

# Puspa Shrestha

Best Quality Resource Site for Class 11 And 12 Students  
(Based on Updated Curriculum 2077)

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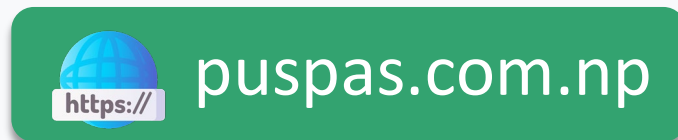


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# Biology

## Syllabus

Full Marks: 100

Teaching Hrs: 150

### Course Contents

#### Section A (Botany)

Teaching hour 75

##### Unit 1: Introduction to Biology

TH 5

- Bio-chemically important organic and inorganic molecules (general concepts): Carbohydrate, protein, lipid, nucleic acid, minerals and water.

##### Unit 2: Cell Biology

TH 15

- **The cell:** The cell as a unit of life, structure of prokaryotic and eukaryotic cells, Structure and functions of cell organelles and inclusions.
- **Cell division:** Amitosis, mitosis, meiosis.

##### Unit 3: Biodiversity

TH 40

- Definition and scope of biodiversity, flora diversity of Nepal, concept of taxonomy: classification, binomial nomenclature, shortcoming of two kingdom classification, hierarchic system in classification, phylogeny. Five kingdom classification: Monera, Protista, Mycota, Plantae and Animalia.
- **Monera:** General account, structure and function of bacterial cells, concept of autotrophic and heterotrophic life styles, economic importance of bacteria.
- **Cyanobacteria:** *Nostoc* - Structure, reproduction and economic importance.
- **Mycota:** Concept of Zygomycetes, Ascomycetes, Basidiomycetes and Deuteromycetes. Structure and reproduction of Zygomycetes (*Mucor*), Ascomycetes (*Yeast*). Economic importance of fungi.
- **Plantae:**
- **Algae:** Introduction to green, red and brown algae, structure and reproduction of *Spirogyra*.
- **Bryophyta:** *Marchantia* and *Funaria* (morphology and life cycle).
- **Pteridophyta:** *Dryopteris* (morphology and life cycle).
- **Gymnosperm:** Brief morphological structure of *Cycas* and *Pinus*.
- **Angiosperm:** Morphology: root, stem, leaf, flower, fruit and seed. Taxonomy and economic importance of the following families; Cruciferae (*Brassicaceae*), Solanaceae, Leguminosae – Papilionaceae only, Compositae (*Asteraceae*) and Gramineae (*Poaceae*).
- **Lichen:** Introduction and economic importance.
- **Virus:** Structure and economic importance.

##### Unit 4: Biota and their Environment

TH 15

- **Ecology:** Definition, abiotic, biotic factors and their interactions.
- Concept of ecosystem, Pond and grassland ecosystems: structural and functional aspects; food chain, trophic level, ecological pyramids, productivity, concept of community and succession.
- Bio-geochemical cycle: carbon cycle and nitrogen cycle.
- Ecological imbalance and its consequences: Green house effects, depletion of ozone layer and acid rain.
- Concept of mountain ecosystem (altitudinal and climatic changes).
- **Adaptation:** Hydrophyte, mesophyte and xerophyte.
- Conservation:
- **Forest conservation:** Brief introduction of forests of Nepal, importance of afforestation and hazards of deforestation.

#### Evaluation Scheme

	Teaching Hrs	Marks	Types of question asked in the examination		
1. Introduction to Biology	5	3	×	1	×
2. Cell Biology	15	8	2 or 1 opt	2	Or 1*
3. Biodiversity	39	18.5	3 or 1 opt	3 or 1 opt	1 or 1 opt (7.5 marks)
4. Biota and their environment	16	8	2 or 1 opt	2 or 1 opt	or 1*
<b>Total</b>	<b>75</b>	<b>37.5 marks</b>	<b>7 ques × 1 mark</b>	<b>5 ques × 3 marks</b>	<b>2 ques × 7.5 marks and 8 marks</b>
			<b>Total 7 marks</b>	<b>Total 15 marks</b>	<b>Total 15.5 marks</b>

\* One full question of 8 marks will asked either from the unit Cell Biology or Biota and their environment.

#### Section B (Zoology)

Teaching hour 75

##### Unit 1: Introduction to Biology

TH 5

- Nature and scope of Biology.
- Branch and relation with other sciences.
- General approach to understand life processes.

##### Unit 2: Evolution of Life

TH 20

- Meaning of evolution.
- Life and its origin.
- A brief history of evolutionary ideas.
- Oparin and Haldane's theory, Miller and Urey experiment.
- Organic evolution, evidences of evolution: structural, anatomical, paleontological, embryological, biochemical and genetical.
- Lamarckism, Darwinism and concept of Neo-Darwinism.
- Human evolution.

##### Unit 3: Biodiversity

TH 35

- Meaning of biodiversity, faunal diversity of Nepal.
- **Protista:** Characteristics and classification of phylum Protozoa upto class with examples; Habit and habitat, structure, reproduction and lifecycle of *Paramecium* and *Plasmodium vivax* (a concept of *P. falciparum*)
- **Animalia:** General characters and classification of the following phyla (upto class) with examples – Porifera,

Coelenterata (Cnidaria), Platyhelminthes, Aschelminthes (Nemathelminthes), Annelida, Arthropoda, Mollusca, Echinodermata and Chordata. • **Earthworm (Pheretima posthuma)**: Habit and habitat, structure; digestive, circulatory, excretory, reproductive and nervous systems. Economic importance. • **Frog (Rana tigrina)**: Habit and habitat, structure; digestive, circulatory, respiratory, urino-genital and nervous system (structure and function of brain).

#### Unit 4: Biota and their Environment

TH 15

- **Environmental pollution**: Air, water and soil. Sources of pollution, their effects and control measures. Hazards of pesticides.
- **Animal behaviour**: Taxes, reflexes and reflex action, dominance and leadership, migratory behaviour of fish and bird.
- **Adaptation**: Animal: Aquatic, amphibious and terrestrial (arboreal and volant). • **Conservation**: (1) **Wildlife conservation**: Meaning of wildlife, importance of wildlife, meaning of rare, threatened, vulnerable and endangered species; few endangered species in Nepal. Conservation practices (National parks, wildlife reserves and hunting reserves), Ways of conservation and causes of extinction. (2) Management of land and water • Human responsibility for the protection of earth.

#### Evaluation Scheme

	Teaching Hrs	Marks	Types of question asked in the examination		
1. Introduction to Biology	5	2	2	x	x
2. Evolution of Life	20	10	2 or 1 opt	0 or 1 opt	1 (8 marks)*
3. Biodiversity	35	17.5	3 or 1 opt	3 or 1 opt	1 or 1 opt (7.5 marks)
4. Biota and their environment	15	8	2 or 1 opt	2	x
<b>Total</b>	<b>75</b>	<b>37.5 marks</b>	<b>7 ques × 1 mark</b>	<b>5 ques × 3 marks</b>	<b>2 ques × 7.5 marks and 8 marks</b>
			<b>Total 7 marks</b>	<b>Total 15 marks</b>	<b>Total 15.5 marks</b>

\* One full question of 8 marks will asked either from the unit Evolution of life or Biota and their environment.

#### Botany Practical – Grade XI

- Use and maintenance of compound microscope.
- Study of museum specimen and slides:
  - Types of bacterial cells;
  - Spirogyra filaments;
  - Mucor: Culture to demonstrate mycelium and sporangium; culture of yeast cells.
  - Study of vegetative and reproductive structure of Marchantia, Funaria, Dryopteris, Pinus.
- Study of different stages of mitotic and meiotic cell division through permanent slides and chart.
- Preparation of temporary slide to study cell structure: Onion scale leaf, Leaf of Geranium or Zebrina or Tradescantia or any other locally available leaf.
- Description of following plants in semi-technical terms with their floral diagrams and formulae and identification and economic importance of at least one plant from each of the following families:
  - Cruciferae (Brassicaceae)
  - Solanaceae
  - Leguminosae – Papilionoidae only
  - Compositae (Asteraceae)
  - Gramineae (Poaceae)
- Study of freshwater ecosystem using an aquarium or pond showing a food chain.
- Study of morphological adaptations of the hydrophytes, mesophytes and xerophytes.
- Field study: Collection, identification of plants and animals from local area; Preservation of collected organisms in suitable preservatives and maintain a record. The students are also advised to observe different types of environmental pollution during their field study (Jointly with zoology Dept).

#### Zoology Practical – Grade XI

- Study of permanent slide and museum specimen: Paramecium, Plasmodium, Sycon, Hydra, Fasciola (Liver fluke), Taenia (Tape worm), Ascaris (Round worm), Pheretima (Earthworm), Hirudinaria (Leech), Palaemon (Prawn), Cancer (Crab), Periplaneta (Cockroach), Pieris (Butterfly), Bombyx (Moth), Aranea (Spider), Palamnaeus (Scorpion), Scolopendra (Centipede), Julus (Millipede), Helix (Garden Snail), Asterias (Starfish), Labeo (Rohu fish), Rana (Frog), Bufo (Toad), Hemidactylus (Wall-lizard), Chelone (Turtle), Columba (Pigeon), Rhinolophus (Bat) and Funambulus (Squirrel).
- Preparation of temporary slide and their study:
  - Striated muscle fibre (thigh) of frog.
  - Setae and ovary of earthworm.
  - Squamous epithelial cell of human cheek.
- Study of histological structure through permanent slides of skin, oesophagus, stomach, intestine, rectum, liver, pancreas, lung, kidney, testis and ovary of frog.
- Study of adaptational features of a primary aquatic animal (Labeo), secondary aquatic animal (Turtle), arboreal (Calotes, Tree frog), primary volant (Pigeon or other birds) and secondary volant (Flying fish, Bat)
- Dissection of animal provided so as to expose their:
  - Earthworm**: General anatomy, alimentary canal, nervous system and reproductive organs.
  - Frog**: General anatomy, alimentary canal, arterial and venous systems, reproductive organs and brain.

## Model Question Paper (Theory) Biology Grade XI

Time: 3 hrs

Full Marks: 75  
Pass Marks: 27

### Section A (Botany)

1. Answer any seven questions in very short. [7×1=7]
  - a. Differentiate prokaryotic and eukaryotic cells on the basis of nucleus.
  - b. Write the functions of chloroplast.
  - c. What are the components of a nucleotide?
  - d. Why are cyanobacteria called a blue green algae?
  - e. Why are ferns called vascular cryptogams?
  - f. Write the difference between disc and ray floret.
  - g. Name the primary consumers of pond ecosystem.
  - h. Define green house effect.
  - i. Lichen is an example of symbiosis, how?
  - j. Define plant succession.
2. Answer any five questions in brief. [5×3=15]
  - a. In what ways DNA differ from RNA?
  - b. Give the shortcomings of two kingdoms system of classification.
  - c. Illustrate vegetative structure of Spirogyra with neat & labelled diagram (no description required).
  - d. Write economic importance of fungi.
  - e. By means of stamen character only, how will you differentiate the various families which are included in your syllabus?
  - f. Energy flow in an ecosystem is always unidirectional. Explain.
  - g. How does the carbon cycle exist in the nature?
3. Describe the prophase I of meiosis cell division. Distinguish it from prophase of mitosis. [8]
4. Give the distinguishing characters of Solanaeaceae with its floral formula and floral diagram. Mention botanical names of three economically important plants of this family. [7.5]

**OR**

Define alternation of generation discuss it with reference to life cycle of Marchantia.

### Section B (Zoology)

1. Answer any seven questions in very short. [7×1=7]
    - a. Define the terms: Parasitology, Paleontology.
    - b. How is zoology related with chemistry?
    - c. What is organic evolution?
    - d. Define analogous organs.
    - e. Differentiate oxidizing atmosphere and reducing atmosphere.
    - f. Write zoological names of (i) wall lizard (ii) liver fluke.
    - g. Mention the functions of contractile vacuoles in Paramecium.
    - h. Define conservation.
    - i. Name two examples of migratory birds.
    - j. Why is DDT banned?
  2. Answer any five questions in brief. [5×3=15]
    - a. "Archeopteryx is a connecting link between reptiles and birds", justify.
    - b. Give an account of gamogony life cycle of Plasmodium vivax.
    - c. Classify Pila.
    - d. How is a cocoon formed in earthworm?
    - e. Draw labeled diagram of internal structure of frog's heart (No description).
    - f. Describe the volant adaptational features of birds.
    - g. Enlist the important measures to protect endangered species.
  3. Draw the neat and labelled diagram of male reproductive system of Pheretima. [7.5]
- OR**
- Write describe the alimentary canal of Rana tigrina.
4. Write an essay on the theory of natural selection. [8]

## Chapter Based Questions

### Section A (Botany)

#### Unit 1: Introduction to Biology

#### Answer in Very Short [1 Mark]

1. **2069 Q. No. 1d** What does it mean by taxonomy? [1]
2. **2067 Supp Q.No. 1a** Define applied biology. [1]
3. **2067 Supp Q.No. 1c** What do you understand by Physiology? [1]
4. **2066 Q.No. 1 j** What do you mean by micronutrients? [1]
5. **2064 Q.No. 2 a** Why cellulose can not be digested by carnivores? [1]
6. **2064 Q.No. 1 c** How Protein is formed? [1]
7. **2062 Q.No. 2 d** **2060 Q.No. 1a** What is cholesterol? [1]

8. **2062 Q.No. 2 f** Define conjugate protein. [1]
9. **2061 Q.No. 1a** Give two examples of micronutrients. [1]
10. **2061 Q.No. 1e** Mention the function of lipid. [1]
11. **2061 Q.No. 2d** Give two examples of polysaccharides. [1]
12. **2060 Q.No. 2c** Why cellulose can not be digested by human being? [1]
13. **2059 Q.No. 1a** Give the names of important organic life-components. [1]
14. **2058 Q.No. 1 a** Why calcium is an important life component? [1]
15. **2057 Q.No. 1 b** Importance of Adenosine triphosphate in plant metabolism. [2]

**Answer in Brief [3 Marks]**

1. **2076 Set B Q.No. 2a** Functions of carbohydrate. [3]
2. **2076 Set C Q.No. 2a** Types of amino acid. [3]
3. **2075 GIE Q.No. 2a** **2072 Set C Q.No. 2a** Biological role of water. [3]
4. **2075 Set A Q.No. 2a** **2069 Supp Q.No. 2g** Describe the function of carbohydrates. [3]
5. **2075 Set B Q.No. 2a** Proteins and its function. [3]
6. **2074 Supp Q.No. 2a** Biological role of lipids. [3]
7. **2074 Set A Q.No. 2a** Functions of lipid. [3]
8. **2074 Set B Q.No. 2a** Differentiate between DNA and RNA. [3]
9. **2073 Supp Q.No. 2a** The types of saccharides. [3]
10. **2073 Set D Q.No. 2a** Biological role of protein. [3]
11. **2072 Set D Q.No. 2a** Differentiate between micromolecules and macromolecules. [3]
12. **2072 Set E Q.No. 2a** Types of protein. [3]
13. **2070 Set C Q.No. 2a** List out the functions of proteins. [3]
14. **2070 Set D Q.No. 2a** Describe the types of lipids with examples. [3]
15. **2068 Q.No. 2a** Describe the fatty acids. [3]
16. **2067 Q.No. 2a** Define protein and highlight its role as an important bio-molecule. [3]
17. **2066 Q.No. 2a** Differentiate between saturated and unsaturated fatty acids. [3]
18. **2060 Q.No. 3 a** What are amino acids? Describe their types and functions. [3]
19. **2056 Q.No. 3 d** Discuss protein as an important bio-molecule. [3]

