2) Write a note on Amphullae of Lorenzini.
3) Explain anadromous migration in fishes with examples.
4) Write interesting features of Sphenodon.
5) Explain interesting features in order carnivora.
6) Write any six general characters of class reptelia.
7) Explain any two exotic breeds of poultry.

P.T.O.

Paper Code : 10329

PART – C

III. Answer **any five** of the following. **(5×5=25)**

1) Explain Ammocoete larva and write its significance.
2) Write the salient features of Chondrichthyes.
3) Explain the general characters of Amphibians.
4) Write the interesting features of Archaeopteryx.
5) Explain the general characters of the reptiles.
6) Give brief account of fishing gears.
7) What is artificial insemination ? Explain MOET in respect of cattle improvement.

PART – D

IV. Answer **any two** of the following. **(10×2=20)**

1) With neat labelled diagram explain digestive system of *Amphioxus*.
2) Explain nervous system in Scoliodon with neat lebelled diagram.
3) Explain the general characters of class *Mammalia* and mention three sub classes with examples for each.
4) Give a detailed account on inland Pisciculture.

SS – 373

V Semester B.Sc. Examination, November/December 2018
(CBCS) (Freshers and Repeaters) (2016–17 and Onwards)
ZOOLOGY (Paper – VI)
Developmental Biology and Organic Evolution

Time : 3 Hours

Max. Marks : 70

Instructions : *1) Draw* ***neat*** *labelled diagrams* ***wherever*** *necessary.*
2) Answers should be ***completely*** *in* ***English*** *or* ***Kannada.***

PART – A

I. Answer **any five** of the following : **(5×3= 15)**

1) Give the views of ovists and animalculists.

2) What are secondary egg membranes ? Give an example.

3) Define oviparity citing a suitable example.

4) Explain the role of fertilizin and antifertilizin in fertilization.

5) With reference to embryonic induction, define :
a) Inducer b) Evocator c) Responder.

6) Give the significance of Hardy-Weinberg Law.

7) Write a note on allopatric speciation.

PART – B

II. Answer **any five** of the following : **(5×5= 25)**

1) Draw a neat labelled diagram of hen's egg.

2) Give a brief account of estrous cycle.

P.T.O.

3) Mention the functions of :
   a) Allontois.
   b) Amnion.

4) Explain blastulation in frog.

5) What is placenta ? Distinguish between deciduate and non-deciduate placenta.

6) Explain lead method of dating of fossils.

7) Enumerate the salient features of Cromagnon man.

PART – C

III. Answer **any three** of the following : **(3×10= 30)**

1) What is polyspermy ? Explain the mechanisms to block polyspermy.

2) Give an account of :
   a) Fate map of blastula of chick.
   b) Regeneration in amphibia.

3) Describe the process of gastrulaton in Amphioxus.

4) Explain the morphological and physiological changes during metamorphosis of frog.

5) What is isolation ? Explain post-zygotic isolating mechanisms.

6) Write notes on :
   a) Analogous structures.
   b) Adaptive radiation.

SS – 376

V Semester B.Sc. Examination, November/December 2018
(NS) (Repeaters) (2013 – 14 and Onwards) (Prior to 2016 – 17)
ZOOLOGY (Paper – V)
Environmental Biology and Ethology

Time : 3 Hours Max. Marks : 70

Instructions : *1) Draw neat labelled diagrams wherever necessary.*
*2) Answers should be completely in **English** or **Kannada**.*

PART – A

I. Answer **any five** of the following. **(5×3=15)**

1) Define spatial niche. Give an example.

2) Briefly explain the concept of net primary productivity.

3) Comment on dispersion as a population attribute.

4) Explain parasitism with a suitable example.

5) What are fungicides ? Give two examples.

6) Write a note on alarm calls.

7) Enumerate any three diagnostic features of biological clock.

PART – B

II. Answer **any five** of the following. **(5×5=25)**

1) Justify soil as an abiotic factor.

2) Give an account of mutualism.

3) Enumerate the important causes and effects of acid rain.

4) List the harmful effects of

a) Lead

b) Mercury.

P.T.O.

5) With respect to solid waste management explain land filling and incineration.

6) Write a note on taxes.

7) Give an account of dances in honey bees.

PART – C

III. Answer **any two** of the following. **(2×10=20)**

1) Discuss light as an abiotic factor.

2) Explain chemical and biological control as approaches to pest management.

3) Write notes on :

a) Red-data book

b) Biodiesel

4) Discuss social behaviour in ants.

PART – D

IV. With respect to remote sensing explain : **(1×10=10)**

a) Principle

b) Types

c) Applications.

OR

Write an essay on bird migration.

SS – 372

V Semester B.Sc. Examination, Nov./Dec. 2018
(CBCS) (Freshers and Repeaters) (2016-17 and Onwards)
ZOOLOGY – Paper – V
Environmental Biology and Ethology

Time : 3 Hours Max. Marks : 70

Instructions *: 1) Draw* ***neat*** *labelled diagrams* ***wherever*** *necessary.*
2) Answers should be completely in ***English*** *or* ***Kannada****.*

PART – A

I. Answer **any five** of the following : **(5×3=15)**

1) What is autecology ? Give an example.
2) Write a note on net primary productivity.
3) Briefly explain antibiosis with a suitable example.
4) Define pesticides. Give two examples.
5) Give a brief account of land filling.
6) What are instincts ? Give an example.
7) Mention three diagnostic features of biological clock.

