

CHAPTER 1

THE SCIENCE OF BIOLOGY

Complete Solved MCQ Bank

75

Solved MCQs

5

Topic Sections

100%

Answers Verified

Every question is answer-keyed and explained in detail — covering the definition of Biology, its major fields and sub-fields, career pathways, the scientific method, and the classic malaria case study.

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How to Use This MCQ Bank

✓ The **correct option** is highlighted in green with a tick mark.

 Cover the answers first, attempt each MCQ, then check your response.



A short **explanation** follows every question — read it even if you answered correctly.



Questions are grouped by topic, following the order of the textbook chapter.

Q1

What does the word “Biology” originate from?

A Two Latin words

B Two Greek words: ‘bios’ and ‘logos’ ✓

C Two Arabic words

D Two French words

Explanation Biology comes from the Greek words ‘bios’ (life) and ‘logos’ (study) — literally, the study of life.

Q2

Biology is best defined as:

A The science of matter

B The science of life ✓

C The science of energy

D The science of numbers

Explanation Biology is the science of life — it explores the structures, functions, and interactions of living organisms.

Q3

Which of the following is NOT one of the three major fields of Biology?

A Zoology

B Botany

C Microbiology

D Geology



Explanation The three major fields of Biology are Zoology, Botany, and Microbiology. Geology is the study of the Earth, not life.

Q4

Zoology is the study of:

A Plants

B Animals, including structure, function, behaviour and diversity ✓

C Microorganisms

D Fossils

Explanation Zoology focuses on animals — their structure, function, behaviour, and diversity.

Q5

Botany deals with the study of:

A Animals

B Plants, including structure, growth and reproduction ✓

C Bacteria

D Rocks and minerals

Explanation Botany is the study of plants, covering their structure, growth, reproduction, and interaction with the environment.

Q6

Microbiology is the study of:

A Large animals

B Fossils



Microorganisms such as bacteria and microscopic fungi



D Plant reproduction only

Explanation Microbiology examines microorganisms — their structures, functions, habitats, reproduction, and impact on health and the environment.

Sub-Fields of Biology

Q7

Which branch of Biology studies the outward appearance — shape, colour and pattern — of organisms?

A Physiology

B Morphology ✓

C Histology

D Taxonomy

Explanation Morphology is the study of the form and structure of organisms, focusing on their outward appearance as well as internal structures like organs.

Q8

Anatomy is particularly concerned with the study of:

A Animal behaviour

B The internal physical structure of organisms ✓

C Classification of species

D Drug effects on the body

Explanation Anatomy explores internal physical structure, particularly in humans, aiding disease diagnosis and medical device development.

Q9

Physiology deals with:

A The outward appearance of organisms

B The functioning of body parts, such as circulation ✓

C Fossil study

D Genetic disease transfer

Explanation Physiology deals with how body parts function — for example, how the blood circulatory system transports vital substances.

Q10

Histology is defined as:

A The study of fossils

B The microscopic study of tissues ✓

C The study of drugs

D The study of ecosystems

Explanation Histology is the microscopic study of tissues — groups of similarly functioning cells — useful in disease diagnosis and drug studies.

Q11

Cytology is the study of:

A Tissues

B Organs

C Cells, the building blocks of life ✓

D Ecosystems

Explanation Cytology studies cells, unraveling their fundamental structures, organelles, and mechanisms of cell division.

Q12

**According to the chapter,
approximately how many cells
does the human body contain?**

A 3 million

B 30 million

C 30 trillion ✓

D 3 trillion

Explanation The chapter notes the human body contains over 30 trillion cells, of various types with unique structures.

Q13

Molecular Biology deals with the study of:

A Carbohydrates, proteins, lipids and nucleic acids ✓

B Only proteins

C Only DNA sequences

D Rocks and minerals

Explanation Molecular Biology studies biological molecules — carbohydrates, proteins, lipids, and nucleic acids — and fundamental life processes.

Q14

Which branch studies the development of an organism from a fertilized egg?