**Unit 2: Cell Biology****Answer in Very Short [1 Mark]**

1. **2076 Set B Q.No. 1a** What does it mean by eukaryotic cell? [1]
2. **2076 Set B Q.No. 1b** Define cell sap. [1]
3. **2076 Set B Q.No. 1c** State about plasmodesmata. [1]
4. **2076 Set C Q.No. 1a** What is totipotency? [1]
5. **2076 Set C Q.No. 1b** Define cell inclusion. [1]
6. **2076 Set C Q.No. 1c** Mention about cyclosis. [1]
7. **2075 GIE Q.No. 1a** **2075 Set A Q.No. 1a** **2072 Set E Q.No. 1a** Define eukaryotic cell. [1]
8. **2075 GIE Q.No. 1b** What is the function of ribosome? [1]
9. **2075 GIE Q.No. 1c** What is spindle fiber? [1]
10. **2075 Set A Q.No. 1b** What is the function of cell wall? [1]
11. **2075 Set A Q.No. 1c** What is cytoplasmic matrix? [1]
12. **2075 Set B Q.No. 1a** Define totipotency. [1]
13. **2075 Set B Q.No. 1b** What is the meaning of RER and SER? [1]
14. **2075 Set B Q.No. 1c** How do you define amitosis? [1]
15. **2074 Supp Q.No. 1a** Define nucleus. [1]
16. **2074 Supp Q.No. 1b** What is cyclosis? [1]
17. **2074 Supp Q.No. 1c** What does it mean by somatic cell division? [1]
18. **2074 Set A Q.No. 1a** What is nuclear membrane? [1]
19. **2074 Set A Q.No. 1b** Define cytoplasmic streaming. [1]
20. **2074 Set A Q.No. 1c** Mention about mitosis. [1]
21. **2074 Set B Q.No. 1a** Define nucleoplasm. [1]
22. **2074 Set B Q.No. 1b** What does it mean by cyclosis? [1]
23. **2074 Set B Q.No. 1c** What is mitosis? [1]
24. **2073 Supp Q.No. 1a** **2068 Q.No. 1a** What is prokaryotic cell? [1]
25. **2073 Supp Q.No. 1b** What is crossing over? [1]
26. **2073 Supp Q.No. 1c** Why is a cell considered structural and functional unit? [1]
27. **2073 Set C Q.No. 1a** **2071 Set C Q.No. 1a** **2069 Q.No. 1c** Define suicidal bag. [1]
28. **2073 Set C Q.No. 1b** What is nucleoplasm? [1]
29. **2073 Set C Q.No. 1c** How do you identify metaphase? [1]
30. **2073 Set D Q.No. 1a** Define prokaryotic cell. [1]
31. **2073 Set D Q.No. 1b** How do you identify cell plate? [1]
32. **2073 Set D Q.No. 1c** **2070 Set D Q.No. 1a** What does it mean by cell inclusions? [1]
33. **2072 Set C Q.No. 1a** **2071 Supp Q.No. 1a** Define true nucleus. [1]
34. **2072 Set C Q.No. 1b** What is the function of golgi body? [1]
35. **2072 Set C Q.No. 1c** Give the meaning of amitosis. [1]
36. **2072 Set C Q.No. 1d** What is rhizome? [1]
37. **2072 Set D Q.No. 1a** Define protoplasm. [1]
38. **2072 Set D Q.No. 1b** What is the function of lysosome? [1]
39. **2072 Set D Q.No. 1c** Define crossing over. [1]
40. **2072 Set E Q.No. 1b** What is the function of nuclear membrane? [1]
41. **2072 Set E Q.No. 1c** Define telophase. [1]
42. **2071 Supp Q.No. 1b** Give full form of RER and SER. [1]
43. **2071 Supp Q.No. 1c** Mention characters of metaphase. [1]
44. **2071 Set C Q.No. 1b** What does it mean by cell organelles? [1]
45. **2071 Set C Q.No. 1c** Mention about anaphase. [1]
46. **2071 Set D Q.No. 1a** Define plasmodesmata. [1]
47. **2071 Set D Q.No. 1b** What does it mean by cell plate? [1]
48. **2071 Set D Q.No. 1c** Mention about spindle fibre. [1]
49. **2070 Supp Q.No. 1a** Define incipient nucleus. [1]
50. **2070 Supp Q.No. 1b** What is nucleoplasm? [1]
51. **2070 Supp Q.No. 1c** Elaborate prophase. [1]
52. **2070 Set C Q.No. 1a** What do you mean by Cytokinesis? [1]
53. **2070 Set C Q.No. 1b** What is eukaryotic cell? [1]
54. **2070 Set C Q.No. 1c** Write any two functions of Golgi bodies. [1]
55. **2070 Set D Q.No. 1b** What do you mean by karyokinesis? [1]
56. **2070 Set D Q.No. 1c** Why meiosis is called as reductional cell division? [1]
57. **2069 Supp Q.No. 1a** What is somatic cell? [1]
58. **2069 Supp Q.No. 1b** What is the function of rhizome? [1]
59. **2069 Q.No. 1a** What is the message of Steward's experiment? [1]
60. **2069 Q.No. 1b** What do you mean by RER and SER? [1]
61. **2068 Q.No. 1b** Define cell wall. [1]
62. **2068 Q.No. 1c** What is cyclosis? [1]
63. **2067 Q.No. 1a** Define cellular totipotency. [1]
64. **2067 Q.No. 1b** What is plasmodesmata? [1]
65. **2067 Q.No. 1c** Write the function of plasma membrane. [1]
66. **2067 Q.No. 1d** What is chiasmata? [1]
67. **2067 Supp Q.No. 1d** Define eobiont. [1]

38. **2067 Supp Q.No. 1 e** What do you mean by Neo-Darwinism? [1]
39. **2068 Q.No. 1 b** What do you mean by cytokinesis? [1]
40. **2066 Q.No. 2 b** Describe the plastids. [1]
41. **2066 Q.No. 2 c** Describe the process of crossing over in meiosis. [1]
42. **2066 Q.No. 2g** **2051 Q.No. 4a** Differentiate between a prokaryotic and eukaryotic cell. [1]
43. **2066 Old Q.No. 2 a** Different types of RNA and their functions. [1]
44. **2065 Q.No. 1 c** What is the function of mitochondria? [1]
45. **2065 Q.No. 1 f** What are the major chemical constituents of protoplasm? [1]
46. **2064 Q.No. 1 d** Define Cytology. [1]
47. **2064 Q.No. 2 e** Mention two differences between plant and animal cell. [1]
48. **2063 Q.No. 1 b** Why Lysosome is called suicidal bag? [1]
49. **2063 Q.No. 1 c** What is prokaryotic cell? [1]
50. **2063 Q.No. 2 d** Give the chief components of RNA. [1]
51. **2063 Q.No. 2 f** Mention the functions of cell wall. [1]
52. **2063 Q.No. 3 b** Explain the process of mitosis. (Diagrammatically only) [1]
53. **2063 Q.No. 3 c** Describe the structure and functions of mitochondria. [1]
54. **2062 Q.No. 1 b** Give two function of RNA. [1]
55. **2062 Q.No. 2 b** **2060 Q.No. 2 b** Define cell theory. [1]
56. **2062 Q.No. 2 h** Name the components of nucleotide. [1]
57. **2061 Q.No. 1 b** What is cristae? [1]
58. **2061 Q.No. 1 d** Name the full form of ATP and ADP. [1]
59. **2061 Q.No. 2 c** Write the chief components of DNA. [1]
60. **2061 Q.No. 2 h** Write the function of a cell wall. [1]
61. **2060 Q.No. 1 b** Give two characters of pro-karyotic cell. [1]
62. **2060 Q.No. 1 c** Why mitochondria is called power house of a cell? [1]
63. **2059 Q.No. 1 c** Write a change in chromosomes during zygotene stage of meiotic Prophase-I cell division. [1]
64. **2059 Q.No. 1 g** Mention the function of RNA molecules. [1]
65. **2057 Q.No. 1 j** Significance of metaphase stage in mitotic cell division. [2]
66. **2057 Q.No. 10 b** Write short note on Chromatids. [2]
67. **2056 Q.No. 1 b** What is the process dealing with the formation of sex cell? [1]
68. **2056 Q.No. 1 c** Mention the change you find in chromosomes during anaphase stage of mitosis. [1]
69. **2054 Q.No. 9 a** Give two differences between Prophase of Mitosis and Meiosis. [2]
100. **2054 Q.No. 9 b** Give two differences between asexual reproduction and sexual reproduction. [2]
101. **2053 Q.No. 1 c** Name the site for: (i) Protein synthesis (ii) Photosynthesis [2]  
List two characteristics which differ DNA and RNA.
102. **2052 Q.No. 1 b** Name two D.N.A. containing cell organelles. [1]
103. **2052 Q.No. 7 b** Distinguish between Prophase and metaphase [2]

**Answer in Brief [3 Marks]**

- 2076 Set B Q.No. 2b** Types of lysosomes. [3]
- 2076 Set B Q.No. 2c** Kinds of chromosome. [3]
- 2076 Set C Q.No. 2b** Types and function of chromoplast. [3]
- 2076 Set C Q.No. 2c** Structure of chromosome. [3]
- 2075 GIE Q.No. 2b** Difference between cytoplasm and nucleoplasm. [3]
- 2075 GIE Q.No. 2c** Process of meiosis II. [3]
- 2075 Set A Q.No. 2b** Describe the various endoplasmic reticulum. [3]
- 2075 Set A Q.No. 2c** Elaborate the significance of meiosis. [3]
- 2075 Set A Q.No. 2g** **2072 Set E Q.No. 2b** Describe the structure and function of mitochondria. [3]
- 2075 Set B Q.No. 2b** **2071 Supp Q.No. 2b** Structure and function of nucleus. [3]
- 2075 Set B Q.No. 2c** **2071 Supp Q.No. 2c** **2071 Set C Q.No. 2c** **2071 Set D Q.No. 2c** Significance of meiosis. [3]
- 2074 Supp Q.No. 2b** **2074 Set B Q.No. 2b** Structure and function of Golgi bodies. [3]
- 2074 Supp Q.No. 2c** Prophase I of meiosis. [3]
- 2074 Set A Q.No. 2b** Structure and function of chloroplast. [3]
- 2074 Set A Q.No. 2c** Importance of mitosis. [3]
- 2074 Set B Q.No. 2c** Crossing over and its significance. [3]
- 2073 Supp Q.No. 2b** **2073 Set C Q.No. 2b** **2070 Supp Q.No. 2b** The structure and functions of vacuoles. [3]
- 2073 Supp Q.No. 2c** Metaphase and anaphase of mitosis with labelled diagram [3]
- 2073 Set C Q.No. 2a** **2069 Q.No. 2a** Differentiate between DNA and RNA. [3]
- 2073 Set C Q.No. 2c** Significance of crossing over. [3]
- 2073 Set D Q.No. 2b** Structure and function of mitochondria. [3]
- 2073 Set D Q.No. 2c** Process of crossing over. [3]
- 2072 Set C Q.No. 2b** Structure and function of endoplasmic reticulum. [3]
- 2072 Set C Q.No. 2c** Significance of mitosis. [3]
- 2072 Set E Q.No. 2c** Process of mitosis. [3]
- 2071 Supp Q.No. 2a** **2071 Set C Q.No. 2a** **2071 Set D Q.No. 2a** Structure of DNA. [3]
- 2071 Set C Q.No. 2b** Structure and function of ER. [3]
- 2071 Set D Q.No. 2b** Structure and function of Golgi apparatus. [3]
- 2070 Supp Q.No. 2a** Composition of nucleotide. [3]
- 2070 Supp Q.No. 2c** The process of pachytene and its significances. [3]
- 2070 Set C Q.No. 2b** Describe the structure of mitochondria. [3]
- 2070 Set C Q.No. 2c** Write the significance of mitosis. [3]
- 2070 Set D Q.No. 2b** The structure of nucleus. [3]
- 2070 Set D Q.No. 2c** **2056 Q.No. 3b** Differentiate between a prokaryotic and eukaryotic cell. [3]
- 2069 Supp Q.No. 2a** Describe the structure of nucleus. [3]
- 2069 Supp Q.No. 2b** Explain Metaphase and Anaphase stage of mitotic cell division. [3]

37. **2069 Supp Q.No. 2c** What is Mitochondria, explain. [3]
38. **2069 Q. No. 2b** Structure and functions of plastid. [3]
39. **2069 Q. No. 2c** The process of meiosis I. [3]
40. **2068 Q.No. 2b** Discuss the structure of golgi complex. [3]
41. **2068 Q.No. 2c** Describe the process of mitosis. [3]
42. **2068 Q.No. 2g** Describe the importance and structure of endoplasmic reticulum. [3]
43. **2067 Q.No. 2 b** Describe the process of amitosis and mention its significance. [3]
44. **2067 Q.No. 2 c** Describe the structure and function of chloroplast. [3]
45. **2067 Supp Q.No. 2 a** The Oparin and Haldane's theory of origin of life. [3]
46. **2067 Supp Q.No. 2 c** How is Ookinete formed? Explain. [3]
47. **2065 Q. No. 2 a** Describe in short Golgi apparatus. [3]
48. **2065 Q. No. 2 b** Describe in short Different types of ribosomes. [3]
49. **2065 Q. No. 2 c** Describe in short Significance of mitosis [3]
50. **2064 Q.No. 3 a** Describe the structure and functions of plastids. [3]
51. **2062 Q.No. 3 a** Describe the structure of Eukaryotic cell. [3]
52. **2062 Q.No. 3 g** Explain the significances of meiosis. [3]
53. **2061 Q.No. 3 g** Differentiate between meiotic and mitotic metaphase. [3]
54. **2060 Q.No. 3 b** Discuss the changes that occur during Anaphase of mitosis. [3]
55. **2058 Q.No. 3 b** How chromosome changes during 'Anaphase' of mitosis? [3]
56. **2057 Q.No. 9 c** Differentiate between mRNA and tRNA [3]
57. **2056 Q.No. 3 c** Explain the structure of a mitochondrion. [3]
58. **2055 Q.No. 9b** Differentiate between Plastid and mitochondria. [3]
59. **2054 Q.No. 10 c** Write short note Heredity [3]
60. **2052 Q.No. 4** Give the characteristic features of: (a) Prokaryotic cell (b) Cell membrane [4]
61. **2051 Q.No. 10 a** Write short note on Prophase-I in meiosis. [3]

### Long Answer Questions [7 or 8 Marks]

1. **2073 Supp Q.No. 4** Describe the human evolution starting from proconsul. [8]
2. **2067 Supp Q.No. 3** Discuss evidences of evolution on the basis of palaeontology. [8]
3. **2066 Old Q.No. 4** Sketch a well labelled diagram of a typical plant cell and describe the structure and function of Mitochondria and Nucleus. [8]
4. **2059 Q.No. 4** Describe the structures and functions of any two major cytoplasmic organelles of eukaryotic cell. [3.5+3.5]
5. **2058 Q.No. 4** Describe the structure and functions of cell membrane and mitochondrion of a cell. [3.5+3.5]
6. **2055 Q.No. 3** Describe the structure and function of chromosomes. [3+2]
7. **2053 Q.No. 3** State the six main differences between Mitosis and Meiosis. [6]

## Unit 3: Biodiversity

### Answer in Very Short [1 Mark]

1. **2076 Set B Q.No. 1d** What is species? [1]
2. **2076 Set B Q.No. 1e** Elaborate bacillus. [1]
3. **2076 Set B Q.No. 1f** Define hormogonia. [1]
4. **2076 Set B Q.No. 1g** Mention about pin mould. [1]
5. **2076 Set C Q.No. 1d** Illustrate nomenclature. [1]
6. **2076 Set C Q.No. 1e** Elaborate spirillum. [1]
7. **2076 Set C Q.No. 1f** Define heterocyst. [1]
8. **2076 Set C Q.No. 1g** What is saprophyte? [1]
9. **2075 GIE Q.No. 1d** Define cryptogams. [1]
10. **2075 GIE Q.No. 1e** What does it mean by chemosynthetic bacteria? [1]
11. **2075 GIE Q.No. 1f** State about pyrenoids. [1]
12. **2075 GIE Q.No. 1g** Elaborate di-adelphous stamens. [1]
13. **2075 Set A Q.No. 1d** Define species. [1]
14. **2075 Set A Q.No. 1e** What is budding? [1]
15. **2075 Set A Q.No. 1f** How does scalariform conjugation differ from lateral conjugation? [1]
16. **2075 Set A Q.No. 1g** What is antheridiophore? [1]
17. **2075 Set B Q.No. 1d** What is binomial nomenclature? [1]
18. **2075 Set B Q.No. 1e** Mention the importance of Nostoc. [1]
19. **2075 Set B Q.No. 1f** Illustrate thallus. [1]
20. **2075 Set B Q.No. 1g** What does it mean by sporophytic generation? [1]
21. **2074 Supp Q.No. 1d** State about fungi. [1]
22. **2074 Supp Q.No. 1e** Mention the negative effect of bacteria. [1]
23. **2074 Supp Q.No. 1f** What is protonema? [1]
24. **2074 Supp Q.No. 1g** Define calyx. [1]
25. **2074 Set A Q.No. 1d** What does it mean by species? [1]
26. **2074 Set A Q.No. 1e** Write positive effects of bacteria. [1]
27. **2074 Set A Q.No. 1f** What do you mean by roots? [1]
28. **2074 Set A Q.No. 1g** Define corolla. [1]
29. **2074 Set B Q.No. 1d** Mention about bacteria. [1]
30. **2074 Set B Q.No. 1e** What do you mean by nomenclature? [1]
31. **2074 Set B Q.No. 1f** Write the functions of stem. [1]
32. **2074 Set B Q.No. 1g** Define androecium. [1]
33. **2073 Supp Q.No. 1d** What is meant by binomial system of nomenclature? [1]
34. **2073 Supp Q.No. 1e** Why bryophytes are known as amphibious plants? [1]
35. **2073 Supp Q.No. 1f** **2062 Q.No. 1g** What is protonema? [1]
36. **2073 Supp Q.No. 1g** What do you mean by cruciform corolla? [1]
37. **2073 Set C Q.No. 1d** What does it mean by phylogeny? [1]
38. **2073 Set C Q.No. 1e** Define cyanobacteria. [1]
39. **2073 Set C Q.No. 1f** Illustrate leaf. [1]
40. **2073 Set C Q.No. 1g** What do you mean by sporophytic generation? [1]
41. **2073 Set D Q.No. 1d** Define mycota. [1]
42. **2073 Set D Q.No. 1e** What is heterocyst? [1]

