Answer Key

Past Paper Questions · Chapter 2 — Biodiversity (Biology SSC-I)

Paper	Source
Paper 1 — Model Paper 2025	FBISE Model Paper · Curriculum 2022-23 · Inclusive Scheme of Studies 2024
Paper 2 — 2025, 1st Exam (Old)	Footer code 1SA-I 25006 (OLD) · Curriculum 2006
Paper 3 — 2025, 1st Exam (B)	Footer code 1SA-I 25006 (B) · Standard
Paper 4 — 2025, 1st Exam (D)	Footer code 1SA-I 25006 (D) · Standard
Paper 5 — 2025, 2nd Exam	Footer code 1SA-II 25006 · Standard · stamped 10/02/2026
Paper 6 — Model Paper 2026 (50% MCQs)	FBISE Model Paper · 60 MCQs (0.5 mark each) + 30 marks descriptive
Paper 7 — 2026 (B)	Footer code 1SA-I 26006 (B) · Inclusive 2024
Paper 8 — 2026 (D)	Footer code 1SA-I 26006 (D) · Inclusive 2024
Paper 9 — 2026 (M)	Footer code 1SA-I 26006 (M) · Inclusive 2024

Same paper sequence and question numbers as the Past Paper Questions file. Answers follow the Chapter 2 textbook (Biodiversity) and are written in exam style; for the marks given, write the points in your own words. Answers are in teal-marked boxes.

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Paper 1 — Model Paper 2025

FBISE Model Paper · Curriculum 2022-23 · Inclusive Scheme of Studies 2024

Section A — MCQ

Q1(iv). The scientific study of organisms and their evolutionary relationship is called:

Ans: C) Systematics

Section B — Short Questions (Q2)

(i) (OR) Show the complete taxonomic classification of human beings. **[3]**

> **Ans:** Domain: Eukarya | **Kingdom:** Animalia | **Phylum:** Chordata | **Class:** Mammalia
> **Order:** Primate(s) | **Family:** Homonidae (Hominidae) | **Genus:** *Homo* | **Species:** *Homo sapiens*

(x) (OR) Name three distinct domains of living organisms with one distinguishing feature of each? **[3]**

> **Ans:** • **Archaea:** prokaryotic; cell wall contains no peptidoglycan (often live in extreme environments).
> • **Bacteria:** prokaryotic; cell wall contains peptidoglycan.
> • **Eukarya:** cells have a true nucleus (eukaryotic cells).

Paper 2 — 2025, 1st Exam (Old)

Footer code 1SA-I 25006 (OLD) · Curriculum 2006

Section A — MCQ

Q3. Which one is correct scientific name according to binomial nomenclature?

Ans: B) *Homo sapiens*

Section B — Short Questions (Q2)

(x) (OR) How does biodiversity contribute to stability of natural ecosystem? Explain briefly. Provide one example. **[3]**

> **Ans:** • Biodiversity gives oxygen, clean water and air, and helps in the carbon cycle and nutrient fixing, so plants can grow.
> • Pests are controlled by organisms such as insects, birds and fungi; biodiversity also helps protect against flooding and regulates climate.
> • It helps in pollination and crop production.
> • **Example:** birds and insects control crop pests while bees pollinate flowers, so the ecosystem stays balanced.

Section C — Long Questions

Q.4 What is meant by two kingdom and five kingdom classification systems? Give their comparison. **[5]**

Basis	Two-kingdom system	Five-kingdom system
Kingdoms	Plantae and Animalia	Monera, Protista, Fungi, Plantae, Animalia
Proposed	Oldest system	Robert Whittaker, 1967
Plantae contains	Autotrophs; bacteria, fungi and algae also included	Only eukaryotic, multicellular, autotrophic plants (cell wall of cellulose)
Animalia contains	Organisms that depend on autotrophs or other heterotrophs	Multicellular heterotrophic eukaryotes without cell wall
Bacteria	Placed in Plantae	Bacteria and archaea together in kingdom Monera (prokaryotes)
Euglena-like unicellular organisms	No separate place (show plant and animal characters)	Placed in kingdom Protista
Fungi	Placed in Plantae	Separate kingdom (saprotrophic decomposers, chitin in cell wall)