A Genetics

B Embryology



C Taxonomy

D Ecology

Explanation Embryology studies development from a fertilized egg, including tissue and organ formation and birth defects.

Q15

Genetics deals with the study of:

A Fossils of ancient life

B Transfer of characteristics from parents to offspring ✓

C Ocean biodiversity

D Outward appearance of organisms

Explanation Genetics studies how characteristics transfer from parents to offspring, the causes of genetic diseases, and improved plant/animal varieties.

Q16

Palaeontology is the branch of Biology that deals with the study of:

A Living cells

B Fossils ✓

C Drugs

D Ecosystems

Explanation Palaeontology deals with fossils, helping scientists understand the evolutionary history of organisms.

Q17

According to the chapter, the oldest known fossil is estimated to be how old?

A 3.5 million years

B 35 million years

C 3.5 billion years ✓

D 350 million years

Explanation The oldest known fossil, a Cyanobacterium, is estimated to be about 3.5 billion years old.

Q18

The oldest known fossil mentioned in the chapter belongs to which organism?

A Dinosaur

B Cyanobacterium ✓

C Trilobite

D Fern

Explanation The chapter states the oldest known fossil is a Cyanobacterium, estimated at 3.5 billion years old.

Q19

Taxonomy deals with:

A Study of diseases

B Classification of organisms based on similarities and differences ✓

C Study of drugs

D Study of tissues

Explanation Taxonomy classifies organisms into groups based on similarities and differences, helping organize and understand biodiversity.

Q20

Ecology is the branch of Biology that studies:

A Relationships between organisms and their environment ✓

B The internal structure of organisms

C Fossils of ancient organisms

D Drug reactions in the body

Explanation Ecology studies relationships between organisms and their environment, helping conserve biodiversity and address environmental problems.

Q21

Which branch of Biology helps us understand ocean biodiversity, such as coral reefs?

A Marine Biology



B Botany

C Palaeontology

D Genetics

Explanation Marine Biology deals with the study of life in oceans, helping discover new species and address marine conservation issues.

Q22

Pathology is the study of:

A Only healthy organs

B Diseases, their causes and effects ✓

C Ocean life

D Fossils

Explanation Pathology studies diseases, their causes, and effects, aiding diagnosis, prevention, and treatment — for example, how cancer develops.

Q23

Immunology focuses on the study of:

A Fossils

B

The immune system and its role against diseases



C

Plant reproduction

D

Classification of species

Explanation Immunology studies the immune system, helping develop vaccines, treat autoimmune diseases, and improve immune response to infections.

Q24

Pharmacology is the branch of Biology dealing with:

A Classification of organisms

B Drugs and their effects on the body ✓

C Fossil formations

D Cell division

Explanation Pharmacology studies drugs and their effects on the body, aiding the development of new antibiotics and medicines.

Q25

Which career requires a 5-year Bachelor of Medicine, Bachelor of Surgery (MBBS) degree?

A Dentistry

B Medicine and Surgery ✓

C Physiotherapy

D Forensics

Explanation The profession of Medicine and Surgery requires a 5-year MBBS degree, dealing with diagnosis, repair, and treatment of the body.

Q26

Dentists specialize in the diagnosis and treatment of:

- A** Oral and dental health ✓
- B** Ocean life
- C** Genetic counselling
- D** Crop production

Explanation Dentists specialize in oral health, diagnosing and treating dental diseases and performing surgeries.

Q27

Which degree is required to become a Dentist, according to the chapter?

A 5-year MBBS

B 4-year Bachelor of Dental Surgery (BDS) ✓

C 4-year BS Pharmacy

D 4-year BS Forestry

Explanation Dentists need a 4-year Bachelor of Dental Surgery (BDS) degree.

Q28

Which degree(s) are required for a career in Pharmacology, per the chapter?

A BS in Pharmacy or Doctor of Pharmacy (D.Pharm) ✓

B BDS

C MS in Zoology

D BS in Forestry

Explanation Pharmacologists need a Bachelor of Studies (BS) in Pharmacy or a Doctor of Pharmacy (D.Pharm) degree.