3. 2073 Set D Q.No. 1f 2069 Q. No. 1g Mention about sori. [1]
4. 2073 Set D Q.No. 1g State about cruciform corolla. [1]
5. 2072 Set C Q.No. 1d What do you mean by algae? [1]
6. 2072 Set C Q.No. 1e Write the two names of bacteria on the basis of its shape. [1]
7. 2072 Set C Q.No. 1g What does it mean by sporophytic generation? [1]
8. 2072 Set C Q.No. 1h Define homeostatis. [1]
9. 2072 Set D Q.No. 1d What do you mean by binomial nomenclature? [1]
10. 2072 Set D Q.No. 1e Give the importance of Nostoc. [1]
11. 2072 Set D Q.No. 1f What is thallus? [1]
12. 2072 Set D Q.No. 1g What does it mean by spore? [1]
13. 2072 Set E Q.No. 1d What do you mean by bryophyta? [1]
14. 2072 Set E Q.No. 1e Give the negative effect of bacteria. [1]
15. 2072 Set E Q.No. 1f What is rhizoids? [1]
16. 2072 Set E Q.No. 1g What does it mean by gamete? [1]
17. 2071 Supp Q.No. 1d Illustrate about biodiversity. [1]
18. 2071 Supp Q.No. 1e What do you mean by symbiotic bacteria? [1]
19. 2071 Supp Q.No. 1f Define pyrenids. [1]
20. 2071 Supp Q.No. 1g Elaborate about syngeneious stamen. [1]
21. 2071 Set C Q.No. 1d What do you mean by phylogeny? [1]
22. 2071 Set C Q.No. 1e Illustrate about Nostoc. [1]
23. 2071 Set C Q.No. 1f Define protonema. [1]
24. 2071 Set C Q.No. 1g Give significance of root nodule. [1]
25. 2071 Set D Q.No. 1d Illustrate about binomial nomenclature. [1]
26. 2071 Set D Q.No. 1e What do you mean by cyanobacteria. [1]
27. 2071 Set D Q.No. 1f Define algae. [1]
28. 2071 Set D Q.No. 1g Elaborate the persistent calyx. [1]
29. 2070 Supp Q.No. 1d What do you mean by protista? [1]
30. 2070 Supp Q.No. 1e State about protonema. [1]
31. 2070 Supp Q.No. 1f What does it mean by heterotrophic? [1]
32. 2070 Supp Q.No. 1g Mention about the raceme. [1]
33. 2070 Set C Q.No. 1d Define species. [1]
34. 2070 Set C Q.No. 1e What is heterocyst? [1]
35. 2070 Set C Q.No. 1f What do you understand by heterosporous? [1]
36. 2070 Set C Q.No. 1g 2066 Q.No. 1.g What is lichen? [1]
37. 2070 Set D Q.No. 1d Define taxonomy. [1]
38. 2070 Set D Q.No. 1e What is coenocytic hyphae? [1]
39. 2070 Set D Q.No. 1f Why ferns are called vascular cryptogam? [1]
40. 2070 Set D Q.No. 1g What is inflorescence? [1]
41. 2069 Supp Q.No. 1b Define heterosporous? [1]
42. 2069 Supp Q.No. 1c What is Oogamous? [1]
43. 2069 Supp Q.No. 1d Give and name one example of hypogynous flower? [1]
44. 2069 Supp Q.No. 1f Give two examples of gymnosperm. [1]
45. 2069 Supp Q.No. 1g What is the function of yeast? [1]
46. 2069 Q. No. 1e Write the name of bacteria on the basis of its shape. [1]
47. 2069 Q. No. 1f Define the function of leaf. [1]
48. 2068 Q.No. 1d Define binomial nomenclature. [1]
49. 2068 Q.No. 1e What is coenocytic? [1]
50. 2068 Q.No. 1f Define thallophytes. [1]
51. 2068 Q.No. 1g What is rhizoides? [1]
52. 2067 Q.No. 1d What do you mean by heterocyst? [1]
53. 2067 Q.No. 1e Why lichen is called a dual organism? [1]
54. 2067 Q.No. 1f What is a zygospore? [1]
55. 2067 Q.No. 1g Give one example of each of the following: [1]
- i. Vascular seedless plant. [1]
- ii. Vascular seeded plant [1]
56. 2067 Q.No. 1i Write the meaning of sporophyll with its types. [1]
57. 2067 Q.No. 1j Define a perianth. [1]
58. 2067 Supp Q.No. 1b Give the zoological name of scorpion of wall lizard. [1]
59. 2067 Supp Q.No. 1f Name the HCl secreting cells. [1]
60. 2067 Supp Q.No. 1g What is reflex arc? [1]
61. 2067 Supp Q.No. 1h Write the function of nictitating membrane. [1]
62. 2067 Supp Q.No. 1i Define polymorphism. [1]
63. 2066 Q.No. 1a Define adventitious root. [1]
64. 2066 Q.No. 1j Define aestivation. [1]
65. 2066 Q.No. 1a What do you understand by taxonomy? [1]
66. 2066 Q.No. 1c What do you understand by binomial nomenclature? [1]
67. 2066 Q.No. 1d What is incipient nucleus? [1]
68. 2066 Q.No. 1e What is sporangium? [1]
69. 2066 Old Q.No. 1a What is the prothallus of fern? [1]
70. 2066 Old Q.No. 1b How do the bacteria get their nutrition? [1]
71. 2066 Old Q.No. 1c Give two examples of cyanobacteria. [1]
72. 2066 Old Q.No. 1d Define alternation of generations. [1]
73. 2066 Old Q.No. 1e What is the genetic material of viruses? [1]
74. 2066 Old Q.No. 1e What is protandrous? [1]
75. 2065 Q. No. 1b What is rhizome? [1]
76. 2065 Q. No. 1e What is the function of gemma cup? [1]
77. 2065 Q. No. 1g Write the botanical name of potato and tomato. [1]
78. 2064 Q.No. 2 d Why Bryophytes are called amphibious plants? [1]
79. 2064 Q.No. 2 f What is the botanical name of Pinus? [1]
80. 2063 Q.No. 1 e What is taxonomic category? [1]
81. 2063 Q.No. 1 g Why ferns are called vascular cryptogams? [1]
82. 2063 Q.No. 2 c Differentiate between ray and disc florets. [1]
83. 2063 Q.No. 2 g Write two points of the demerits of 2 kingdom system of classification. [1]
84. 2062 Q.No. 1 d What is two kingdom type of classification? [1]
85. 2061 Q.No. 2 b Define heterocyst. [1]
86. 2061 Q.No. 2 e Name the types of anther found in family cruciferae and compositae. [1]
87. 2060 Q.No. 1 f Write the function of "akinetes" in Spirogyra. [1]
88. 2060 Q.No. 2 g Classify mustard plant in hierarchic system of classification. [1]
89. 2059 Q.No. 2 a Mention the advantage of five kingdoms system of classification. [1]

130. 2059 Q.No. 2 b Give the concept of binomial system of nomenclature. [1]
131. 2059 Q.No. 2 c State the function of "Gemma cups" in Marchantia. [1]
132. 2059 Q.No. 2 e Write the function of mycorrhizal roots in Pinus. [1]
133. 2059 Q.No. 2 g Give the type of ovary you find in legumes. [1]
134. 2058 Q.No. 2 a Name the father of taxonomy. [1]
135. 2058 Q.No. 2 b Classify the mustard plant in the hierarchic system. [1]
136. 2058 Q.No. 2 f Name the types of fruit in Gramineae and Solanaceae. [1]
137. 2058 Q.No. 2 g Why 'Bryophytes are known as amphibious plants'? [1]
138. 2058 Q.No. 2 h Give the function of mesosomes of a bacterial cell. [1]
139. 2057 Q.No. 10 f Write short note on Economic importance of fungi [2]
140. 2056 Q.No. 2 a Write hierarchic system in classification. [1]
141. 2056 Q.No. 2 b Give the shortcoming of two kingdoms system of classification. [1]
142. 2056 Q.No. 2 c Write the function of 'akinetes' in Spirogyra. [1]
143. 2056 Q.No. 2 d Give the type of vascular bundle found in Pinus stem. [1]
144. 2055 Q.No. 1 vi 'Bacteria are the nature's scavengers', justify. [2]
145. 2055 Q.No. 10 c Write short note Cycas ovule. [2]
146. 2053 Q.No. 1 a Give the methods of reproduction in Spirogyra. [2]
147. 2052 Q.No. 1 d Why spirogyra is an eukaryote? [1.5]
148. 2052 Q.No. 1 c What is binomial nomenclature? [1.5]
149. 2051 Q.No. 2 a Define Binomial nomenclature with example. [2]
150. 2051 Q.No. 10 f Write short note on Syngonium anthers. [2]
- Answer in Brief [3 Marks]**
1. 2076 Set B Q.No. 2d Structure of Nostoc. [3]
2. 2076 Set B Q.No. 2e Economic importance of gymnosperm. [3]
3. 2076 Set B Q.No. 2f Types of stem. [3]
4. 2076 Set C Q.No. 2d Economic importance of bacteria. [3]
5. 2076 Set C Q.No. 2e Female cone of Pinus. [3]
6. 2076 Set C Q.No. 2f Types of leaf. [3]
7. 2075 GIE Q.No. 2d 2071 Supp Q.No. 2d Structure and economic importance of Nostoc. [3]
8. 2075 GIE Q.No. 2e Importance of gymnosperms in Nepal. [3]
9. 2075 GIE Q.No. 2f Structure and significance of Lichen. [3]
10. 2075 Set A Q.No. 2d 2071 Supp Q.No. 2f Describe the structure of mucor. [3]
11. 2075 Set A Q.No. 2e Describe the characteristics of gymnosperm. [3]
12. 2075 Set B Q.No. 2d 2070 Set C Q.No. 2e 2069 Q. No. 2d Structure of spirogyra. [3]
13. 2075 Set B Q.No. 2e Structure of cycas. [3]
14. 2074 Supp Q.No. 2d Differentiate between artificial and natural system of classification. [3]
15. 2074 Supp Q.No. 2e Vegetative structure of Spirogyra. [3]
16. 2074 Supp Q.No. 2f Economic importance of Pinus. [3]
17. 2074 Set A Q.No. 2d Scope of biodiversity. [3]
18. 2074 Set A Q.No. 2e Lateral conjugation of spirogyra. [3]
19. 2074 Set A Q.No. 2f 2073 Set D Q.No. 2e 2066 Q.No. 2 f Male cone of Pinus. [3]
20. 2074 Set B Q.No. 2d Drawbacks of two kingdom system of classification. [3]
21. 2074 Set B Q.No. 2e Structure and function of prothallus of fern. [3]
22. 2074 Set B Q.No. 2f Economic importance of gymnosperm. [3]
23. 2073 Supp Q.No. 2d The economic importances of bacteria [3]
24. 2073 Supp Q.No. 2e 2073 Set C Q.No. 2d 2066 Q.No. 2 d Structure of yeast. [3]
25. 2073 Supp Q.No. 2g 2070 Set D Q.No. 2g Structure of virus. [3]
26. 2073 Set C Q.No. 2e Characteristics of gymnosperm. [3]
27. 2073 Set C Q.No. 2f Characteristics of virus. [3]
28. 2073 Set D Q.No. 2d Economic importance of bacteria. [3]
29. 2073 Set D Q.No. 2f Structure and economic importance of virus. [3]
30. 2072 Set C Q.No. 2d Structure of Nostoc and its importance. [3]
31. 2072 Set C Q.No. 2e Structure of Pinus. [3]
32. 2072 Set D Q.No. 2d Scalariform conjugation. [3]
33. 2072 Set E Q.No. 2d Structure of yeast and its importance. [3]
34. 2072 Set E Q.No. 2e Differences between gymnosperm and angiosperm. [3]
35. 2071 Supp Q.No. 2e Direct lateral conjugation is Spirogyra. [3]
36. 2071 Set C Q.No. 2d Structure and economic importances of bacteria. [3]
37. 2071 Set C Q.No. 2e Asexual reproduction of Spirogyra. [3]
38. 2071 Set C Q.No. 2f Structure of antheridiophore in Marchantia. [3]
39. 2071 Set D Q.No. 2d Economic importance of fungi. [3]
40. 2071 Set D Q.No. 2e Indirect lateral conjugation in Spirogyra. [3]
41. 2071 Set D Q.No. 2f Structure of Marchantia. [3]
42. 2070 Supp Q.No. 2d Economic importance of yeast. [3]
43. 2070 Supp Q.No. 2e Structure of bacteria. [3]
44. 2070 Supp Q.No. 2f Importance of virus. [3]
45. 2070 Set C Q.No. 2d Describe the prothallus of fern with the help of diagram. [3]
46. 2070 Set C Q.No. 2g Economic importance of virus. [3]
47. 2070 Set D Q.No. 2d 2060 Q.No. 3f The sporophyte of marchantia. [3]
48. 2070 Set D Q.No. 2e An account of scalariform conjugation of spirogyra. [3]
49. 2069 Supp Q.No. 2d Describe the structure and function of protonema. [3]
50. 2069 Supp Q.No. 2e Describe the scalariform conjugation. [3]
51. 2069 Supp Q.No. 2f What is binomial nomenclature system with example? [3]
52. 2069 Q. No. 2g Distribution of Pinus and its importance. [3]
53. 2068 Q.No. 2d Elaborate the economic importance of fungi. [3]
54. 2068 Q.No. 2e Describe the scalariform conjugation. [3]
55. 2067 Q.No. 2 d Describe the structure of fern prothallus. [3]

5. **2067 Q.No. 2 e** Describe the structure of megasporophyll of cycas. [3]
7. **2067 Q.No. 2 g** Justify with appropriate reasons that viruses are living beings. [3]
8. **2067 Supp Q.No. 2 b** The process of conjugation in *Paramecium* up to ex conjugants. [3]
9. **2067 Supp Q.No. 2 d** Write the differences between *scolopendra* and *julus*. [3]
10. **2067 Supp Q.No. 2 e** Draw a well labelled diagram of T.S. of stomach of frog. (No description) [3]
11. **2066 Q.No. 2 e** Describe the scalariform conjugation in *Spirogyra*. [3]
12. **2066 Old Q.No. 2 b** Describe in brief Vegetative structure of *Spirogyra*. [3]
13. **2066 Old Q.No. 2 c** Describe in brief Female cone of *Pinus*. [3]
14. **2066 Old Q.No. 3 or** Describe the life cycle of *Mucor*. [3]
15. **2064 Q.No. 3 e** Discuss the merits of 5 kingdom system of classification over 2 kingdom system. [3]
16. **2064 Q.No. 3 h** Discuss the agricultural economic importance of Bacteria. [3]
17. **2063 Q.No. 3 e** Mention the importance of Yeast. [3]
18. **2063 Q.No. 3 g** Describe the asexual reproductive process of *Mucor*. [3]
19. **2062 Q.No. 3 d** Distribution of *Pinus* in Nepal. [3]
20. **2061 Q.No. 3 a** Define the term genus and species with suitable examples. [3]
21. **2061 Q.No. 3 b** Write the different structural types and economic importance of bacteria. [3]
22. **2061 Q.No. 3 e** Describe in brief the female gametophyte in *Marchantia*. [3]
23. **2060 Q.No. 3 g** Give the sketch of the life cycle of yeast. [3]
24. **2060 Q.No. 3 h** Discuss the advantages of 5-kingdom classification over 2-kingdom classification. [3]
25. **2059 Q.No. 3 b** Give the economic importance of bacteria. [3]
26. **2059 Q.No. 3 g** Mention characters of the lichens. [3]
27. **2058 Q.No. 3 f** Draw the L.S. capsule of *Funaria* with labellings. [3]
28. **2058 Q.No. 3 g** Give any two characters of red and brown algae. Also mention their differences. [3]
29. **2057 Q.No. 9 b** Differentiate between Carpel and stamen [3]
30. **2057 Q.No. 9 a** Differentiate between Gametophyte and sporophyte [3]
31. **2056 Q.No. 3 e** Give an account of the Compositae flower. [3]
32. **2056 Q.No. 3 f** Explain the economic importance of fungi. [3]
33. **2055 Q.No. 9 c** Differentiate between Gametophytes of *Marchantia* and that of Fern. [3]
34. **2051 Q.No. 8 a** Explain Capitulum of sunflower with the help of diagram. [3]
- Identifying characters, floral diagram and floral formula with two examples of economic value. [7.5]
3. **2076 Set C Q.No. 3** Define alternation of generation and describe the process with reference to life cycle of Moss. [7.5]
4. **2076 Set C Q.No. 3 OR 2073 Set D Q.No. 3 OR 2071 Set D Q.No. 3 OR** Describe the family gramineae in semi-technical terms with identifying characters, floral diagram and floral formula with two examples of economic value. [7.5]
5. **2075 GIE Q.No. 3** Describe the structure and vegetative reproduction of Yeast with necessary diagrams. [7.5]
6. **2075 GIE Q.No. 3 OR 2074 Supp Q.No. 3 OR 2074 Set B Q.No. 3 OR 2072 Set C Q.No. 3 OR 2069 Q. No. 3 OR** Describe the family solanaceae in semi-technical terms with identifying characters, floral diagram and floral formula with two examples of economic value. [7.5]
7. **2075 Set A Q.No. 3** Describe the life cycle of *Marchantia*. [7.5]
8. **2075 Set A Q.No. 3 OR** Describe the Leguminosae with necessary diagrams and give two examples of economic value of this family. [7.5]
9. **2075 Set B Q.No. 3** Define alternation of generation, describe it with the special references to the life cycle of Moss with necessary diagrams. [7.5]
10. **2075 Set B Q.No. 3 OR 2074 Set A Q.No. 3 OR 2072 Set D Q.No. 3 OR 2070 Supp Q.No. 3 Or** Describe the family Leguminosae in semi-technical terms with identifying characters, floral diagrams and floral formula with two examples of economic value of this family. [7.5]
11. **2074 Supp Q.No. 3** Define alternation of generation and describe the process with the reference of life cycle of Moss. [7.5]
12. **2074 Set A Q.No. 3** Define alternation of generation and discuss the process with special reference to life cycle of Fern. [7.5]
13. **2074 Set B Q.No. 3** What is alternation of generation? Describe the process with special reference to life history of *Funaria*. [7.5]
14. **2073 Supp Q.No. 3 2070 Set C Q.No. 3** What is alternation of generation? Describe life cycle of *Funaria*. [7.5]
15. **2073 Supp Q.No. 3 OR** Describe the family compositae in semi-technical terms, with necessary diagram and give botanical name of any two economic importance plants of same family. [7.5]
16. **2073 Set C Q.No. 3** What is alternation of generation? Describe it with the special reference to the life cycle of Fern. [7.5]
17. **2073 Set D Q.No. 3** Describe the structure and reproduction of *Spirogyra* with necessary diagrams. [7.5]
18. **2072 Set C Q.No. 3** Define alternation of generation and describe it in the reference of Moss with necessary diagrams. [7.5]
19. **2072 Set D Q.No. 3** What is alternation of generation? Describe it with the reference of *Marchantia* with necessary diagrams. [7.5]
20. **2072 Set E Q.No. 3** Define alternation of generation, and describe it in the reference of *Marchantia* with necessary diagrams. [7.5]
21. **2072 Set E Q.No. 3 OR** Describe the family compositae in semitechnical terms with distinguishing characters, floral diagram and floral formula with two examples of the economic importance. [7.5]

### Long Answer Questions [7.5 Marks]

1. **2076 Set B Q.No. 3** Describe the structure and sexual reproduction in *Marchantia* with suitable diagrams. [7.5]
2. **2076 Set B Q.No. 3 OR 2073 Set C Q.No. 3 OR 2071 Supp Q.No. 3 OR** Describe the family cruciferae in semi-technical terms with