Ans: **Two-kingdom system:** the oldest system; it classifies organisms into two kingdoms, Plantae and Animalia.
Five-kingdom system: proposed by Robert Whittaker in 1967; the five kingdoms are Monera, Protista, Fungi, Plantae and Animalia.
Comparison: see table (a separate three-kingdom system by Ernst Haeckel added Protista in between).

Paper 3 — 2025, 1st Exam (B)

Footer code 1SA-I 25006 (B) · Standard

Section A — MCQ

Q2. If human and cats belong to same class, they must belong to same:

Ans: D) Phylum

Q3. Colonial organization is the unique feature of kingdom:

Ans: C) Protista

Section B — Short Questions (Q2)

(i) (OR) Complete the table (Algae, Chitin, Bacteria). **[3]**

Name of group of organism	Composition of cell wall
Algae	**Cellulose**
Fungi	Chitin
Bacteria	**Peptidoglycan**

Ans: Completed table is shown (answers in teal). Fungi have chitin in their cell wall; algae (plant-like protists) have cellulose; bacterial cell wall contains peptidoglycan.

(ii) (OR) Outline taxonomic hierarchy of human up to taxon of phylum. **[3]**

Ans: Domain: Eukarya → Kingdom: Animalia → Phylum: Chordata.

(v) Why are viruses considered to be at borderline between living and non-living organisms? **[3]**

> **Ans: Living characters:** they occur in different varieties, have their own genetic material (DNA or RNA), reproduce using the host cell, and enter living cells to cause diseases.
> **Non-living characters:** they lack cellular structure and enzyme system, can be crystallized and stored in a bottle, do not respire, and behave as inert particles outside the host.
> So they show characters of both, and are not included in any domain or kingdom.

Paper 4 — 2025, 1st Exam (D)

Footer code 1SA-I 25006 (D) · Standard

Section A — MCQ

Q2. A multicellular eukaryotic heterotrophic organism having chitinous cell wall is the member of kingdom:

Ans: C) Fungi

Q3. A _____ is a group of related genera.

Ans: A) Family

Section B — Short Questions (Q2)

(ii) (OR) Outline taxonomic hierarchy of pea up to taxon of phylum. **[3]**

> **Ans:** Domain: Eukarya → Kingdom: Plantae → Phylum (Division): Magnoliophyta.

(v) Compare domain archaea and eubacteria. (Any two points) **[3]**

Point	Archaea	Bacteria (Eubacteria)
Cell type	Prokaryotic	Prokaryotic
Cell wall	No peptidoglycan	Contains peptidoglycan
rRNA	Unique to Archaea	Unique to Bacteria
Antibiotics	Not sensitive to some antibiotics that affect bacteria; sensitive to some that affect Eukarya	Sensitive to traditional antibiotics; resistant to most that affect Eukarya
Habitat	Often live in extreme environments (methanogens, halophiles, thermoacidophiles)	Common/ordinary environments

> **Ans:** Any two points from the table are enough: for example, (1) Archaea cell wall has no peptidoglycan whereas Bacteria cell wall contains peptidoglycan; (2) Archaea are not sensitive to some antibiotics that affect bacteria whereas Bacteria are sensitive to traditional antibiotics.

