+3 SEM-III(NEP)
ZOO-C-I(P-5)Major(R)

Dec,2025

PRINCIPLES OF ECOLOGY

Time - 3 hours **Full marks-100**

Figures in the right-hand side of the margin indicates mark
Give an illustrated diagram wherever required

PART-I

1. **Answer all questions with one-word answer/ fill in the blanks/MCQ:** **10x1=10**

i) Red data Book provides data on ---------

ii) Main component of biodiversity is called as-------

iii) Which of the following requires maximum energy ?

a. Secondary consumer
b. Primary consumer
b, Decomposer
d. Primary producer

iv) Which is not the characteristic of 'r' selected species?

a. Reproduce quickly
b. Parental care
c. A low survival rate of progenies
d. Produce a large number of progenies

v) Lincoln index measures------

vi) The ability of a population to increase under ideal environmental conditions is called----------

vii) Which ecological pyramid is always upright?

viii) In an ecosystem, the energy flow is always---------

ix) The upper part of an aquatic ecosystem contains ----

x) The natural place of an organism or community is known as ----------

Part-II

2. **Answer all questions within maximum 50 words each:** **9x2=18**

i) Define Polyclimax theory

ii) Define ecotone

iii) Describe Synecology

iv) Explain Exponential growth

v) Write the merits of arithmetic mean

vi) Describe Oligotrophic Lake

vii) Explain Species diversity

viii) Describe Biological Oxygen Demand

ix) Describe Food web with examples

Part-III

3. Answer any eight questions within 250 words each. 8x5=40

i) Write short notes on pyramid of numbers.

ii) Write short notes on Edge effect

iii) Describe species richness.

iv) Distinguish between Neritic and Benthic zone.

v) Describe biogeochemical cycle.

vi) Explain the role of abiotic factors in ecosystem.

vii) Differentiate between Linear and Y-shaped food chain.

viii) Explain standard deviation with suitable example.

ix) Explain intraspecific interactions with suitable example.

x) What are the laws of limiting factor?

Part-IV

4. **Answer any four questions with maximum 800 words each. 4x8=32**

i) Write an essay on Temperature as a physical factor

ii) Explain the exponential and logistic growth forms of population with the help of suitable diagrams and equations

iii) What is succession? Explain the various theories of climax in succession

iv) Define Biological data and explain graphical representation of data

v) Explain measures of dispersion with suitable example.

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3 SEM-III(NEP)

ZOO-C-1(P-6)Major(R)

Dec, 2025

PHYSIOLOGY: CONTROLLING AND COORDINATING SYSTEMS

Time - 3 hours Full marks-100

Answer all questions as directed. The figures on the right-hand margin indicate marks. Draw diagram wherever necessary.

PART-I:

1. Answer all questions [10x1=10]

i. Nervous tissue originates from _____germ layer.
ii. Reabsorption of bone is carried out by _____ cells.
iii. _____ tissue consist of extracellular matrix and cells.
iv. The outermost layer, encircling the entire muscle is known as _____**.**
v. The receiving or input part of the neuron is called _____.
vi. Chemicals that have an odour and can therefore stimulate the olfactory hairs are called
vii. The gustatory pathway is controlled by the gustatory nucleus located in the_____
viii. The _____ photoreceptor cells provide colour vision.
ix. _____ is the condition of equilibrium (balance) in the body's internal environment due to the constant interaction of the body's many regulatory processes.
x. Individuals having narrow range of tolerance to salinity are known as _____ animals.

PART- II:

2. Define the following
(Answer all questions within maximum 50 words) [9x2=18]

i. Pseudostratified epithelium.
ii. Epiphyseal (growth) plate.
iii. Osteoblast.
iv. Action potential.
v. Synapse.
vi. Baroreceptors
vii. Auditory ossicles
viii. Osmosis
ix. Thermoregulation

PART III:

3. Write short notes <u>any 8</u> of the following.
(Answer within maximum 250 words) [8x5=40]

i. Function of epithelial tissue.
ii. Haversian system.
iii. Structure of cartilage.
iv. Ultra structure of skeletal muscle.
v. Structure of neuron.
vi. Structure of rods and cone.

vii. Sensory neuron and its function
viii. Physiology of Olfaction
ix. Extracellular fluid and its role in homeostasis.
x. Thermoregulation in homeotherms.

PART-IV

4. **Answer <u>any four</u> questions with maximum 800 words each.** **4x8=32**

i. Describe the structure of long bone. Add a note on intramembranous ossification.
ii. Describe the chemical and molecular basis of muscle contraction.
iii. Give a detailed account of the origin and conduction of action potential in myelinated nerve fibre.
iv. Discuss the structure of the inner ear and its role in equilibrium (balance).
v. What is osmoregulation? Describe the mechanism of osmoregulation in marine and fresh water fishes.