22. **2071 Supp Q.No. 3** Define alternation of generation and describe it in the life cycle of *Marchantia*. [7.5]
23. **2071 Set C Q.No. 3** Define alternation of generation and describe it in the life cycle of *Dryopteris*. [7.5]
24. **2071 Set C Q.No. 3 OR** Describe the family *Cruciferae* in semitechnical terms with distinguishing characters, floral diagram and floral formula with two examples of the economic importance. [7.5]
25. **2071 Set D Q.No. 3** Define alternation of generation and describe it in the life cycle of *Fern*. [7.5]
26. **2070 Supp Q.No. 3** Describe in detail about structure and reproduction of *Spirogyra* with necessary diagrams. [7.5]
27. **2070 Set C Q.No. 3 Or** Describe the family *compositae* with necessary diagrams. And mention the botanical name of two plants belonging to this family. [7.5]
28. **2070 Set D Q.No. 3** Describe the life cycle of *Mucor* with well labelled diagrams. [7.5]
29. **2070 Set D Q.No. 3 Or** Describe the family *papilionaceae* with necessary diagrams. Write any two plants belong to this sub family. [7.5]
30. **2069 Supp Q.No. 3** Describe the family *cruciferae* in semi technical terms with distinguishing characters, floral diagram and floral formula with two examples of its economic importance. [7.5]
31. **2069 Supp Q.No. 3 Or** Explain life cycle of pteridophyte with emphasis on the alternation of generation. [7.5]
32. **2069 Q. No. 3** Describe the structure and life cycle of *Marchantia* in detail. [7.5]
33. **2068 Q.No. 3** Describe the life cycle of *Fern* with alternation of generation. [7.5]
34. **2068 Q.No. 3 Or** Describe the *Cruciferae* with necessary diagrams and give two examples of economic value of this family. [7.5]
35. **2067 Q.No. 3** Describe the distinguishing characteristics of family *Solanaceae* with floral diagram and floral formula. Give scientific names of any two plants of this family. [7.5]
36. **2067 Q.No. 3 Or** Explain the alternation of generations based on the life cycle of *Funaria*. [7.5]
37. **2067 Supp Q.No. 4** Describe internal structure of the heart and its working mechanism in frog. [7.5]
38. **2067 Supp Q.No. 4 Or** Give an account of reproductive organs of earthworm. [7.5]
39. **2066 Q.No. 3 or** Describe the family *Cruciferae* with necessary diagrams and give the two examples of economic value of this family. [7.5]
40. **2066 Old Q.No. 3** Describe the characteristic features of family *Cruciferae* with its floral diagram and formula. Give scientific names of any two edible plants of this family. [7.5]
41. **2066 Q.No. 3** Describe the life cycle of *Dryopteris* with alternation of generation. [7.5]
42. **2065 Q. No. 3** Describe the life cycle of *Marchantia* showing alternation of generation. [7.5]
43. **2065 Q. No. 5** Describe the family *papilionaceae* with necessary diagrams and give two examples of economic value of this family. [8]
44. **2064 Q.No. 5** Write down the structure and reproduction of *spirogyra*. [7]
45. **2064 Q.No. 7 OR** Give the distinguishing features of *Solanaceae* family with floral diagram and floral formula. Also write the scientific name of two plants of economic of this family. [7]
46. **2063 Q.No. 5** What is alternation of generation? Describe life cycle of *Funaria*. [7]
47. **2063 Q.No. 7 OR** Give the distinct features of *cruciferae* in semi-technical terms giving its floral diagram, formula and two examples of plants (scientific name) of economic importance. [7]
48. **2062 Q.No. 5** Describe the life cycle of *Marchantia* with the help of labeled diagram. [7]
49. **2062 Q.No. 7** Give the salient features of *Gramineae* in semitechnical terms with its floral diagram, formula and two scientific names of economically important plants of this family. [9]
50. **2061 Q.No. 5** Describe the diagrammatic life cycle of *Funaria*. [7]
51. **2061 Q.No. 7 OR** Describe the family *compositae* with necessary diagram and give two examples of economic value of the same family. [8]
52. **2060 Q.No. 7** Give the distinguishing features of *Solanaceae* with its floral diagram, F. formal and examples of two plants of economic importances. [8]
53. **2060 Q.No. 7 OR** What is alternation of generation? Discuss this phenomenon in the life cycle of "*Funaria*". [8]
54. **2059 Q.No. 7** Give the distinguishing characters of *Cruciferae* in semi-technical terms. Give the floral formula and floral diagram as well as scientific name of any two economically important plants of the same family. [5+3]
55. **2059 Q.No. 7 OR** Describe the structure and conjugation mode of reproduction in *Spirogyra*. [3+5]
56. **2058 Q.No. 5** Describe the diagrammatic life-cycle of *Marchantia*. [7]
57. **2056 Q.No. 5** What is alternation of generation? Discuss it in the life-cycle of *Funaria*. [2+6]
58. **2056 Q.No. 5 OR** Give the distinguishing features of *Solanaceae* with its floral formula and floral diagram. Also mention botanical name of any four economically important plants of this family. [8]
59. **2052 Q.No. 8** Describe in semi-technical language the taxonomy of the family *solanacea* with special reference to floral formula and floral diagram. [5+2.5+2.5]
60. **2055 Q.No. 2** Discuss the economic importance of virus and bacteria. [6]

### Unit 4: Biota and their Environment

#### Answer in Very Short (1 Mark)

1. **2076 Set B Q.No. 1h** Illustrate hydrosphere. [1]
2. **2076 Set B Q.No. 1i** What is predation? [1]
3. **2076 Set B Q.No. 1j** **2075 Set A Q.No. 1i** **2060 Q.No. 1 e** Define food web. [1]
4. **2076 Set C Q.No. 1h** What is the meaning of atmosphere? [1]

5. 2076 Set C Q.No. 1f State about mutualism. [1]
6. 2076 Set C Q.No. 1j What is grazing food chain? [1]
7. 2075 GIE Q.No. 1h State synecology. [1]
8. 2075 GIE Q.No. 1j Mention about climax community. [1]
9. 2075 GIE Q.No. 1j What do you mean by ozone depletion? [1]
10. 2075 Set A Q.No. 1h Define succession. [1]
11. 2075 Set A Q.No. 1j What is the role of producer? [1]
12. 2075 Set B Q.No. 1h 2071 Set C Q.No. 1j Define synecology. [1]
13. 2075 Set B Q.No. 1j Explain predation. [1]
14. 2075 Set B Q.No. 1j State about green house effect. [1]
15. 2074 Supp Q.No. 1h What do you mean by detritus food chain? [1]
16. 2074 Supp Q.No. 1j Define symbiosis. [1]
17. 2074 Supp Q.No. 1j Mention about primary succession. [1]
18. 2074 Set A Q.No. 1h Illustrate food web. [1]
19. 2074 Set A Q.No. 1j What is antibiotics? [1]
20. 2074 Set A Q.No. 1j Mention about ammonification. [1]
21. 2074 Set B Q.No. 1h 2066 Q.No. 1 h 2064 Q.No. 1 b What is food chain? [1]
22. 2074 Set B Q.No. 1j Define commensalism. [1]
23. 2074 Set B Q.No. 1j Define nitrogen fixation. [1]
24. 2073 Supp Q.No. 1h Name any two gases which cause green house effect. [1]
25. 2073 Supp Q.No. 1i What is plant succession? [1]
26. 2073 Supp Q.No. 1j What is nitrogen fixation? [1]
27. 2073 Set C Q.No. 1h Explain detritus food chain. [1]
28. 2073 Set C Q.No. 1i. Mention about predation. [1]
29. 2073 Set C Q.No. 1j. State about succession. [1]
30. 2073 Set D Q.No. 1h. What do you mean by grazing food chain? [1]
31. 2073 Set D Q.No. 1i Define scavenging. [1]
32. 2073 Set D Q.No. 1j. Illustrate nitrogen assimilation. [1]
33. 2072 Set C Q.No. 1i. Point out about parasitism. [1]
34. 2072 Set C Q.No. 1j. Mention about green house effect. [1]
35. 2072 Set D Q.No. 1h Define autecology. [1]
36. 2072 Set D Q.No. 1i. Point out about competition. [1]
37. 2072 Set D Q.No. 1j. Mention about food chain. [1]
38. 2072 Set E Q.No. 1h. Define abiotic factors. [1]
39. 2072 Set E Q.No. 1i. Point out about predation. [1]
40. 2072 Set E Q.No. 1j. State about dominance. [1]
41. 2071 Supp Q.No. 1h Mention about climax community. [1]
42. 2071 Supp Q.No. 1i. What do you understand by commensalism? [1]
43. 2071 Supp Q.No. 1j. Illustrate about green house effects. [1]
44. 2071 Set C Q.No. 1h Mention about ecological succession. [1]
45. 2071 Set C Q.No. 1i. Illustrate about competition. [1]
46. 2071 Set D Q.No. 1h Mention about detritus food chain. [1]
47. 2071 Set D Q.No. 1i. What does it mean by predation? [1]
48. 2071 Set D Q.No. 1j. Illustrate about acid rain. [1]
49. 2070 Supp Q.No. 1h Define ozone depletion. [1]
50. 2070 Supp Q.No. 1i. Point out about scavenging. [1]
51. 2070 Supp Q.No. 1j. State about food chain. [1]
52. 2070 Set C Q.No. 1h 2068 Q.No. 1j Define food chain. [1]
53. 2070 Set C Q.No. 1j 2068 Q.No. 1j What is acid rain? [1]
54. 2070 Set C Q.No. 1j Mention role of decomposers in ecosystem. [1]
55. 2070 Set D Q.No. 1h What is xerosere? [1]
56. 2070 Set D Q.No. 1i. What do you mean by parasitism? [1]
57. 2070 Set D Q.No. 1j What is the impact of altitude in vegetation? [1]
58. 2069 Supp Q.No. 1h Define parasitism. [1]
59. 2069 Supp Q.No. 1i. What is molecular biology? [1]
60. 2069 Supp Q.No. 1j. Define acid rain. [1]
61. 2069 Q. No. 1h How do you mean autecology? [1]
62. 2069 Q. No. 1i. State about predation. [1]
63. 2069 Q. No. 1j. Elaborate climax community. [1]
64. 2068 Q.No. 1h Define abiotic factor. [1]
65. 2067 Supp Q.No. 1 j Name the smallest national park of Nepal. [1]
66. 2066 Old Q.No. 1 g Define trophic level. [1]
67. 2065 Q. No. 1 a Define a grazing food chain. [1]
68. 2065 Q. No. 1 d Mention the abiotic components of ecosystem. [1]
69. 2064 Q.No. 2 b Define ecological Pyramid. [1]
70. 2064 Q.No. 1 f Why green algae is called producer? [1]
71. 2063 Q.No. 1 a What is natural resource? [1]
72. 2063 Q.No. 2 a What is food web? [1]
73. 2060 Q.No. 1 d What are ecotypes? [1]
74. 2060 Q.No. 2 d What are decomposers? [1]
75. 2059 Q.No. 1 e Give any two examples of secondary consumers of a pond. [1]
76. 2058 Q.No. 1 d Name any two gases which cause green house effect. [1]
77. 2057 Q.No. 1 g Role of predator in the balance of an ecosystem. [2]
78. 2057 Q.No. 10 d Write short note on Trophic level. [2]
79. 2056 Q.No. 2 f Which bacteria in legume roots is used for nitrogen fixation? [1]
80. 2055 Q.No. 1 vii. Give a graphic diagram of the carbon cycle. [2]
81. 2054 Q.No. 9 d Give two differences between Population and community [2]
82. 2052 Q.No. 1 i Give the name of three ecological factors. [1.5]
83. 2051 Q.No. 2 b Define Parasitism with example. [2]

**Answer in Brief [3 Marks]**

- 2076 Set B Q.No. 2g Significance of water management [3]
- 2076 Set C Q.No. 2g Significance of land management. [3]
- 2075 GIE Q.No. 2g 2072 Set E Q.No. 2g Importance of water management. [3]
- 2075 Set A Q.No. 2f Discuss the nitrogen cycle in nature. [3]
- 2075 Set B Q.No. 2f Nitrogen cycle. [3]
- 2075 Set B Q.No. 2g Consequences of deforestation. [3]
- 2074 Supp Q.No. 2g Nitrogen cycle in detail (chart only). [3]
- 2074 Set A Q.No. 2g Importance of land management. [3]
- 2074 Set B Q.No. 2g Significance of afforestation. [3]

10. **2073 Supp Q.No. 2f** **2072 Set D Q.No. 2f** **2071 Set C Q.No. 2g** The carbon cycle [3]
11. **2073 Set C Q.No. 2g** Impact of deforestation. [3]
12. **2073 Set D Q.No. 2g** Importance of mountain ecosystem. [3]
13. **2072 Set C Q.No. 2f** Concept of mountain ecosystem. [3]
14. **2072 Set D Q.No. 2e** Structure of cycas. [3]
15. **2072 Set D Q.No. 2g** Consequences of deforestation. [3]
16. **2072 Set E Q.No. 2f** Depletion of ozone layer. [3]
17. **2071 Supp Q.No. 2g** Disadvantages of deforestation. [3]
18. **2071 Set D Q.No. 2g** Benefit of afforestation. [3]
19. **2070 Supp Q.No. 2g** Significant role of forest. [3]
20. **2070 Set C Q.No. 2f** **2059 Q.No. 3h** Mention the consequences of green house effects. [3]
21. **2070 Set D Q.No. 2f** The importance of forest. [3]
22. **2069 Q. No. 2e** Importance of N<sub>2</sub> cycle in nature. [3]
23. **2069 Q. No. 2f** Consequences of deforestation. [3]
24. **2068 Q.No. 2f** **2064 Q.No. 3f** Discuss the carbon cycle in nature. [3]
25. **2067 Q.No. 2f** What are the physical constraints of a mountain ecosystem? [3]
26. **2067 Supp Q.No. 2f** The importance of wildlife conservation. [3]
27. **2067 Supp Q.No. 2g** The advantage of bird migration. [3]
28. **2066 Q.No. 1f** Mention abiotic factors. [3]
29. **2066 Old Q.No. 1f** What do you understand by primary productivity? [3]
30. **2066 Old Q.No. 2d** Describe in brief Impact of Green house effect on environment. [3]
31. **2066 Old Q.No. 2e** Describe in brief meaning and causes of ecological succession. [3]
32. **2065 Q. No. 2d** Describe in short N<sub>2</sub> cycle in nature. [3]
33. **2065 Q. No. 2e** Describe in short Benefits of afforestation. [3]
34. **2063 Q.No. 3i** Define ecosystem and mention the main components of ecosystem. [3]
35. **2063 Q.No. 3j** What is deforestation? Discuss the causes of deforestation. [3]
36. **2062 Q.No. 3h** Depletion of ozone layer, a threat to life. [3]
37. **2060 Q.No. 3e** **2056 Q.No. 3j** Discuss the consequences of acid rain. [3]
38. **2056 Q.No. 3j** Explain the role of light in an aquatic ecosystem. [3]
5. **2075 Set B Q.No. 4** What is ecosystem? Describe it in detail about pond ecosystem with necessary diagrams and examples. [8]
6. **2074 Supp Q.No. 4** Define ecosystem. Describe the structural and functional aspects of grassland ecosystem with necessary examples. [8]
7. **2074 Set A Q.No. 4** What is ecosystem? Discuss in detail about the main components of ecosystem with suitable examples. [8]
8. **2074 Set B Q.No. 4** Define ecological pyramid and describe in detail about the ecological pyramids with the reference to the number, biomass and energy with necessary figures. [8]
9. **2073 Supp Q.No. 4** Describe the causes and effects of deforestation. Also discuss its controlling measures with suitable examples. [8]
10. **2073 Set C Q.No. 4** Define succession and discuss the stages involved in the process of Xerosere with suitable examples. [8]
11. **2073 Set D Q.No. 4** What is ecosystem? Describe in detail about the pond ecosystem. [8]
12. **2072 Set C Q.No. 4** **2072 Set D Q.No. 4** Define ecosystem, describe in detail about grassland ecosystem with suitable examples. [8]
13. **2072 Set E Q.No. 4** Define succession and explain the detail process involved in the hydrosere with suitable examples. [8]
14. **2071 Supp Q.No. 4** Explain bio-geochemical cycle and describe it with reference to the nitrogen cycle in detail. [8]
15. **2071 Set C Q.No. 4** Describe the ecological pyramids in detail with the reference to number biomass and energy. [8]
16. **2071 Set D Q.No. 4** Define ecosystem and describe pond ecosystem with its components in detail. [8]
17. **2070 Supp Q.No. 4** What is ecosystem? State in detail about grassland ecosystem with relevant examples. [8]
18. **2070 Set C Q.No. 4** Describe different types of ecological factors in detail with suitable examples. [8]
19. **2070 Set D Q.No. 4** Discuss the main components of ecosystems in detail with suitable examples. [8]
20. **2069 Supp Q.No. 4** Define ecosystem, describe in detail about the aquatic system. [8]
21. **2069 Q. No. 4** Define succession and describe the process of successions in detail. [8]
22. **2068 Q.No. 4** What is ecosystem? Describe in detail about the pond ecosystem. [8]
23. **2067 Q.No. 4** Define ecosystem and describe food chain, Trophic level and ecological pyramids of a grassland ecosystem. [8]
24. **2066 Q.No. 4** Define ecosystem and discuss the main components of ecosystem. [8]
25. **2065 Q. No. 4** Define ecosystem. Discuss in detail about the pond ecosystem. [8]
26. **2063 Q.No. 7** Discuss the grass land ecosystem. [8]
27. **2062 Q.No. 7 OR** What is an ecosystem? Explain it with reference to a pond. [9]
28. **2061 Q.No. 4** What are the major causes of forest and wildlife depletion? Describe its methods of conservation. [7]

**Long Answer Questions [7.5 Marks]**

1. **2076 Set B Q.No. 4** Define ecosystem and describe the structural and functional aspects of pond ecosystem with suitable examples. [8]
2. **2076 Set C Q.No. 4** What is ecosystem? Describe the structural and functional aspects of grassland ecosystem with necessary examples. [8]
3. **2075 GIE Q.No. 4** What is succession? Explain the process involved in the xerosere with suitable examples. [8]
4. **2075 Set A Q.No. 4** Define ecosystem, and describe in detail about the grassland ecosystem. [8]