Q29

Physiotherapy is the therapy used to restore:

A Digestive function only

B Movement and physical function impaired by disease or injury ✓

C Immune response

D Genetic traits

Explanation Physiotherapy restores movement and physical function impaired by disease or injury, using exercise and physical modalities like massage.

Q30

Fisheries and Wildlife departments offer jobs to biologists after which qualification?

A

A BS and Master of Studies (MS) in Zoology, Fisheries or Aquaculture



B

Only a BDS

C

Only an MBBS

D

A BS in Forensic Science

Explanation Fisheries and Wildlife departments hire biologists holding a BS and MS in Zoology, Fisheries, or Aquaculture.

Q31

Which professionals improve farming practices, crop production and sustainable agricultural techniques?

A Horticulturists

B Agricultural scientists ✓

C Foresters

D Pathologists

Explanation Agricultural scientists improve farming practices, crop production, and sustainable agricultural techniques, requiring a 4-year BS in Agriculture.

Q32

Animal Husbandry, as a career field, primarily involves:

A Cultivating fruits and vegetables

B Breeding and caring for livestock to improve quality and productivity ✓

C Managing forests

D Studying crime scenes

Explanation Animal Husbandry involves breeding and caring for livestock; a 4-year BS degree in Animal Husbandry is required.

Q33

Horticulturists cultivate:

A Livestock

B Fruits, vegetables, flowers and ornamental plants ✓

C Forensic evidence

D Marine organisms

Explanation Horticulturists cultivate fruits, vegetables, flowers, and ornamental plants, requiring a 4-year BS degree in Horticulture.

Q34

Foresters are primarily responsible for:

A Managing and conserving forests and wildlife ✓

B Studying fossils

C Diagnosing human diseases

D Developing vaccines

Explanation Foresters manage and conserve forests and wildlife, requiring a 4-year BS degree in Forestry.

Q35

Biotechnologists use biological processes to develop products and technologies in which fields?

A Only medicine

B Medicine, agriculture, and more ✓

C Only forestry

D Only forensics

Explanation Biotechnologists develop products and technologies across medicine, agriculture, and more, requiring a 4-year BS in Biotechnology.

Q36

Forensic scientists analyse physical evidence from crime scenes. Which degree is needed for this career?

A A 4-year BS in Forensic Science ✓

B MBBS

C BDS

D BS in Agriculture

Explanation Forensic scientists need a 4-year BS degree in Forensic Science to analyse physical evidence in criminal investigations.

The Scientific Method

Q37

The specific steps scientists follow while doing scientific work are collectively called:

- A** The biological law
- B** The scientific method ✓
- C** The taxonomy system
- D** The hypothesis chain

Explanation These specific steps are called the scientific method; in biological research, they are called the biological method.

Q38

What is the first step of the scientific method?

A Observation

B Recognition of a scientific problem ✓

C Hypothesis

D Experiment

Explanation The first step is recognizing a scientific problem — identifying and defining the specific issue to be investigated.

Q39

Which step of the scientific method directly follows Hypothesis?

A Observation

B Deduction ✓

C Results

D Recognition of Problem

Explanation After forming a Hypothesis, scientists develop logical results from it, called Deductions.

Q40

Observations that cannot be measured with numbers, such as the colour and texture of a flower, are called:

A Quantitative observations

B Qualitative observations ✓

C Experimental observations

D Deductive observations

Explanation Qualitative observations involve descriptive information, such as colour and texture, that cannot be expressed numerically.

Q41

Observations that involve measurements or numerical data, such as counting birds in a tree, are called:

- A** Qualitative observations
- B** Quantitative observations ✓
- C** Hypothetical observations
- D** Deductive observations

Explanation Quantitative observations involve measurements or numerical data expressed in terms of quantity.

Q42

Why are quantitative observations considered more accurate than qualitative ones?