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+3 SEM-III(NEP)
ZOO-C-1(P-7)Major(R)

DECEMBER, 2025
FUNDAMENTALS OF BIOCHEMISTRY

Time - 3 hours **Full marks-100**

Figures in the right-hand side of the margin indicates mark
Give an illustrated diagram wherever required

Q.1 MCQ / One word/ One Sentence type answer (10 x 1=10)

i) Name one storage polysaccharide in plants and one in animals.

ii) Fatty acid with 18 carbons and one double bond (18:1) is _____.

iii) Name the bond that links amino acids in a polypeptide chain.

iv) Which amino acid is essential for humans?
a) Glycine b) Lysine c) Alanine d) Serine

v) Which interaction is most responsible for stabilizing an α-helix?
a) Disulfide bond b) Hydrogen bond c) Peptide bond d) Ionic bond

vi) Name the dominant immunoglobulin present in tears.

vii) The nitrogenous bases adenine (A) and guanine (G) are _____.

viii) A nucleoside is composed of _____.

ix) Name the non-protein part of a holoenzyme.

x) The substrate concentration at which the reaction velocity is ½ Vmax is_____.

Q.2 Answer the following questions within 50 words each (9 x 2=18)

i) Differentiate aldose and ketose with one example each.

ii) Explain reducing sugar with one example of a reducing and a non-reducing disaccharide.

iii) List two major functions of steroids in the human body.

iv) Differentiate between essential and non-essential amino acids (with two examples each).

v) What is denaturation of proteins? Mention two causes.

vi) Define antigenic determinant (epitope) and write its significance in immune response.

vii) Define purines and pyrimidines with proper structures.

viii) Differentiate between nucleoside and nucleotide (any two points).

ix) Define Km and state what it indicates about enzyme–substrate affinity.

Q.3 Answer the following questions within 250 words (8 x 5=40)

i) Write notes on the structure and functions of starch, glycogen and cellulose.

ii) Discuss the physiological role of saturated and unsaturated fatty acids.

iii) Explain the structure of phospholipids and glycolipids and their functions in biological membranes.

iv) Briefly describe the levels of organisation in proteins with suitable examples.

v) Write on different classes of immunoglobulins with biological functions.

vi) Describe the detail structure of "Watson – Crick" base pairing in DNA.

vii) Write an account of DNA denaturation and renaturation, including melting temperature (Tm) and factors affecting Tm.

viii) Give a brief description on common types of RNA (mRNA, tRNA and rRNA).

ix) Describe the mechanism of enzyme action.

x) Explain the mechanism of allosteric regulation and describe how effectors alter enzyme activity.

Q.4 Answer the following questions within 800 words (4 x 8=32)

i) Give detail acount on membrane lipids.

ii) Discuss in detail the structure, classification, and general properties of α-amino acids.

iii) Describe basic structure of immunoglobulin G (IgG) and its function.

iv) Explain DNA structure and complementarity.

v) Derive the Michaelis–Menten equation in detail and explain the concept of Km and Vmax.

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+3 Sem-III(NEP)
ZOO-C-2(P-2)Minor(R)

Dec,2025

DIVERSITY OF CHORDATES: PROTOCHORDATES TO MAMMALIA

Time - 3 hours **Full marks-100**

Figures in the right-hand side of the margin indicates mark

Give an illustrated diagram wherever required

PART-I

Q1. Answer all questions **10x1 = 10**

a. Hemichordates are …….. Feeders
b. In Herdmania the matrix is formed of ……..
c. Jawless fishes are grouped under ……..
d. ……is known as the age of Fishes
e. 4 chambered heart in class reptilia is found in …….
f. ……bones are found in birds
g. The sole survivor of the order Rhyncocephalia……..
h. Jacobson organ is present in …….
i. ……ovary is functional in birds
j. The internal ear in mammals contain a highly coiled hearing organ called……

PART-II

Q2. **Answer all questions within maximum 50 words each:** **9x2= 18**

a. Continuous distribution of animals
b. Burrowing adaptation of mammals
c. Threats during migration in birds
d. Living fossil
e. Wheel organ
f. Catadromous migration in fishes
g. Poison apparatus of snakes
h. *Tornaria* larva
i. Plate tectonic theory

PART-III

Q3. **Answer any eight questions within 250 words each.** **8x5= 40**

a. Continental drift theory
b. Mammalian affinities of Prototheria
c. Reptilian features of Archaeopteryx
d. Parental care in Apoda
e. Characteristics of Hemichordata
f. Dipluerula concept
g. Evolutionary significance of Dipnoi
h. Biting mechanism in snakes
i. Oriental realm
j. Flight muscles in birds

PART-IV

Q 4. **Answer any four questions with maximum 800 words each.** **4x8= 32**

a. Describe the structure of Ascidian tadpole larva and discuss the retrogressive metamorphosis.
b. Describe the accessory respiratory organs of fishes
c. Describe briefly the biting mechanism in snakes.
d. What is migration? Discuss the different kinds of migration in migratory birds.
e. Give an account of adaptive radiation in mammals with special respect to locomotory appendages.

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