29. **2061 Q.No. 7** Define ecosystem. Describe abiotic factors in a terrestrial ecosystem. Mention the flow of energy in the trophic level. [8]
30. **2060 Q.No. 5** What is deforestation? Discuss the causes and consequences of deforestation. [1+3+3]
31. **2059 Q.No. 5** Write down the structural and functional aspects of a pond ecosystem. [3.5+3.5]
32. **2058 Q.No. 7** Define trophic level. How energy flows between the trophic levels in the pond ecosystem? [1+7]
33. **2058 Q.No. 7 OR** Describe the measures used for forest conservation. [8]
34. **2057 Q.No. 5** Point out various abiotic factors in an ecosystem. [6]
35. **2057 Q.No. 7** Describe the carbon cycle with a labeled diagram. [5+2]
36. **2055 Q.No. 5** How the temperature and the light influence the distribution of organism in an ecosystem? [3+3]
37. **2054 Q.No. 5** Draw a carbon-cycle and mention its significance in natural ecosystem. [8]
38. **2052 Q.No. 3** Define ecosystem and discuss the biotic and abiotic components of pond ecosystem. [7]
39. **2051 Q.No. 9** Discuss the food-chain in a pond ecosystem. [6]
21. **2071 Supp Q.No. 1b** How is biology interrelated with physics? [1]
22. **2071 Set C Q.No. 1b** Give any two scopes of zoology. [1]
23. **2071 Set D Q.No. 1a** What do you mean by anatomy? [1]
24. **2070 Supp Q.No. 1a** Which branch of Biology deals with the fundamental chemistry of life? [1]
25. **2070 Supp Q.No. 1b** How would you define growth? [1]
26. **2070 Supp Q.No. 1j** What do you mean by anatomy? [1]
27. **2070 Set C Q.No. 1a** Which branch of biology deals with the physical and chemical functions of the tissues and organs? [1]
28. **2070 Set D Q.No. 1a** Define the term physiology. [1]
29. **2070 Set D Q.No. 1b** What can you do after studying biology? [1]
30. **2069 Supp Q.No. 1a** Define histology. [1]
31. **2069 Q. No. 1a** Define the term Herpetology. [1]
32. **2069 Q. No. 1b** Give a reason to show the relation of zoology with chemistry. [1]
33. **2068 Q.No. 1a** Define molecular biology. [1]
34. **2068 Q.No. 1b** Name the branch of biology that deals with the study of fossils. [1]
35. **2067 Q.No. 1e** Define Physiology. [1]
36. **2066 Q.No. 1 b** How is biology inter related with other sciences? [1]
37. **2066 Old Q.No. 1 a** Define helminthology. [1]
38. **2065 Q. No. 1 a** What is morphology? [1]
39. **2064 Q.No. 1 a** Define Phycology. [1]
40. **2060 Q.No. 2 a** Define the terms Mycology and Anthropology. [1]
41. **2056 Q.No. 1 e** Mention the contribution made by Aristotle. [1]

## Section B (Zoology)

### Unit 1: Introduction to Biology

#### Answer in Very Short [1 Mark]

1. **2076 Set B Q.No. 1a** What do you understand by apiculture? [1]
2. **2076 Set C Q.No. 1a** How is growth different from reproduction? [1]
3. **2076 Set C Q.No. 1b** **2067 Q.No. 1 h** Who coined the term Biology? [1]
4. **2075 Set B Q.No. 1a** What is ethology and ecology? [1]
5. **2075 Set B Q.No. 1b** Biology is science of exception, give example. [1]
6. **2074 Supp Q.No. 1a** Write down the meaning of cnidology and toxicology. [1]
7. **2074 Supp Q.No. 1b** What is sensitivity? [1]
8. **2074 Set A Q.No. 1a** Define the term Ornithology. [1]
9. **2074 Set A Q.No. 1c** How is Zoology related with Chemistry? [1]
10. **2074 Set B Q.No. 1a** What are Physiology and Cytology? [1]
11. **2073 Supp Q.No. 1a** Define the term histology. [1]
12. **2073 Supp Q.No. 1b** Give two examples of life process. [1]
13. **2073 Set C Q.No. 1a** How is Histology different from cytology? [1]
14. **2073 Set D Q.No. 1a** Write the meaning of Anatomy and Morphology. [1]
15. **2073 Set D Q.No. 1b** Mention one important scope of zoology. [1]
16. **2072 Set C Q.No. 1a** Give the meaning of Cytology and Histology. [1]
17. **2072 Set D Q.No. 1a** Which branch of biology deals with the building blocks of all life? [1]
18. **2072 Set D Q.No. 1j** Define anatomy. [1]
19. **2072 Set E Q.No. 1f** Define palaeontology. [1]
20. **2071 Supp Q.No. 1a** Define the term morphology. [1]

#### Answer in Brief [3 Marks]

1. **2073 Set C Q.No. 2a** The relation of Biology with other Sciences. [3]
2. **2067 Supp Q.No. 2b** Differentiate between DNA and RNA. [3]
3. **2058 Q.No. 3 a** Explain the relations of biology with other sciences. [3]

### Unit 2: Evolution of Life

#### Answer in Very Short [1 Mark]

1. **2076 Set B Q.No. 1b** Define genetic engineering. [1]
2. **2076 Set B Q.No. 1c** What is the first form of life? [1]
3. **2076 Set C Q.No. 1c** **2072 Set C Q.No. 1h** State Biogenetic Law. [1]
4. **2076 Set C Q.No. 1d** What are coacervates? [1]
5. **2075 GIE Q.No. 1c** What is panspermia? [1]
6. **2075 GIE Q.No. 1d** Who proposed 'Biogenetic law'? [1]
7. **2075 Set A Q.No. 1b** What do you mean by pasteurization? [1]
8. **2075 Set A Q.No. 1h** What are homologous organs? [1]
9. **2075 Set B Q.No. 1c** What is speciation? [1]
10. **2075 Set B Q.No. 1d** What is convergent evolution? [1]
11. **2075 Set B Q.No. 1h** What is the connecting link between reptiles and birds? [1]
12. **2074 Supp Q.No. 1c** What is parallel evolution? [1]
13. **2074 Supp Q.No. 1d** Who proposed "Recapitulation Theory" and when? [1]
14. **2074 Set A Q.No. 1h** What are analogous organ? Give example. [1]

15. 2074 Set B Q.No. 1c Who propounded Abiogenesis? [1]
16. 2074 Set B Q.No. 1e Write down the meaning of vestigial organ with example. [1]
17. 2073 Supp Q.No. 1d Who invented fire for the first time? [1]
18. 2073 Set C Q.No. 1b Who proposed Theory of Special creation? [1]
19. 2073 Set D Q.No. 1c Who is the pioneer of Biogenesis? [1]
20. 2073 Set D Q.No. 1d What are fossils? [1]
21. 2072 Set C Q.No. 1b Who propounded the Special Creation Theory? [1]
22. 2072 Set C Q.No. 1i 2071 Set C Q.No. 1a What are the life processes? [1]
23. 2072 Set D Q.No. 1b Define coacervates. [1]
24. 2072 Set D Q.No. 1c What do you understand by parallel evolution? [1]
25. 2072 Set E Q.No. 1j What is cognogeny? [1]
26. 2071 Supp Q.No. 1c Name the first form of life. [1]
27. 2071 Supp Q.No. 1d What was the direct ancestor of man? [1]
28. 2071 Supp Q.No. 1e What do you understand by digenetic life cycle? [1]
29. 2071 Set C Q.No. 1c What do you mean by connecting link? [1]
30. 2071 Set D Q.No. 1b Define life processes. [1]
31. 2071 Set D Q.No. 1c Write about Oparin concept about origin of life. [1]
32. 2070 Supp Q.No. 1c What do you mean by pasteurization? [1]
33. 2070 Set C Q.No. 1c What is divergent evolution? [1]
34. 2070 Set C Q.No. 1f What is phototaxis? [1]
35. 2070 Set C Q.No. 1g What do you understand by the term fossil? [1]
36. 2070 Set D Q.No. 1c In what condition of earth, life originated? [1]
37. 2070 Set D Q.No. 1d When and where Cro - Magnon man appeared? [1]
38. 2070 Set D Q.No. 1e What do you understand by monogenetic life cycle? [1]
39. 2070 Set D Q.No. 1f Define the term pseudocoelom. [1]
40. 2069 Supp Q.No. 1b Name any two life processes. [1]
41. 2069 Supp Q.No. 1c Who gave the most widely accepted theory of "Origin of Life"? [1]
42. 2069 Supp Q.No. 1d Who proposed the first theory of evolution? [1]
43. 2069 Supp Q.No. 1g What was the Hugo do Vries's view regarding origin of species? [1]
44. 2069 Q. No. 1c What is recapitulation theory? [1]
45. 2069 Q. No. 1d What do you know about primordial soup? [1]
46. 2068 Q.No. 1c How was the earth formed? [1]
47. 2068 Q.No. 1d Who wrote the book "Origin of species" ? [1]
48. 2068 Q.No. 1g What do you mean by speciation? [1]
49. 2067 Q.No. 1c What are homologous organs? [1]
50. 2067 Q.No. 1g Which human ancestor invented fire? [1]
51. 2067 Q.No. 1j What is the gist of Lamarckism? [1]
52. 2067 Supp Q.No. 1a Why are lysosomes called suicidal bags of cells? [1]
53. 2066 Q.No. 1d Who proposed recapitulation theory? [1]
54. 2066 Old Q.No. 1 b What do you understand by convergent evolution? [1]
55. 2066 Old Q.No. 1 c Define biogenesis. [1]
56. 2066 Old Q.No. 1 d What is connecting link? [1]
57. 2064 Q.No. 1 e Give two acquired characters with examples. [1]
58. 2064 Q.No. 2 g Give the source of energy in Miller-Urey experiment. [1]
59. 2063 Q.No. 1 d Which one is closely related to man, apes or monkeys? [1]
60. 2062 Q.No. 1 a Define earth crust. [1]
61. 2062 Q.No. 1 c What is Mutation? [1]
62. 2062 Q.No. 2 c Who is Oparin? [1]
63. 2061 Q.No. 1 c Give two examples of vestigial organs. [1]
64. 2061 Q.No. 1 g What is organic evolution? [1]
65. 2061 Q.No. 2 a Write the important features of Archaeopteryx. [1]
66. 2059 Q.No. 1 b Point out the difference between the new and old world monkeys. [1]
67. 2059 Q.No. 1 f Mention the source of energy in the Miller-Urey's experiment. [1]
68. 2058 Q.No. 1 c Give any one example of the homologous organs in organisms. [1]
69. 2058 Q.No. 1 b What is coacervate? [1]
70. 2056 Q.No. 1 a What was Louis Pasteur's view regarding origin of life? [1]
71. 2056 Q.No. 1 d Give the name of vestigial organ of human intestine. [1]

**Answer in Brief [3 Marks]**

1. 2076 Set B Q.No. 2a 2075 Set A Q.No. 2g 2070 Supp Q.No. 2b 2070 Set D Q.No. 2a Oparin-Haldane's theory. [3]
2. 2076 Set C Q.No. 2a Discuss Pasteur's experiment in support of biogenesis. [3]
3. 2076 Set C Q.No. 2e Give general characters of Neanderthal man. [3]
4. 2075 GIE Q.No. 2a Explain Pasteur's experiment with diagram. [3]
5. 2075 GIE Q.No. 2b Describe a connecting link with an example that you know. [3]
6. 2075 Set A Q.No. 2a How does archaeopteryx represent the connecting link between reptiles and birds? [3]
7. 2075 Set A Q.No. 2e Write a brief account of the criticism of Lamarckism. [3]
8. 2075 Set B Q.No. 2a Give an account on evolution of horse. [3]
9. 2074 Supp Q.No. 2a Discuss the experiment of Pasteur in favor of Biogenesis. [3]
10. 2074 Set A Q.No. 2e 2062 Q.No. 3 c Describe Miller & Urey's experiment. [3]
11. 2074 Set A Q.No. 2f Explain draw-backs of theory of Natural Selection. [3]
12. 2074 Set B Q.No. 2a Discuss precipitation test. [3]
13. 2073 Supp Q.No. 2a Describe Francisco Redi's experiment. [3]
14. 2073 Supp Q.No. 2b Explain use and disuse of organ. [3]
15. 2073 Set C Q.No. 2b Archaeopteryx is connecting link between reptiles and birds. How? [3]

16. **2073 Set D Q.No. 2a** Describe Miller Urey experiment on origin of life. [3]
17. **2072 Set C Q.No. 2d** Describe one experiment in favour of Abiogenesis. [3]
18. **2072 Set D Q.No. 2b** Structure and function of plastids. [3]
19. **2072 Set D Q.No. 2c** Significances of meiosis. [3]
20. **2072 Set D Q.No. 2a** Write a brief account of the criticism of Lamarckism. [3]
21. **2072 Set D Q.No. 2e** Discuss the ways to determine the age of rocks. [3]
22. **2072 Set E Q.No. 2d** Biogenetic theory. [3]
23. **2071 Supp Q.No. 2a** The evolution of horse. [3]
24. **2071 Supp Q.No. 2b** "Life comes only from pre-existing life." Explain. [3]
25. **2071 Supp Q.No. 2c** "The Cro-Magnons are the immediate ancestor of modern man". Justify. [3]
26. **2071 Set C Q.No. 2a** Explain Lamarck's theory of inheritance of acquired characters. [3]
27. **2070 Supp Q.No. 2a** How does archaeopteryx represent the connecting link between reptiles and birds? [3]
28. **2070 Set C Q.No. 2a** Explain the types of struggle for existence. [3]
29. **2070 Set C Q.No. 2b** Biochemical theory. [3]
30. **2070 Set D Q.No. 2b** The development of Giraffe's neck. [3]
31. **2070 Set D Q.No. 2c** How is a new species formed in nature? [3]
32. **2069 Q. No. 2a** Miller-Urey Experiment [3]
33. **2069 Supp Q.No. 2e** Write a short note on vestigial organs. [3]
34. **2068 Q.No. 2e** Write a short note on the "use and disuse of organ". [3]
35. **2067 Supp Q.No. 2a** The structure of chloroplast. [3]
36. **2066 Q.No. 2 a** Point out the drawbacks of "Lamarckism". [3]
37. **2065 Q. No. 2 a** Describe in short Miller-Urey's experiment. [3]
38. **2065 Q. No. 2 b** Describe in short Lamarck's theory of use and disuse of organs [3]
39. **2065 Q. No. 2 c** Describe in short Evolution of Cromangnon to modern man. [3]
40. **2065 Q. No. 2 d** Describe in short Biochemical evidences of evolution. [3]
41. **2064 Q.No. 3 b** Explain the chemical evolution of life. [3]
42. **2064 Q.No. 3 c** Discuss the role of variation in organic evolution. [3]
43. **2064 Q.No. 3 i** What is Neo-Darwinism? Discuss. [3]
44. **2063 Q.No. 3 a** Discuss the Oparin Haldane Theory of origin of life. [3]
45. **2063 Q.No. 3 d** Explain the meaning of diversity in the context of the causes of evolution. [3]
46. **2062 Q.No. 3 b** Explain the plaeontological evidences of evolution with examples. [3]
47. **2061 Q.No. 3 f** Write short notes on Neanderthal man. [3]
48. **2061 Q.No. 3 h** Explain Darwin's theory of natural selection. [3]
49. **2060 Q.No. 3 d** Trace the evolution of modern man from Peking man. [3]
50. **2059 Q.No. 3 d** Mention the criticisms to Darwinsim. [3]
51. **2059 Q.No. 3 e** Explain Lamarck's theory of "Inheritance of acquired characters." [3]
52. **2059 Q.No. 3 f** Give the characteristics of Cro-Mgnon. [3]
53. **2058 Q.No. 3 c** Explain how fossils give sufficient evidence in favour of organic evolution. [3]
54. **2058 Q.No. 3 d** Describe Darwin's theory of overproduction with example. [3]
55. **2058 Q.No. 3 e** 'The Cro-magnons are the immediate ancestors of modern man'. Justify. [3]
56. **2056 Q.No. 3 a** Explain a short account of Oparin and Haldane theory of origin of life on earth. [3]

### Long Answer Questions [7.5 or 8 Marks]

1. **2076 Set B Q.No. 4** **2071 Set C Q.No. 4** Explain the most accepted theory of origin of life on the earth. [8]
2. **2076 Set C Q.No. 4** Describe Oparin-Haldane theory in favour of origin of life. [8]
3. **2075 GIE Q.No. 4** Write an essay on evolution of man. [8]
4. **2075 Set A Q.No. 4** **2072 Set C Q.No. 4** Describe the Theory of Natural Selection with its drawbacks. [8]
5. **2075 Set B Q.No. 4** Explain in detail the evolution of human. [8]
6. **2074 Supp Q.No. 4** Describe the evolution of human beings starting from proconsul. [8]
7. **2074 Set A Q.No. 4** Discuss the evolution of modern man from proconsul. [8]
8. **2074 Set B Q.No. 4** Explain the Oparin Haldane Theory of origin of life on earth. [8]
9. **2073 Set C Q.No. 4** **2069 Q. No. 4** Discuss the modern synthetic theory of evolution. [8]
10. **2073 Set D Q.No. 4** Describe the Theory of Inheritance of Acquired Characters with its draw backs. [8]
11. **2072 Set D Q.No. 4** Write an essay on Darwinism. [8]
12. **2072 Set E Q.No. 4** Describe the theory of Natural Selection with its draw-backs. [8]
13. **2071 Set D Q.No. 4** Write an essay on Lamarckism. [8]
14. **2070 Supp Q.No. 4** Give the paleontological evidences in support of organic evolution. [8]
15. **2069 Supp Q.No. 4** Describe the various stages in the evolution of human being. [8]
16. **2068 Q.No. 4** Discuss briefly the evolution of human being from his early ancestor to modern man. [8]
17. **2067 Q.No. 4** Discuss the Neo darwinism along with the draw backs of theory of Natural Selection. [8]
18. **2067 Supp Q.No. 4** Describe in detail the process of meiosis. [8]
19. **2066 Q.No. 3** Write an essay on "evolution of man". [8]
20. **2066 Old Q.No. 4** Discuss the evolution of man from hominids. [8]
21. **2063 Q.No. 4** Discuss with examples how Lamarckism explains the theory of organic evolution? [8]
22. **2062 Q.No. 4** Explain the modern theory of evolution and show how a new species is formed according to this concept. [6]
23. **2060 Q.No. 4** Explain Darwin's theory of evolution by natural selection with examples. [7]
24. **2056 Q.No. 7** Write a short account of human evolution starting from an Anthropoid group. [7]