Paper 5 — 2025, 2nd Exam

Footer code 1SA-II 25006 · Standard · stamped 10/02/2026

Section A — MCQ

Q2. Biodiversity is defined as the:

Ans: A) Variety of living organisms

Q12. A group of organisms that can interbreed and produce fertile offsprings is called:

Ans: B) Species

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Section B — Short Questions (Q2)

(i) (OR) Explain briefly ‘biodiversity’ and ‘classification’. **[1.5 + 1.5]**

> **Ans:** • **Biodiversity** (from “biological diversity”) is the variety of living organisms on earth; it has ecological and economic importance (food, medicines, fuel, clothing, housing).
> • **Classification** is the grouping of organisms into classes on the basis of similarities and differences, which brings together like things and separates unlike things.

Paper 6 — Model Paper 2026 (50% MCQs)

FBISE Model Paper · 60 MCQs (0.5 mark each) + 30 marks descriptive

Section A — MCQ (0.5 mark each)

Q7. Which kingdom contains eukaryotes with cell walls and an absorptive mode of nutrition?

Ans: A) Fungi

Q8. Which one of the following best defines “biodiversity”?

Ans: C) The variety of living organisms found in a specific area or on Earth

Q9. In the taxonomic hierarchy starting from kingdom, which rank comes immediately after Family?

Ans: C) Genus

Q10. Earliest classification systems were mainly based on:

Ans: D) Physical characteristic

Section B — Short Questions

Q1 Define binomial nomenclature. Give scientific names of one animal and one plant using binomial nomenclature. **[1+1+1]**

> **Ans:** • **Definition:** the system of naming organisms (introduced by Carolus Linnaeus) in which each organism gets a two-part Latin name; the first part is the genus (starts with a capital letter) and the second is the species (starts with a small letter).
> • **Animal:** *Homo sapiens* (human) | **Plant:** *Pisum sativum* (pea) or *Oryza sativa* (rice).
> • Scientific names are written in italics (or underlined when handwritten).

Paper 7 — 2026 (B)

Footer code 1SA-I 26006 (B) · Inclusive 2024

Section A — MCQ

Q4. Which condition is essential for organisms to be placed in the same species?

Ans: C) Produce fertile offspring

Section B — Short Questions (Q2)

(v) Name the domain which includes organisms without a true nucleus. Also write two characteristics of this domain. **[1+2]**

> **Ans:** Organisms without a true nucleus are prokaryotes, found in two domains: **Archaea** and **Bacteria**. Write either one:
> **Domain Archaea:** (1) prokaryotic cells; (2) cell wall contains no peptidoglycan (also: often live in extreme environments).
> **Domain Bacteria:** (1) prokaryotic cells; (2) cell wall contains peptidoglycan (also: sensitive to traditional antibiotics).

(vi) (OR) What is meant by family, genus and class. According to taxonomic ranking. **[1x3]**

> **Ans:** • **Family:** a group of related genera.
> • **Genus:** a group of related species.
> • **Class:** a group of related orders.

Paper 8 — 2026 (D)

Footer code 1SA-I 26006 (D) · Inclusive 2024

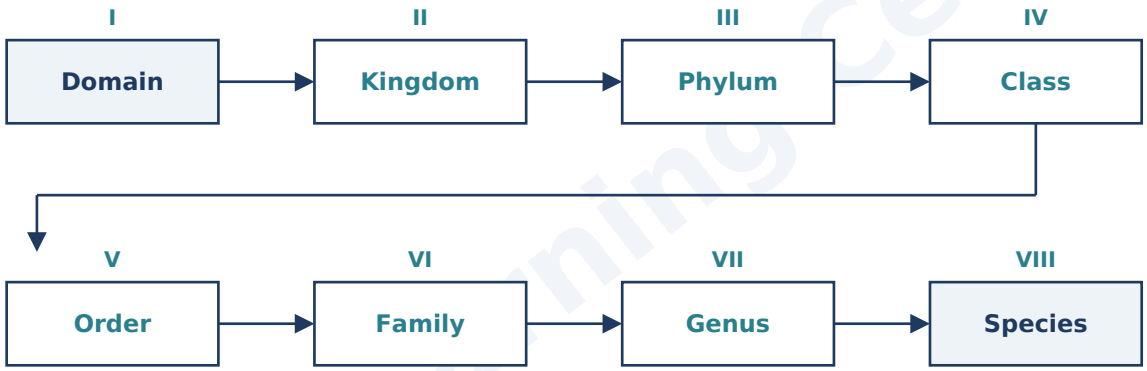
Section A — MCQ

Q4. A species is best defined as a group of organisms that:

Ans: B) Interbreed naturally

Section B — Short Questions (Q2)

(i) (OR) Complete the given flowchart of Taxonomic ranks of classification in correct order. **[3]**



> **Ans:** I Domain → II **Kingdom** → III **Phylum** (Division in plants and fungi) → IV **Class** → V **Order** → VI **Family** → VII **Genus** → VIII Species.

(v) Name and write one characteristic of three domains into which living organisms are broadly classified. **[1x3]**

> **Ans:** • **Archaea:** prokaryotic; cell wall has no peptidoglycan.
> • **Bacteria:** prokaryotic; cell wall contains peptidoglycan.
> • **Eukarya:** eukaryotic cells having a true nucleus.

Paper 9 — 2026 (M)

Footer code 1SA-I 26006 (M) · Inclusive 2024

Section A — MCQ

Q9. If two different species are crossed artificially, they will produce:

Ans: B) Sterile offsprings

Section B — Short Questions (Q2)

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(ix) Name the groups included in domain Eukarya. Also write two features of this domain. **[1+2]**

> **Ans: Groups (kingdoms):** Protista, Fungi, Plantae and Animalia.
> **Features (any two):** • cells are eukaryotic (true nucleus); • cell wall, where present, contains no peptidoglycan; • rRNA is unique to Eukarya; • resistant to traditional antibacterial antibiotics but sensitive to most antibiotics that affect eukaryotic cells.

(x) (OR) Identify the highest and lowest taxonomic rank used in modern classification. Also describe these briefly. **[1.5 + 1.5]**

> **Ans:** • **Highest rank: Domain** — a group of kingdoms; the category above the kingdom (three domains: Archaea, Bacteria, Eukarya).
> • **Lowest rank: Species** — a group of similar organisms that can interbreed and produce fertile offspring; it is the most basic unit of classification.
> • *(If the question is asked on the eight-rank list only, kingdom is the largest taxon.)*

Related — Partly Chapter 2 / Other Chapters

Brief answers

Taxonomy in Chapter 1 (branches of biology) questions

Paper 1, Q2(i) (OR) Match branch of biology with aspect (Pharmacology, Physiology, Pathology). **[0.5 x 6]**

> **Ans:** • Pharmacology — study of drugs and their effects; Physiology — functions of the body; Pathology — study of diseases.
> • Immunology — defence against pathogens; **Taxonomy** — classification and naming; Ecology — relations between organisms and environment.

Paper 2, Q2(i) Branch | To study: Plants, Taxonomy, Insects. **[3]**

> **Ans:** • Plants — Botany; **Taxonomy** — classification and naming of organisms; Insects — Entomology.

Paper 9, Q2(iii) Briefly describe Taxonomy, Immunology and Morphology with one example of each. **[1x3]**

> **Ans:** • **Taxonomy:** identification, naming and classification of organisms; e.g. naming human as *Homo sapiens*.
> • **Immunology:** study of the body's defence against pathogens; e.g. how vaccines protect.
> • **Morphology:** study of form and external structure of organisms; e.g. shape of a leaf or flower.

Speciation (Evolution chapter)

Paper 3, Q11. The evolutionary process by which new biological species arise is called:

Ans: D) Speciation

Paper 7, Q2(ii) Briefly explain speciation. **[3]**

> **Ans:** • Speciation is the formation of new species from an existing species.
> • When populations become isolated, variations and natural selection build up differences until they can no longer interbreed and produce fertile offspring.