PART – B

II. Answer **any five** of the following : **(5×5=25)**

1) Discuss soil as an abiotic factor.
2) With respect to population ecology explain :
   a) Density
   b) Biotic potential.
3) What is ecological succession ? Explain the same with respect to hydrosere.
4) Enumerate the detrimental effects of lead and arsenic.
5) What is GIS ? List the applications.
6) Give an account of imprinting.
7) Write an explanatory note on parental care in fishes.

P.T.O.

PART – C

III. Answer **any three** of the following : **(3×10=30)**

1) Define ecological niche. Explain the types with examples.
2) Give a detailed account of the causes, effects and mitigation of green house effect.
3) Sun and wind are non-conventional renewable sources of energy. Justify.
4) Write notes on :
   a) Red data book
   b) Biosphere reserves.
5) Discuss social behaviour in honey bees.
6) Explain :
   a) Eco-location in bats.
   b) Role of pheromones in insects.

SM – 395

VI Semester B.Sc. Examination, May/June 2018
(CBCS) (F+R) (2016-17 and Onwards)
ZOOLOGY – VII
Genetics and Biotechnology

Time : 3 Hours Max. Marks : 70

Instructions : *1)* ***Draw*** *labelled diagrams* ***wherever*** *necessary.*
2) Answers should be ***completely*** *in* ***Kannada*** *or* ***English****.*

PART – A

I. Answer **any five** of the following : **(5×3=15)**

1) Write a note on norm of reaction.
2) Define :
   a) Rh factor
   b) Gene interaction
   c) Polygenes.
3) List any three applications of blood groups.
4) Write a note on biological mutagens.
5) Mention the names of components of rDNA technology regarded as
   a) Molecular scissors
   b) Molecular glue
   c) Molecular vector.
6) Give an account of bioreactors.
7) List the applications of stem cells.

PART – B

II. Answer **any five** of the following : **(5×5=25)**

1) State the law of segregation. Explain it with a suitable example.
2) Write notes on :
   a) Y-linked inheritance
   b) Criss-cross inheritance.

P.T.O.

3) Describe cytoplasmic inheritance of coiling of shells in snail.

4) Explain CIB method of detection of mutations.

5) Define eugenics. Explain any two aspects of negative eugenics.

6) Mention the benefits and limitations of embryo transfer.

7) What is gene therapy ? Explain any two approaches of gene therapy.

PART – C

III. Answer **any three** of the following : **(3×10=30)**

1) With reference to the inheritance of comb shape in fowls, work out the following :

   A) Homozygous rose comb is crossed with single comb.

   B) Homozygous pea comb is crossed with single comb.

   C) Conduct a cross between F_1 of A and B, find the offsprings.

2) What is aneuploidy ? Give an account of one autosomal and one allosomal aneuploidy.

3) Explain inducible operon concept with a suitable example.

4) Write notes on :

   a) Genic balance theory

   b) Sickle cell anaemia.

5) Define transgenesis. Explain knock-out and knock-in transgenesis technology in mice.

6) Write notes on :

   a) Hybridoma technology

   b) DNA fingerprinting.

SM – 396

VI Semester B.Sc. Examination, May/June 2018
(CBCS) (Fresh+Repeaters) (2016 – 17 and Onwards)
ZOOLOGY – VIII
Animal Physiology and Techniques in Biology

Time : 3 Hours Max. Marks : 70

Instructions : *1) Draw labelled diagrams* ***wherever*** *necessary.*
2) Answer should be ***completely*** *either in* ***Kannada*** *or* ***English****.*

PART – A

I. Answer **any five** of the following : **(5×3=15)**

1) Write a note on Haldane effect.
2) Define ureotelism with an example.
3) Write a short note on electrical synapse.
4) List any three functions of thyroxine.
5) Briefly explain the causes of obesity.
6) Mention the significance of fixative in microtechnique.
7) Give any three applications of electrophoresis.

PART – B

II. Answer **any five** of the following : **(5×5=25)**

1) Explain the hormonal control of digestive glandular secretions.
2) Define oxygen dissociation curve and discuss the effect of carbon dioxide on the same.
3) Explain physiology of vision.
4) Briefly explain the hormonal control of metamorphosis in insects.
5) Explain the mechanism of osmoregulation in anadromous fish.
6) Give an account of electron microscopy.
7) Write notes on principle and applications of auto radiography.

P.T.O.

PART – C

III. Answer **any three** of the following : **(3×10=30)**

1) Explain carbon dioxide transport.
2) Describe the sliding filament theory of muscle contraction.
3) Write notes on :
   a) Neurotransmitters
   b) Methods of heat loss in homeotherms.
4) With reference to homeostasis explain positive feed back mechanism.
5) List any five hormones of adenohypophysis with one functions each.
6) Write explanatory notes on :
   a) Diabetes mellitus
   b) Immunoassay.