## Unit 3: Biodiversity

### Answer in Very Short [1 Mark]

1. **2076 Set B Q.No. 1d** Define taxonomy. [1]
2. **2076 Set B Q.No. 1e** What is conjugation? [1]
3. **2076 Set B Q.No. 1f** Define the term haemocoelomate. [1]
4. **2076 Set B Q.No. 1g** **2075 GIE Q.No. 1j** **2075 Set B Q.No. 1i** What is haemozoin? [1]
5. **2076 Set B Q.No. 1h** Give the scientific name of millipede and tiger. [1]
6. **2076 Set C Q.No. 1e** Name enteronephric nephridia of earthworm. [1]
7. **2076 Set C Q.No. 1f** What do you understand by myogenic heart? [1]
8. **2076 Set C Q.No. 1i** Write down zoological names of spider and starfish. [1]
9. **2076 Set C Q.No. 1j** Name infective stage of plasmodium. [1]
10. **2075 GIE Q.No. 1b** Define metabolism. [1]
11. **2075 GIE Q.No. 1e** Give one specific character of Phylum Arthropoda. [1]
12. **2075 GIE Q.No. 1f** What do you mean by pseudopodia? [1]
13. **2075 Set A Q.No. 1c** Meaning of diploblastic with example. [1]
14. **2075 Set A Q.No. 1d** Why does paramecium never get old? [1]
15. **2075 Set A Q.No. 1e** What is meant by nuclear dimorphism? [1]
16. **2075 Set A Q.No. 1f** Give the scientific name of Leech and Red Panda. [1]
17. **2075 Set A Q.No. 1g** Which cells in liver are phagocytic? [1]
18. **2075 Set A Q.No. 1i** Name any two respiratory organs of Arthropods. [1]
19. **2075 Set B Q.No. 1e** What is pellicle? [1]
20. **2074 Supp. Q.No. 1e** Name the toxic substance produced during malaria. [1]
21. **2074 Supp. Q.No. 1f** When does conjugation occur in *Paramecium*? [1]
22. **2074 Supp. Q.No. 1g** Name the muscles that assist in breathing in Frog. [1]
23. **2074 Set A Q.No. 1i** Why do frog undergo hibernation? [1]
24. **2074 Set A Q.No. 1j** Give the scientific name of Garden snail and tapeworm. [1]
25. **2074 Set B Q.No. 1d** Give zoological names of leech and prawn. [1]
26. **2074 Set B Q.No. 1f** What is metagenesis? [1]
27. **2074 Set B Q.No. 1g** What enzymes are present in pancreatic juice of frog? [1]
28. **2073 Supp. Q.No. 1e** What is digenetic life cycle? Give example. [1]
29. **2073 Supp. Q.No. 1f** Name the pigment found in skin of earthworm. [1]
30. **2073 Supp. Q.No. 1g** Write the importance of hibernation in frog. [1]
31. **2073 Set C Q.No. 1c** Why does *Paramecium* never get old? [1]
32. **2073 Set C Q.No. 1d** What is Biomagnification? [1]
33. **2073 Set C Q.No. 1g** Why is ureter called urinogenital duct in male Frog? [1]
34. **2073 Set C Q.No. 1h** What is meant by protandrous animals? [1]
35. **2073 Set C Q.No. 1i** Point out the basis of classification of phylum Porifera. [1]
36. **2073 Set C Q.No. 1j** Give the function of Nematocyst. [1]
37. **2073 Set D Q.No. 1e** What is the common name of *Paramecium*? [1]
38. **2073 Set D Q.No. 1f** What are homologous organs? [1]
39. **2073 Set D Q.No. 1g** When are copulatory pads developed in Frog? [1]
40. **2072 Set C Q.No. 1c** Mention the functions of contractile vacuole in paramecium. [1]
41. **2072 Set C Q.No. 1d** At what time copulatory pads are developed and for what? [1]
42. **2072 Set D Q.No. 1d** What for nematocysts in coelenterates? [1]
43. **2072 Set D Q.No. 1e** Name any two respiratory organs of arthropods. [1]
44. **2072 Set D Q.No. 1f** Why do earthworms go away from light? [1]
45. **2072 Set E Q.No. 1d** Give the zoological name of leech and pigeon. [1]
46. **2072 Set E Q.No. 1e** Which cells in liver are phagocytic? [1]
47. **2072 Set E Q.No. 1g** What is meant by nuclear dimorphism? [1]
48. **2072 Set E Q.No. 1h** Name the kidney tubule that takes part in reproduction only. [1]
49. **2072 Set E Q.No. 1i** Which hormones is responsible for glycogenolysis? [1]
50. **2071 Supp. Q.No. 1f** Define the term haemocoel. [1]
51. **2071 Supp. Q.No. 1g** How does frog meet its water requirement? [1]
52. **2071 Supp. Q.No. 1h** Write the function of nictitating membrane. [1]
53. **2071 Supp. Q.No. 1i** Give major function of nephridia. [1]
54. **2071 Set C Q.No. 1d** Why plasmodium falciparum is more dangerous than other species? [1]
55. **2071 Set C Q.No. 1e** Define haemocoel. [1]
56. **2071 Set C Q.No. 1g** Write the functions of typhlosole. [1]
57. **2071 Set C Q.No. 1h** Define assimilation. [1]
58. **2071 Set C Q.No. 1i** Give an example of heterocrine gland. [1]
59. **2071 Set C Q.No. 1j** Mention the function of chlorogogen cells. [1]
60. **2071 Set D Q.No. 1d** Define the term schizogony. [1]
61. **2071 Set D Q.No. 1e** In which group of animals you will get the flame cells? [1]
62. **2071 Set D Q.No. 1g** Give the functions of spermathecae. [1]
63. **2071 Set D Q.No. 1h** Define polymorphism. [1]
64. **2071 Set D Q.No. 1i** What are the proteolytic enzymes? [1]
65. **2071 Set D Q.No. 1j** Which gland is known as heterocrine gland? [1]
66. **2070 Supp. Q.No. 1d** Write the significance of trichocyst in paramecium. [1]
67. **2070 Supp. Q.No. 1e** Give the meaning of diploblastic with example. [1]
68. **2070 Set C Q.No. 1b** How would you define excretion? [1]

69. 2070 Set C Q.No. 1d Write the significance of contractile vacuoles in paramecium. [1]
70. 2070 Set C Q.No. 1e Define symmetry. [1]
71. 2070 Set C Q.No. 1h Give the scientific name of the garden lizard and leech. [1]
72. 2070 Set C Q.No. 1j What does it mean by histology? [1]
73. 2070 Set D Q.No. 1g Why do the frogs need hibernation and aestivation? [1]
74. 2070 Set D Q.No. 1h Write about sexual dimorphism. [1]
75. 2070 Set D Q.No. 1i Name the respiratory pigment found in earthworm. - *Haemoglobin* [1]
76. 2069 Supp Q.No. 1e Who is the father of taxonomy? [1]
77. 2069 Supp Q.No. 1f What do you understand by the term spawn? [1]
78. 2069 Q. No. 1e Write the scientific name of a vertebrate having long, flexible neck and webbed feet. [1]
79. 2069 Q. No. 1f Name the excretory organs of flatworms. [1]
80. 2069 Q. No. 1g When do female anopheles mosquitoes become infectious? [1]
81. 2068 Q.No. 1e What do you understand by taxonomic hierarchy? [1]
82. 2068 Q.No. 1f What is Ostium? [1]
83. 2067 Q.No. 1a Write two peculiar characters of class Aves. [1]
84. 2067 Q.No. 1b Give classification of Earthworm. [1]
85. 2067 Q.No. 1d The opening of pulmonary veins are devoid of valves. Why? [1]
86. 2067 Q.No. 1f Mention the functions of Trichocyst in Paramecium. [1]
87. 2067 Supp Q.No. 1b What is the role of nitrifying bacteria? [1]
88. 2067 Supp Q.No. 1c Explain the term epipetalous. [1]
89. 2067 Supp Q.No. 1d Write any two importance of lichens. [1]
90. 2067 Supp Q.No. 1g What is gymnosperm? [1]
91. 2067 Supp Q.No. 1i What is sorus? [1]
92. 2066 Q.No. 1c Give the zoological name of (i) Jelly fish and (ii) Pigeon [1]
93. 2066 Q.No. 1e Mention the number of valves in auriculo-ventricular aperture. [1]
94. 2066 Q.No. 1f What is pellicle? *buccal cavity* [1]
95. 2066 Q.No. 1g Name the boring organ of earthworm. [1]
96. 2066 Q.No. 2 b List the significances of conjugation in Paramecium. [1]
97. 2066 Q.No. 2 c Describe pre-erythrocytic schizogony of malarial parasites. [1]
98. 2065 Q. No. 1 b What is the role of tympanic membrane? [1]
99. 2065 Q. No. 1 c Give two characters of Insects? [1]
100. 2065 Q. No. 1 e What is flagella? [1]
101. 2065 Q. No. 1 f What do you mean by hibernation? [1]
102. 2065 Q. No. 1 g Give the scientific name of tiger and leopard. [1]
103. 2065 Q. No. 1 d Why blood becomes red in higher organisms? [1]
104. 2064 Q.No. 1 g Give two characters of Sporozoa. [1]
105. 2064 Q.No. 2 c Write the function of trichocyst. [1]
106. 2064 Q.No. 2 h What is cyclosis? [1]
107. 2063 Q.No. 1 f Why paramecium never gets old? [1]
108. 2063 Q.No. 2 f What is cutaneous respiration? [1]
109. 2063 Q.No. 2 h In what medium proteolytic enzymes work? [1]
110. 2063 Q.No. 3 f Give the characters and classification of protozoa. [1]
111. 2062 Q.No. 1 e What do you mean by Protista? [1]
112. 2062 Q.No. 1 f Differentiate between Centipede and Millipede. [1]
113. 2062 Q.No. 2 e Which organ takes part in circulation of blood in living beings? [1]
114. 2062 Q.No. 2 g Give the scientific name of spider and frog. [1]
115. 2061 Q.No. 2 f What do you mean by nictitating membrane? [1]
116. 2060 Q.No. 1 g What is typhlosole? [1]
117. 2060 Q.No. 2 h Give the scientific names of wall lizard and tape worm. [1]
118. 2059 Q.No. 2 d Mention the action of proteolytic enzyme in frog's stomach. [1]
119. 2059 Q.No. 2 f State the condition of coelom in the Nematelminthes. [1]
120. 2059 Q.No. 2 h Mention segment/s where the nerve-ring lies in earthworm. [1]
121. 2058 Q.No. 2 c Write the Phylum and Class names of a millipede. [1]
122. 2058 Q.No. 2 d How is sound produced in frog? [1]
123. 2058 Q.No. 2 e Give the two characters of Sprotozoa. [1]
124. 2057 Q.No. 1 c Characters of phylum protozoa. [2]
125. 2057 Q.No. 1 e Habitat of the lizard and rat. [2]
126. 2057 Q.No. 10 c Write short note on WBC [2]
127. 2056 Q.No. 1 f Give the type of limb found in aquatic animals. [1]
128. 2056 Q.No. 2 e In which group of animals you find flame cells? [1]
129. 2056 Q.No. 2 g Where do you find the signet-ring stage in the life-cycle of Plasmodium? [1]
130. 2056 Q.No. 2 h Mention the kinds of tooth found in frog. [1]
131. 2055 Q.No. 10 e Write short note Aves [2]
132. 2055 Q.No. 1 v How does Cocoon formation take place in earthworm? [2]
133. 2055 Q.No. 10 a Write short note Euglena [2]
134. 2054 Q.No. 1 b Mention two major external characteristics of a lizard. [2]
135. 2052 Q.No. 1 j What is the difference between aestivation and hibernation? [1.5]

### Answer in Brief [3 Marks]

- 2076 Set B Q.No. 2b Liver schizogony in malarial parasite. [3]
- 2076 Set B Q.No. 2c Structure and function of trichocyst. [3]
- 2076 Set B Q.No. 2e 2071 Set D Q.No. 2f Differentiate between chondrichthyes and osteichthyes. [3]
- 2076 Set C Q.No. 2b Elaborate the process of cocoon formation in earthworm. [3]
- 2076 Set C Q.No. 2c Discuss mechanism of breathing in frog. [3]
- 2076 Set C Q.No. 2d Write down outline classification of phylum Arthropoda. [3]
- 2075 GIE Q.No. 2c 2071 Supp Q.No. 2e Write the economic importance of Earthworm. [3]

8. **2075 GIE Q.No. 2d** Give a short note on a tooth of frog. [3]
9. **2075 GIE Q.No. 2e** Write any six characters of Amphibia. [3]
10. **2075 GIE Q.No. 2g** Give significance of conjugation in Paramecium. [3]
11. **2075 Set A Q.No. 2b** The process of copulation in earthworm. [3]
12. **2075 Set A Q.No. 2c** Mention the characteristics features of Class-Aves. [3]
13. **2075 Set A Q.No. 2f** Significance of conjugation in paramecium. [3]
14. **2075 Set B Q.No. 2b** Draw a diagram to illustrate sporogony of Plasmodium. [3]
15. **2075 Set B Q.No. 2c** Describe histology of Frogs Liver. [3]
16. **2075 Set B Q.No. 2d** Mention the characters of phylum Chordata. [3]
17. **2075 Set B Q.No. 2e** Give an account of spermathecae of earthworm. [3]
18. **2074 Supp Q.No. 2b** **2072 Set E Q.No. 2b** Differentiate between cartilaginous and bony fishes. [3]
19. **2074 Supp Q.No. 2c** Draw well labeled diagram of Paramecium. [3]
20. **2074 Supp Q.No. 2d** Write short note on integumentary nephridia of earth worm. [3]
21. **2074 Supp Q.No. 2e** Discuss modern theory regarding working of heart of Frog. [3]
22. **2074 Set A Q.No. 2a** Describe the sporogony phase of life cycle of Plasmodium. [3]
23. **2074 Set A Q.No. 2b** Draw a well labelled diagram of internal structure of heart of Frog. (No description required) [3]
24. **2074 Set A Q.No. 2d** Enlist the functions of liver of Frog. [3]
25. **2074 Set A Q.No. 2g** Mention the characteristic features of Class-Mammalia. [3]
26. **2074 Set B Q.No. 2c** Describe binary fission in Paramecium. [3]
27. **2074 Set B Q.No. 2f** Discuss working mechanism of Heart of Frog. [3]
28. **2073 Supp Q.No. 2c** Mention the characteristic features of Aves. [3]
29. **2073 Supp Q.No. 2d** Discuss significance of conjugation in paramecium. [3]
30. **2073 Supp Q.No. 2e** Write down the functions of liver. [3]
31. **2073 Set C Q.No. 2d** Give distinguishing characters of class mammalia. [3]
32. **2073 Set C Q.No. 2e** **2071 Set D Q.No. 2e** Write down the significance of conjugation in Paramecium. [3]
33. **2073 Set D Q.No. 2b** Give general characters of Phylum Porifera. [3]
34. **2073 Set D Q.No. 2c** Describe liver schizogony of Plasmodium. [3]
35. **2073 Set D Q.No. 2d** Discuss cocoon formation and structure in Earthworm. [3]
36. **2073 Set D Q.No. 2e** Describe mechanism of breathing in Frog. [3]
37. **2072 Set C Q.No. 2a** Differentiate between cartilaginous and bony fish. [3]
38. **2072 Set C Q.No. 2b** Discuss Gamogony in plasmodium. [3]
39. **2072 Set C Q.No. 2c** Write short note on economic importance of earthworm. [3]
40. **2072 Set C Q.No. 2f** Discuss the working mechanism of Heart in Frog. [3]
41. **2072 Set D Q.No. 2b** Mention any six characters of Phylum Porifera. [3]
42. **2072 Set D Q.No. 2c** Describe the histological structure of Pancreas of frog. [3]
43. **2072 Set D Q.No. 2d** Draw a neat and well labelled diagram of the pharynx of Earthworm. (No description is required) [3]
44. **2072 Set E Q.No. 2a** The working mechanism of heart of frog. [3]
45. **2072 Set E Q.No. 2f** Important characters of phylum coelenterata. [3]
46. **2072 Set E Q.No. 2g** Significance of conjugation in paramecium. [3]
47. **2071 Supp Q.No. 2d** Give the diagnostic features of bird. [3]
48. **2071 Supp Q.No. 2f** **2056 Q.No. 3 h** Draw well labelled diagram of Paramecium. (No description) [3]
49. **2071 Supp Q.No. 2g** List, at least six major differences between arteries and veins. [3]
50. **2071 Set C Q.No. 2e** Describe the process of binary fission in paramecium. [3]
51. **2071 Set C Q.No. 2f** Give the differences between Agnatha and Gnathostomata. [3]
52. **2071 Set C Q.No. 2g** Discuss the mode of absorption of digested food. [3]
53. **2070 Supp Q.No. 2d** Economic importance of pheretima. [3]
54. **2070 Supp Q.No. 2f** Draw a neatly labelled diagram of bucco pharyngeal cavity of frog. (No description required) [3]
55. **2070 Set C Q.No. 2c** The diagnostic features of phylum mollusca. [3]
56. **2070 Set C Q.No. 2d** The significances of clitellum in earth worm. [3]
57. **2070 Set C Q.No. 2e** Draw a neatly labelled diagram of T.S. of pharynx of Earth worm. (no description is required) [3]
58. **2070 Set D Q.No. 2d** Mention the characteristic features of mammalia. [3]
59. **2070 Set D Q.No. 2e** The process of copulation in earthworm. [3]
60. **2070 Set D Q.No. 2f** Sketch well-labelled figure of Paramecium (NO description). [3]
61. **2070 Set D Q.No. 2g** Functions of liver of frog. [3]
62. **2069 Supp Q.No. 2a** The significance of conjugation in Paramecium. [3]
63. **2069 Supp Q.No. 2b** Draw a well labelled diagram of T.S. of earthworm through gizzard. [3]
64. **2069 Supp Q.No. 2c** Write down the main distinguishing features of class mammalia. [3]
65. **2069 Supp Q.No. 2d** The cutaneous respiration of frog. [3]
66. **2069 Q. No. 2b** Give any six important characters of Phylum Mollusca [3]
67. **2069 Q. No. 2c** Draw a nearly labelled diagram of T.S. of ileum of frog. (No description required) [3]
68. **2069 Q. No. 2d** The process of cocoon formation in Pheretima. [3]