A They are invariable, measurable and can be recorded in numbers ✓

B They are based on guesses

C They cannot be tested

D They are always incorrect

Explanation Quantitative observations are more accurate because they are invariable, measurable, and can be recorded precisely in numbers.

Q43

A tentative statement that may answer a scientific problem, based on observations, is called a:

A Law

B Theory

C Hypothesis



D Deduction

Explanation A hypothesis is a tentative answer to a scientific problem, developed on the basis of observations.

Q44

Which of the following is NOT listed as a characteristic of a hypothesis in the chapter?

- A** It is a proposed statement to answer the problem
- B** It always matches with the available observations
- C** It can never be tested through experiments ✓
- D** There is always a way to disprove it

Explanation A hypothesis must be testable through experiments — the chapter explicitly lists this as a required characteristic.

Q45

Deductions from a hypothesis usually follow the pattern of:

- A** 'if-then' statements ✓
- B** 'either-or' statements
- C** 'before-after' statements
- D** 'cause-only' statements

Explanation Scientists assume the hypothesis is true and follow the pattern: 'if' the hypothesis is true, 'then' what results might follow.

Q46

Given the hypothesis “Iron deficiency causes leaf discoloration and stunted growth,” what is the correct deduction?

- A** Adding iron to the soil will improve leaf colour and plant growth ✓
- B** Removing iron will improve plant growth
- C** Iron has no effect on plants
- D** Sunlight alone causes leaf discoloration

Explanation Following the ‘if-then’ pattern: if iron deficiency causes the symptoms, then adding iron to the soil should improve colour and growth.

Q47

In an experiment, the group that receives the treatment being tested is called the:

A Control group

B Experimental group



C Observation group

D Deduction group

Explanation The experimental group receives the treatment or condition being tested, e.g., the plant given carbon dioxide.

Q48

The group that does NOT receive the treatment, used for comparison, is called the:

A Experimental group

B Control group ✓

C Hypothesis group

D Result group

Explanation The control group does not receive the treatment; it is used to compare against the experimental group's results.

Q49

When a hypothesis is proved correct and alternate hypotheses are proved incorrect, scientists:

A Reject the correct hypothesis

B Accept the proved hypothesis and make further deductions from it ✓

C Stop all research

D Ignore the results entirely

Explanation The proved hypothesis is accepted, and scientists make new deductions from it, followed by further experiments to confirm it.

Q50

Scientists gather data, use statistical analyses and graphs, and share findings in journals — this final step is called:

A Deduction

B Observation

C Results



D Hypothesis

Explanation In the Results step, scientists summarize data, acknowledge sources, and publish/present their findings to other scientists.

Q51

What is the main purpose of publishing results in scientific journals and presenting at meetings?

A To hide findings from other scientists

B To share findings with other scientists and acknowledge sources ✓

C To avoid further experiments

D To delay research indefinitely

Explanation Publishing and presenting results allows scientists to share findings with the scientific community and properly credit sources.

Q52

A hypothesis supported by extensive evidence and repeatedly validated by multiple researchers becomes a:

A Law

B Theory ✓

C Observation

D Deduction

Explanation When a hypothesis gains extensive, repeatedly validated support, it becomes a theory — e.g., the theory of evolution.

Q53

Which of the following best describes a scientific Law or Principle?

A A uniform and constant fact of nature, proved again and again by experiments ✓

B A single unproven guess

C An untested hypothesis

D A personal opinion of a scientist

Explanation A scientific law is a uniform, constant fact of nature that has been repeatedly proved correct through experiments, unable to be disproved.

Q54

Which of the following is given as an example of a biological law in the chapter?

A Theory of Evolution

B Hardy-Weinberg law ✓

C Cell Theory

D Big Bang theory

Explanation The chapter names the Hardy-Weinberg law and Mendel's laws of inheritance as examples of biological laws.

Q55

According to the flowchart in the chapter, if a law/principle needs further testing, it can lead back to:

A A brand-new biological problem only

B Theory/Solution stage for further testing ✓

C Immediate rejection

D Nothing — laws are never tested again

Explanation The Figure 1.1 flowchart shows that laws/principles and theories/solutions undergo further testing in an ongoing cycle.