### Long Answer Questions [7.5 or 8 Marks]

69. **2069 Q. No. 2e** Erythrocytic schizogony of Plasmodium. [3]
70. **2068 Q.No. 2a** The process of binary fission in Paramecium. [3]
71. **2068 Q.No. 2b** Draw a well labelled diagram of T.S. of earthworm through pharynx. [3]
72. **2068 Q.No. 2c** About the hibernation and aestivation. [3]
73. **2068 Q.No. 2d** The teeth of frog. [3]
74. **2067 Q.No. 2a** The general characters of class Mammalia. [3]
75. **2067 Q.No. 2b** Earthworms are friends of farmers. Justify. [3]
76. **2067 Q.No. 2c** Draw well labelled diagram of Arterial system of frog (no description required). [3]
77. **2067 Q.No. 2e** The control measures of Malaria. [3]
78. **2067 Supp Q.No. 2c** A sexual reproduction of *Mucor*. [3]
79. **2067 Supp Q.No. 2d** Draw a well labelled diagram of L.S. of capsule of *Funaria*. (Description is not required). [3]
80. **2067 Supp Q.No. 2g** The advantages of five kingdom system classification. [3]
81. **2066 Q.No. 2d** How do flatworms and roundworms differ in body cavity digestive tract and excretory organs? [3]
82. **2066 Q.No. 2e** Draw a well labelled diagram of T.S. of earthworm passing through typhlosole. [3]
83. **2066 Old Q.No. 2a** Give the classification of phylum platyhelminthes with example. [3]
84. **2066 Old Q.No. 2b** Draw a neatly labelled diagram of Buccopharyngeal cavity of a male frog. (No description is required) [3]
85. **2066 Old Q.No. 2c** Write a note on the economic importance of earthworm. [3]
86. **2065 Q. No. 2e** Describe in short Characteristic features of class aves. [3]
87. **2064 Q.No. 3d** State the feeding mechanism in *Paramecium*. [3]
88. **2063 Q.No. 3h** Explain the digestion in earthworm. [3]
89. **2063 Q.No. 6** Elaborate the life cycle of *Plasmodium* in man. [3]
90. **2062 Q.No. 3e** Characters of reptiles and fish. [3]
91. **2061 Q.No. 3c** Draw a well labeled diagram of *Paramecium*. [3]
92. **2061 Q.No. 3d** Give a brief account of exo-erythrocytic cycle in *Plasmodium*. [3]
93. **2061 Q.No. 3j** Give the important characters of class mammalian. [3]
94. **2060 Q.No. 3i** Write sporogony in the life cycle of *Plasmodium*. [3]
95. **2060 Q.No. 3j** How Cocoon is formed in earthworm? Discuss. [3]
96. **2059 Q.No. 3c** How is cocoon formed in earthworms? Explain. [3]
97. **2058 Q.No. 3i** Describe the structure of liver of frog. [3]
98. **2058 Q.No. 3h** Describe the erythrocytic phase of life cycle of *Plasmodium*. [3]
99. **2057 Q.No. 9d** Differentiate between diploblastic and triploblastic condition [3]
100. **2056 Q.No. 3g** List the characteristic features of Arachnida. [3]
101. **2054 Q.No. 10d** **2051 Q.No. 10c** Write short note on Osmoregulation [3]
102. **2051 Q.No. 10b** Write short note on Gizzard in earthworm [3]
103. **2051 Q.No. 10d** Write short note on Nemathehelminthes [3]
1. **2076 Set B Q.No. 3** What is portal system? Describe the venous system of frog. [7.5]
2. **2076 Set B Q.No. 3 OR** Describe the reproductive system of earthworm. [7.5]
3. **2076 Set C Q.No. 3** Describe reproductive organs of earthworm with diagram. [7.5]
4. **2076 Set C Q.No. 3 OR** Discuss physiology of digestion in frog. [7.5]
5. **2075 GIE Q.No. 3** Give an account of Alimentary Canal of frog. [7.5]
6. **2075 GIE Q.No. 3OR** Describe reproductive organs of Earthworm. [7.5]
7. **2075 Set A Q.No. 3** Describe the pulmonary respiration and mechanism of breathing in frog. [7.5]
8. **2075 Set A Q.No. 3 OR** Explain the life cycle of plasmodium in mosquito. [7.5]
9. **2075 Set B Q.No. 3** Give an account on arterial system of frog. [7.5]
10. **2075 Set B Q.No. 3 OR** Elaborate the asexual life cycle of *Plasmodium*. [7.5]
11. **2074 Supp Q.No. 3** Describe the life cycle of *Plasmodium* in human body with labeled diagram. [7.5]
12. **2074 Supp Q.No. 3 OR** Describe the alimentary canal of Frog with suitable diagram. [7.5]
13. **2074 Set A Q.No. 3** Define conjugation. Describe its process in *Paramecium* with labelled diagram. [7.5]
14. **2074 Set A Q.No. 3 OR** What is digestion? Give an account on the digestive tract of *Pheretima* with suitable diagram. [7.5]
15. **2074 Set B Q.No. 3** What is digestion? Describe alimentary canal of frog with labelled diagram. [7.5]
16. **2074 Set B Q.No. 3 OR** Describe the asexual reproduction of plasmodium in human host. [7.5]
17. **2073 Supp Q.No. 3** Describe pulmonary respiration in frog with labelled diagram. [7.5]
18. **2073 Supp Q.No. 3 OR** Describe the life cycle of plasmodium in mosquito along with control measures of malaria. [7.5]
19. **2073 Set C Q.No. 3** Give the structure and function of nephridia in Earthworm with diagram. [7.5]
20. **2073 Set C Q.No. 3 OR** Describe the structure and function of amphibian Heart with well labelled diagram. [7.5]
21. **2073 Set D Q.No. 3** Describe typical nephridia of Earthworm with labelled diagram. [7.5]
22. **2073 Set D Q.No. 3 OR** Describe the structure and working mechanism of heart of frog with labelled diagram. [7.5]
23. **2072 Set C Q.No. 3** Describe the process of conjugation in paramecium with diagram. [7.5]
24. **2072 Set C Q.No. 3 OR** Describe the pulmonary respiration and mechanism of breathing in Frog. [7.5]
25. **2072 Set D Q.No. 3** Give an account of the internal structure and working mechanism of heart of frog. [7.5]
26. **2072 Set D Q.No. 3 OR** Describe the structure of *Paramecium* with a neat and labelled diagram. [7.5]
27. **2072 Set E Q.No. 3** Describe the reproductive system of earthworm with labelled diagram. [7.5]

28. **2072 Set E Q.No. 3 OR** Discuss the physiology of digestion in Frog. [7.5]
29. **2071 Supp Q.No. 3** Discuss the process of food digestion in frog. [7.5]
30. **2071 Supp Q.No. 3 OR** Explain life cycle of Plasmodium in human host. [7.5]
31. **2071 Set C Q.No. 3** What is portal system? Describe it with reference to Frog. [7.5]
32. **2071 Set C Q.No. 3 OR** Describe the excretory system of earthworm. [7.5]
33. **2071 Set D Q.No. 3** Discuss the internal structure of heart with its working mechanism. [7.5]
34. **2071 Set D Q.No. 3 OR** Describe the septal nephridia of earthworm. [7.5]
35. **2070 Supp Q.No. 3** Describe the Alimentary canal of frog. [7.5]
36. **2070 Supp Q.No. 3 OR** Describe the life cycle of plasmodium in mosquito. [7.5]
37. **2070 Set C Q.No. 3** Give an account of the male and female reproductive organs of frog. [7.5]
38. **2070 Set C Q.No. 3 OR** Describe the sexual reproduction in paramecium. [7.5]
39. **2070 Set D Q.No. 3** Give an account of Reproductive system of frog. [7.5]
40. **2070 Set D Q.No. 3 OR** Explain life cycle of Plasmodium in mosquito. [7.5]
41. **2069 Supp Q.No. 3** Discuss the process of food digestion in frog. [7.5]
42. **2069 Supp Q.No. 3 OR** Explain life cycle of Plasmodium vivax in human host. [7.5]
43. **2069 Q. No. 3** Give an account of the structure of heart of Frog. [7.5]
44. **2069 Q. No. 3 OR** Describe the nephridial system of Pheretima. [7.5]
45. **2068 Q.No. 3** Describe the structure of lung and explain its working mechanism in frog. [7.5]
46. **2068 Q.No. 3 OR** What is schizogony? Illustrate it with reference to the life cycle of Plasmodium vivax. [7.5]
47. **2067 Q.No. 3** Describe the reproductive system of Frog with suitable diagram. [7.5]
48. **2067 Q.No. 3 (Or)** Describe the structure and function of septal nephridia of Earthworm. [7.5]
49. **2067 Supp Q.No. 3** What is alternation of generations? Describe the life cycle of Marchantia with necessary diagrams. [7.5]
50. **2067 Supp Q.No. 3 OR** Describe the family gramineae in semi-technical terms with diagrams. Mention botanical names of any two economically important plants of this family. [7.5]
51. **2066 Q.No. 4** Give an illustrated account of the excretory system of earthworm. [7.5]
52. **2066 Q.No. 4 OR** Describe the structure of lung of frog. Discuss its working mechanism. [7.5]
53. **2066 Old Q.No. 3** Describe the life cycle of Plasmodium in mosquito. [7.5]
54. **2066 Old Q.No. 3 OR** What is portal system? Describe the hepatic portal system of frog. [7.5]
55. **2065 Q. No. 4** Describe in details the process of feeding and digestion in earthworm. [8]
56. **2065 Q. No. 4 Or** Describe the internal structure of heart of frog and explain its working mechanism. [8]
57. **2064 Q.No. 4** Describe the life cycle of Plasmodium in mosquito. [8]
58. **2064 Q.No. 6** Discuss the processes of respiration in Frog. [8]
59. **2064 Q.No. 6 OR** Give an account of reproductive organs of earthworm. [8]
60. **2063 Q.No. 6 OR** Describe the internal structure and working mechanism in the heart of frog. [8]
61. **2062 Q.No. 6** What is reproduction? Describe the female reproductive organs of frog. [8]
62. **2062 Q.No. 6 OR** Discuss on the conjugation process of reproduction in Paramecium. [8]
63. **2061 Q.No. 6** Describe the reproductive organ of earthworm. [8]
64. **2061 Q.No. 6 OR** Describe the mechanism of pulmonary respiration in frog. [8]
65. **2060 Q.No. 6** Describe the sexual reproduction in Paramecium with its significance. [6+2]
66. **2060 Q.No. 6 OR** Describe the internal structure of heart and its working mechanism in Frog. [5+3]
67. **2059 Q.No. 6** Describe the process of reproduction of Plasmodium in its primary host. [8]
68. **2059 Q.No. 6 OR** Discuss the structure of lung in frog and its working mechanism. [4+4]
69. **2058 Q.No. 6** Give an account of the digestive tract of Pheretima. [8]
70. **2058 Q.No. 6 OR** Describe the conjugation process in Paramecium. What is the significance of the process? [8]
71. **2056 Q.No. 4** What is a portal system? Describe it with reference to frog. [2+6]
72. **2056 Q.No. 4 OR** Give an account of the structure of digestive tract of Pheretima. [8]
73. **2055 Q.No. 4** Discuss the structure of the septal nephridium. [5]
74. **2054 Q.No. 2** Describe in brief the digestive organs of earthworm. [8]
75. **2052 Q.No. 1** What are the locomotory organs of earthworm? [1.5]
76. **2052 Q.No. 6** With the help of labelled diagram, describe the reproductive system of earth worm. [5+5]
77. **2051 Q.No. 7 OR** What is excretion? Discuss the excretion process in earthworm. [5]

### Unit 4: Biota and their Environment

#### Answer in Very Short [1 Mark]

1. **2076 Set B Q.No. 1i** What is biological control of pest? [1]
2. **2076 Set B Q.No. 1j** Define the term taxis. [1]
3. **2076 Set C Q.No. 1g** What is secondarily aquatic adaptation? [1]
4. **2076 Set C Q.No. 1h** Give two examples of primary pollutants. [1]

5. **2075 GIE Q.No. 1a** Name one organic compound that helps in transferring energy. [1]
6. **2075 GIE Q.No. 1g** Why is the use of mercury banned these days? [1]
7. **2075 GIE Q.No. 1h** Write the full form of CFCs. [1]
8. **2075 GIE Q.No. 1i** Why prolonged exposure to louder noise should be avoided? [1]
9. **2075 Set A Q.No. 1a** **2070 Supp Q.No. 1j** What is thigmotactic? [1]
10. **2075 Set A Q.No. 1j** What is catadromous migration? [1]
11. **2075 Set B Q.No. 1j** What is reflex arc? [1]
12. **2075 Set B Q.No. 1g** **2066 Q.No. 1h** Define adaptation. [1]
13. **2075 Set B Q.No. 1j** Give two examples of migratory fishes. [1]
14. **2074 Supp Q.No. 1h** Give one important difference between true flight and gliding. [1]
15. **2074 Supp Q.No. 1j** **2073 Supp Q.No. 1h** What are pollutants? [1]
16. **2074 Supp Q.No. 1j** Write down the meaning of rare species with example. [1]
17. **2074 Set A Q.No. 1b** **2074 Set B Q.No. 1j** **2066 Q.No. 1j** Write the full form of IUCN. [1]
18. **2074 Set A Q.No. 1d** Differentiate between primary and secondary pollutants. [1]
19. **2074 Set A Q.No. 1e** Give the reasons of fish migration. [1]
20. **2074 Set A Q.No. 1f** Write two volant features of bat. [1]
21. **2074 Set A Q.No. 1g** **2069 Supp Q.No. 1j** What do you understand by leadership? [1]
22. **2074 Set B Q.No. 1b** What is sensitivity? [1]
23. **2074 Set B Q.No. 1h** What do you mean by learned behaviour? [1]
24. **2074 Set B Q.No. 1j** Define smog. [1]
25. **2073 Supp Q.No. 1c** Define conservation. [1]
26. **2073 Supp Q.No. 1j** What do you mean by latitudinal migration? [1]
27. **2073 Supp Q.No. 1j** What is extinction? [1]
28. **2073 Set C Q.No. 1e** Write the advantages of nocturnal migration in birds. [1]
29. **2073 Set C Q.No. 1f** Name two National Parks included in World Heritage Site. [1]
30. **2073 Set D Q.No. 1h** What is anadromous migration? Give example. [1]
31. **2073 Set D Q.No. 1i** What do you mean by pollution? [1]
32. **2073 Set D Q.No. 1j** Give two examples of endangered species of Nepal. [1]
33. **2072 Set C Q.No. 1e** What do you mean by pollutant? [1]
34. **2072 Set C Q.No. 1f** Where the Reflex arc is formed? [1]
35. **2072 Set C Q.No. 1g** How is primarily aquatic adaptation different from secondarily aquatic adaptation? [1]
36. **2072 Set C Q.No. 1j** In which category do you put Spiny Babbler? [1]
37. **2072 Set D Q.No. 1g** How would you define parental care? [1]
38. **2072 Set D Q.No. 1h** Give the scientific name of Dolphin. [1]
39. **2072 Set D Q.No. 1i** Write the name of a bird showing local migration. [1]
40. **2072 Set E Q.No. 1a** What is meant by camouflage? [1]
41. **2072 Set E Q.No. 1b** Name two National Parks included in World Heritage Site. [1]
42. **2072 Set E Q.No. 1c** What is catadromous migration? Give example. [1]
43. **2071 Supp Q.No. 1j** What is conservation? [1]
44. **2071 Set C Q.No. 1f** What is innate behaviour of an animal? [1]
45. **2071 Set D Q.No. 1f** What is learned behaviour? [1]
46. **2070 Supp Q.No. 1g** In which animal limbs are developed into flipper? [1]
47. **2070 Supp Q.No. 1h** What is the common name of *plantanista gangetica*? [1]
48. **2070 Supp Q.No. 1j** Define earth protection. [1]
49. **2070 Set C Q.No. 1j** Define conservation. [1]
50. **2070 Set D Q.No. 1j** What is wildlife conservation? [1]
51. **2069 Supp Q.No. 1h** Name the hunting reserve of Nepal. [1]
52. **2069 Supp Q.No. 1j** Define pesticides. [1]
53. **2069 Q. No. 1h** What is smog? [1]
54. **2069 Q. No. 1j** What do you mean by arboreal adaptation? [1]
55. **2069 Q. No. 1j** Define buffer zone. [1]
56. **2068 Q.No. 1h** Name two wildlife reserves of Nepal. [1]
57. **2068 Q.No. 1j** Give the difference between reflex action and taxis. [1]
58. **2068 Q.No. 1j** Define the term nature conservation. [1]
59. **2067 Q.No. 1j** What do you understand by wild life? [1]
60. **2067 Supp Q.No. 1e** Define food web. [1]
61. **2067 Supp Q.No. 1f** What is climax community? [1]
62. **2067 Supp Q.No. 1h** What is land management? [1]
63. **2067 Supp Q.No. 1j** What is green house effect? [1]
64. **2066 Q.No. 1j** What is taxis? [1]
65. **2066 Old Q.No. 1f** Give an example of a migratory bird. [1]
66. **2062 Q.No. 2a** What is endangered species? [1]
67. **2061 Q.No. 2g** Give two main reasons causing air pollution. [1]
68. **2060 Q.No. 2e** Give two examples of endangered species. [1]
69. **2060 Q.No. 2f** Role of hormones in birds migration. [1]
70. **2059 Q.No. 1d** Mention the body shape of the Volant animals. [1]
71. **2058 Q.No. 1e** Give the names of any two migratory birds. [1]
72. **2058 Q.No. 1f** Name any two importances of wildlife. [1]
73. **2058 Q.No. 1g** Write any two Volant features of bat. [1]
74. **2057 Q.No. 1a** Air pollution and its effects on human health. [2]
75. **2056 Q.No. 1g** Mention the example of chemotaxis in animals. [1]
76. **2054 Q.No. 1j** Write two causes of air-pollutions and two measures to control population explosion. [2]
77. **2053 Q.No. 1h** Give four prevention measures of water pollution. [2]

### Answer in Brief [3 Marks]

- 2076 Set B Q.No. 2d** List out the sources of pollutants. [3]
- 2076 Set B Q.No. 2f** Terrestrial adaptations of animal. [3]
- 2076 Set B Q.No. 2g** Causes of depletion of wild life. [3]
- 2076 Set C Q.No. 2f** Discuss significance of bird migration. [3]

5. **2076 Set C Q.No. 2g** Elaborate causes of wild life depletion. [3]
6. **2075 GIE Q.No. 2f** How would you prevent air pollution? [3]
7. **2075 Set A Q.No. 2d** **2072 Set C Q.No. 2e** Give the significance of wildlife. [3]
8. **2075 Set B Q.No. 2f** Briefly state on leadership and dominance of animal with suitable examples. [3]
9. **2075 Set B Q.No. 2g** Discuss briefly conservation strategy for wildlife. [3]
10. **2074 Supp Q.No. 2f** Enlist the control measures of water pollution. [3]
11. **2074 Supp Q.No. 2g** Write down the strategies of management of wild life. [3]
12. **2074 Set A Q.No. 2c** Describe the causes of wildlife extinction. [3]
13. **2074 Set B Q.No. 2b** Explain control of malaria. [3]
14. **2074 Set B Q.No. 2d** Give differences between cartilagenous fish and bony fish. [3]
15. **2074 Set B Q.No. 2e** Write down the characters of aquatic adaptation. [3]
16. **2074 Set B Q.No. 2g** Discuss the causes of decline of wildlife. [3]
17. **2073 Supp Q.No. 2f** Discuss causes of bird migration. [3]
18. **2073 Supp Q.No. 2g** Write down the control measures of water pollution. [3]
19. **2073 Set C Q.No. 2c** Methods to control malaria. [3]
20. **2073 Set C Q.No. 2f** Write short note on aquatic adapaton. [3]
21. **2073 Set C Q.No. 2g** Discuss the importance of wildlife. [3]
22. **2073 Set D Q.No. 2f** Explain the control of air pollution. [3]
23. **2073 Set D Q.No. 2g** Discuss the importance of wild life. [3]
24. **2072 Set C Q.No. 2g** Why do birds migrate? [3]
25. **2072 Set D Q.No. 2f** List out the methods of wildlife conservation. [3]
26. **2072 Set D Q.No. 2g** Give an account of adaptational features of duck. [3]
27. **2072 Set E Q.No. 2c** The management of wild life. [3]
28. **2072 Set E Q.No. 2e** **2068 Q.No. 2f** **2066 Old Q.No. 2 d** The effects of water pollution. [3]
29. **2071 Set C Q.No. 2b** Discuss the effects of pesticides. [3]
30. **2071 Set C Q.No. 2c** What are the advantages and disadvantages of bird migration? [3]
31. **2071 Set C Q.No. 2d** Write short note on management of wild life. [3]
32. **2070 Supp Q.No. 2c** Enumerate the diagnostic features of Aves. [3]
33. **2070 Supp Q.No. 2e** The adaptive features of volant adoptation. [3]
34. **2070 Supp Q.No. 2g** Significance of wildlife conservation. [3]
35. **2070 Set C Q.No. 2f** An account of the migratory behaviour of birds. [3]
36. **2070 Set C Q.No. 2g** "The threats to wildlife is due to hunting and habitant loss". Discuss [3]
37. **2069 Supp Q.No. 2f** The control measures of air pollution. [3]
38. **2069 Supp Q.No. 2g** Flight adaplation in birds. [3]
39. **2069 Q. No. 2f** The effects of air pollution [3]
40. **2069 Q. No. 2g** The causes of extinction of wildlife. [3]
41. **2068 Q.No. 2g** Migratory behaviour of fishes. [3]
42. **2067 Q.No. 2 d** Write short note on Taxis. [3]
43. **2067 Q.No. 2 f** The causes of depletion of wild life in Nepal. [3]
44. **2067 Q.No. 2 g** The benefits of animal migration. [3]
45. **2067 Supp Q.No. 2e** Write short notes on biotic components of pond ecosystem. [3]
46. **2067 Supp Q.No. 2f** Define ozone layer depletion and explain its consequences. [3]
47. **2066 Q.No. 2 f** Discuss the control measures of water pollution. [3]
48. **2066 Q.No. 2 g** Write short notes on fish migration. [3]
49. **2066 Old Q.No. 1 g** What do you mean by endangered species? [3]
50. **2066 Old Q.No. 2 e** Discuss the causes of depletion of wildlife. [3]
51. **2064 Q.No. 3 g** Write the control measures of air pollution. [3]
52. **2062 Q.No. 3 j** Migratory behavior of birds. [3]
53. **2062 Q.No. 3 j** Write short note water pollutants. [3]
54. **2061 Q.No. 3 j** Describe adaptive features of bird and wall lizard. [3]
55. **2059 Q.No. 3 a** Discuss the responsibilities of man for the protection of earth. [3]
56. **2059 Q.No. 3 j** Define 'endangered' animals and give any four examples from Nepal. [3]
57. **2058 Q.No. 3 j** Give regions of fish migration. [3]

**Long Answer Questions [7.5 or 8 Marks]**

1. **2071 Supp Q.No. 4** Write an essay on water pollution and its mitigation. [8]
2. **2070 Set C Q.No. 4** Discuss the analogous, homologous and vestigial organs in support of organic evolution. [8]
3. **2070 Set D Q.No. 4** Discuss about the sources, effects and control measures of air pollution. [8]
4. **2065 Q. No. 3** What are the major causes of air pollution? Discuss its impact on life and suggest appropriate control measures. [7.5]
5. **2064 Q.No. 7** Define conservation. What are the conservation strategies for the wild life resources? [8]
6. **2056 Q.No. 6** Discuss the sources and effects of air pollution in an environment. [3+4]

## 5 Sets Questions

## Set 1

## Section (Botany)

- Answer any seven questions in very short. [7×1=7]
  - Differentiate prokaryotic and eukaryotic cells on the basis of nucleus.
  - What is cholesterol?
  - What are the components of nucleosides?
  - Why are cyanobacteria called blue green algae?
  - Why bryophytes are called amphibians plants?
  - Write the difference between ray and disc florets.
  - Name the primary consumers of pond ecosystem.
  - Define green house effect.
  - Lichen is an example of symbiosis how?
  - Define Plant Succession.
- Answer any five questions in brief. [5×3=15]
  - In what ways DNA differ from RNA?
  - Give the shortcoming of two kingdom system of classification.
  - Illustrate vegetative structure of *Spirogyra* with neat and labeled diagram (no description required).
  - Write economic importance of fungi.
  - By Means of stamens character only, how will you differentiate the various families which are included in your syllabus?
  - Energy flow in an ecosystem is always unidirectional. Explain
  - How does the carbon cycle exist in the nature?
- Give the distinguishing characters of solanaceae with its floral formula and floral diagram. Mention botanical names of three economically important plants of this family. [7.5]
 

OR

Define alternation of generation discuss it with reference to the cycle of *Marchantia*. [7.5]
- Describe the prophase I of meiosis cell division. Distinguish it from prophase of mitosis. [8]

## Section (Zoology)

- Answer any seven questions in very short. [7×1=7]
  - Define the terms Mycology and Anthropology.
  - Who coined the term "Biology"?
  - Give the name of vestigial organ of human intestine.
  - What is the difference between aestivation and hibernation?
  - In which group of animals you find flame cells?
  - What is cyclosis?
  - Give the scientific names of Garden Snail and Tapeworm.
  - Give the name of any two migratory birds.
  - Write any two volant features of bat.
  - Write the full form of IUCN.
- Answer any five questions in brief. [5×3=15]
  - Explain the relationship of biology with other sciences.
  - Mention the criticisms to Darwinism.
  - Miller-Urey Experiment.
  - Describe the process of binary fission in *Paramecium*.
  - How is cocoon formed in earthworm? Explain.

- Explain the control measures of air pollution.
  - Discuss the causes of depletion of wildlife.
- Explain the life cycle of *Plasmodium* in human host. [7.5]
 

OR

Describe the conjugation process in *Paramecium*. What is the significance of the process? [7.5]
  - Explain the Oparin Haldane Theory of Origin of Life on earth. [8]

## Set 2

## Section (Botany)

- Answer any seven questions in very short. [7×1=7]
  - What is autoecology?
  - Define food Chain.
  - Define cyclosis.
  - What is the impact of altitude of vegetation?
  - Mention the function of cell wall.
  - Write any two differences between algae and fungi.
  - Define primary succession.
  - Name the type of fruit found in compositae and brassicaceae.
  - Name two species of pine found in Nepal.
  - Why *Nostoc* kept under monera and not under in algae?
- Answer any five questions in brief. [5×3=15]
  - Explain the asexual reproduction in *Mucor* with diagram.
  - Write down the significance of mitosis.
  - Explain lipid as biomolecules.
  - Differentiate between primary and secondary succession.
  - Describe the morphology of *Pinus*.
  - Describe the structure of yeast.
  - Describe the plastids.
- Give the distinguishing characters of Brassicaceae with its floral formula and floral diagram. Mention botanical names of three economically important plants of this family. [7.5]
 

OR

Define alternation of generation discuss it with reference to the cycle of *Dryopteris*. [7.5]
- Define ecosystem. Describe structure and functional aspects of pond ecosystem. [8]

## Section (Zoology)

- Answer any seven questions in very short. [7×1=7]
  - Give the meaning of Cytology and Histology.
  - Write the zoological name of leech and pigeon.
  - What is coacervate?
  - Mention the source of energy of Miller-Urey Experiment.
  - What is life process?
  - Write the significance of contractile vacuoles in *Paramecium*.
  - What is digenetic life cycle? Give example.
  - Name the muscles that assist in breathing in frog.
  - Define wildlife conservation.
  - What are pollutants?
- Answer any five questions in brief. [5×3=15]
  - Explain the fossils give sufficient evidence in favour of organic evolution.

- b. "Life comes only from pre-existing life." Explain.
  - c. Differentiate between chondrichthyes and osteichthyes.
  - d. Write down the function of liver of frog.
  - e. The economic importance of earthworm.
  - f. The effect of water pollution.
  - g. Migratory behaviour of fishes.
3. Describe the life cycle of Plasmodium in mosquito. [7.5]

OR

- Describe the alimentary canal of frog. [7.5]
4. Write an essay on Lamarckism. [8]

### Set 3

#### Section (Botany)

1. Answer any seven questions in very short. [7×1=7]
- a. What is synecology?
  - b. Define cell organelles and cell inclusion.
  - c. What is Perianth and phylotaxy?
  - d. What is commensalism and protocooperation?
  - e. Which cell organelles is called suicidal bag and why?
  - f. Define cholesterol.
  - g. What is capsid?
  - h. Name the pigment present in red and brown algae.
  - i. Expand RER and SER.
  - j. Define coenocytic mycelium.

2. Answer any five questions in brief. [5×3=15]
- a. Explain sporophyte of *Marchantia*.
  - b. Explain causes and consequences of ozone layer depletion.
  - c. Describe the morphology of *Cycas*.
  - d. Write short note on Lichen.
  - e. Write the biological importance of protein.
  - f. Write down the rules for scientific naming.
  - g. Describe the structure and function of mitochondria.
3. Describe the family solanaceae with necessary diagrams. Also mention the botanical names of two plants of this family. [7.5]

OR

- What is alternation of generation? Explain it with the reference to *Funaria*. [7.5]
4. What is succession? Explain the general process of succession. [8]

#### Section (Zoology)

1. Answer any seven questions in very short. [7×1=7]
- a. Write the meaning of Anatomy and Morphology.
  - b. Mention the important scope of zoology.
  - c. What is divergent evolution?
  - d. Define the term pseudocoelom.
  - e. What is cognogeny?
  - f. Write the significance of trichocyst in *Paramecium*.
  - g. Define polymorphism.
  - h. How does frog meet its water requirement?
  - i. How would you define parental care?
  - j. What is green house effect?
2. Answer any five questions in brief. [5×3=15]
- a. "The Cro-Magnons are the immediate ancestor of modern man". Justify.
  - b. Mention the characteristics features of mammalia.
  - c. The working mechanism of heart of frog.

- d. Write down the significance of conjugation in *Paramecium*.
  - e. Describe liver schizogony of plasmodium.
  - f. Write short note on aquatic adaptation.
  - g. Discuss the importance of wildlife.
3. What is digestion? Give an account on the digestive tract of *Pheretima* with suitable diagram. [7.5]
- OR
- Describe the pulmonary respiration in frog with labeled diagram. [7.5]
4. Write an essay on Darwinism. [8]

### Set 4

#### Section (Botany)

1. Answer any seven questions in very short. [7×1=7]
- a. Define food web.
  - b. What is cell cycle?
  - c. Define mycorrhiza.
  - d. Define protonema.
  - e. Why bryophytes are called amphibian's plants?
  - f. Why mitosis is called equational cell division?
  - g. Define biogeochemical cycle.
  - h. What is inflorescence?
  - i. What is acid rain?
  - j. Mention abiotic factors.
2. Answer any five questions in brief. [5×3=15]
- a. Draw a labeled diagram of L.S of capsule of *Funaria*.
  - b. Write down the significance of meiosis.
  - c. Discuss the structure of endoplasmic reticulum.
  - d. List the economic importance of virus.
  - e. Describe the female gametophyte of *Marchantia*.
  - f. Describe the structure of bacteria.
  - g. Write down the causes and consequences of acid rain.
3. Describe the family papilionaceae with necessary diagrams. Also mention the botanical names of two plants of this family. [7.5]

OR

- Describe the life cycle of *Mucor* with well labeled diagrams. [7.5]
4. What is succession? Explain the general process of succession in Xerosere. [8]

#### Section (Zoology)

1. Answer any seven questions in very short. [7×1=7]
- a. How is histology different from cytology?
  - b. How is biology interrelated with physics?
  - c. State biogenetic law.
  - d. What are analogous organs? Give example.
  - e. Why do earthworms go away from light?
  - f. Why does *Paramecium* never get old?
  - g. What is digenetic life cycle? Give example.
  - h. Give the zoological name of Garden Snail and tapeworm.
  - i. What is meant by camouflage?
  - j. Name two National Parks of Nepal included in World Heritage Site.
2. Answer any five questions in brief. [5×3=15]
- a. Archaeopteryx is a connecting link between reptiles and birds. How?
  - b. Explain use and disuse of organ.

- c. Mention the characteristic features of Aves.
  - d. Draw a well-labeled diagram of Paramecium. (No description)
  - e. Earthworms are friends of farmers. Justify.
  - f. Give an account of adaptational features of duck.
  - g. List out the methods of wildlife conservation.
- Describe the excretory system of earthworm. [7.5]

OR

- Give an account of the Internal structure and working mechanism of heart of frog. [7.5]
- Discuss the Modern Synthetic Theory of Evolution. [8]

### Set 5

#### Section (Botany)

1. Answer any seven questions in very short. [7×1=7]

- a. Why Pteridophytes are called vascular cryptogams?
- b. What do you understand by binomial nomenclature?
- c. Define the term of inflorescence.
- d. Mention about phylogeny.
- e. Write down any two differences between DNA and RNA.
- f. What do you mean by ecotone?
- g. Mention about sori.
- h. State about predation.
- i. Define species.
- j. What do you mean by epipetalous condition?

2. Answer any five questions in brief. [5×3=15]

- a. Differentiate between prokaryotic and eukaryotic cell.
- b. Differentiate between dicot and monocot plants.
- c. Write down the general characters of bryophytes.
- d. Describe the scalariform conjugation in *Spirogyra*.
- e. Discuss carbon cycle in nature.
- f. Explain prophase I of meiosis.
- g. Write economic importance of fungi.

3. Describe the family Compositae with necessary diagrams. Also mention the botanical names of two plants of this family. [7.5]

OR

- Describe the structure and reproduction of *Spirogyra*. [7.5]
4. Define ecosystem. Describe the structural and functional components of ecosystem. [8]

#### Section (Zoology)

1. Answer any seven questions in very short. [7×1=7]

- a. Who propounded the special creation theory?
- b. Define the term Palaeontology.
- c. Write the zoological name of Jelly fish and Pigeon.
- d. What do you mean by connecting link?
- e. Point out the basis of classification of Phylum Porifera.
- f. Name the pigment found in the skin of earthworm.
- g. What enzymes are present in pancreatic juice of frog?
- h. Give the function of nematocysts.
- i. Define adaptation.
- j. What is sensitivity?

2. Answer any five questions in brief. [5×3=15]

- a. Discuss Precipitation test.
- b. Describe Francesco Redi's Experiment.
- c. Mention the important characters of Phylum Porifera.
- d. Discuss gamogony in Plasmodium.
- e. The cutaneous respiration in frog.
- f. Discuss the causes of bird migration.
- g. Discuss the effects of pesticides.

3. Describe the reproductive system of earthworm with labelled diagram. [7.5]

OR

- Give an account of reproductive system of frog. [7.5]
4. Discuss the evolution of modern man starting from Proconsul. [8]