Q56

In all branches of science, according to the chapter, new discoveries mean that old theories are:

- A** Always kept unchanged forever
- B** Modified or replaced with better ones ✓
- C** Immediately declared false without testing
- D** Ignored completely

Explanation The chapter notes that as new things are discovered, old theories are modified or replaced with better ones.

Q57

According to the chapter, in human history, which disease has killed more people than any other?

A Tuberculosis

B Malaria ✓

C Influenza

D Cholera

Explanation The chapter states that in human history, malaria has killed more people than any other disease.

Q58

From the 17th to the 20th century, which drug was the only remedy for malaria?

A Penicillin

B Quinine



C Aspirin

D Chloroquine

Explanation Quinine was the only remedy for malaria from the 17th to the 20th century.

Q59

Who discovered the microorganism Plasmodium in the blood of a malarial patient, in 1878?

A Ronald Ross

B A. F. A. King

C Laverer



D Charles Darwin

Explanation In 1878, French army physician Laverer examined a malarial patient's blood under a microscope and named the microorganism Plasmodium.

Q60

Laverer, who identified Plasmodium, was a physician working with which army?

A British army

B French army



C Italian army

D American army

Explanation Laverer was a French army physician who conducted his research on the cause of malaria in 1878.

Q61

What hypothesis did biologists develop after observing Plasmodium in the blood of malarial patients?

- A** Mosquitoes cause malaria
- B** Plasmodium is the cause of malaria ✓
- C** Marshy water causes malaria
- D** Quinine causes malaria

Explanation Based on their observations, biologists hypothesized that 'Plasmodium is the cause of malaria.'

Q62

**To test the hypothesis
“Plasmodium is the cause of
malaria,” biologists examined
the blood of how many malarial
and healthy persons?**

A 50 and 50

B 100 malarial and 100 healthy persons ✓

C 200 and 100

D 10 and 10

Explanation Biologists examined blood samples of 100 malarial patients and 100 healthy persons under a microscope to test the hypothesis.

Q63

In this malaria experiment, which group served as the control group?

A The malarial patients

B The healthy persons ✓

C Both groups equally

D Neither group

Explanation The malarial patients were the experimental group, while the healthy persons served as the control group.

Q64

In 1883, which physician listed 20 observations related to the spread of malaria?

A Ronald Ross

B A. F. A. King ✓

C Laverer

D Louis Pasteur

Explanation In 1883, physician A. F. A. King listed 20 important observations about malaria, such as people sleeping outdoors getting malaria more often.

Q65

Based on his observations, King hypothesized that:

A Marshy water directly causes malaria

B Mosquitoes transmit Plasmodium and are involved in the spread of malaria ✓

C Quinine spreads malaria

D Sleeping outdoors always prevents malaria

Explanation King hypothesized that mosquitoes transmit Plasmodium and are therefore involved in the spread of malaria.

Q66

Ronald Ross was a British army physician conducting his malaria experiments while working in:

A Pakistan

B India ✓

C Egypt

D South Africa

Explanation Ronald Ross was a British army physician working in India when he performed his important malaria experiments in the 1880s.

Q67

In Ross's first experiment, a female *Anopheles* mosquito bit a malarial patient. Where did he later find *Plasmodium* multiplying?

A In the patient's saliva

B In the mosquito's stomach ✓

C In marsh water

D In quinine tablets

Explanation After killing the mosquito, Ross found *Plasmodium* multiplying in its stomach, supporting the deduction that mosquitoes carry *Plasmodium*.

Q68

Why did Ross avoid using human beings for his riskier follow-up experiment (infected mosquito biting a healthy person)?

A Sparrows were cheaper to obtain

B He did not want to use human beings for such a risky experiment ✓

C Sparrows do not get malaria

D It was required by his employer

Explanation Ross considered the experiment too risky for human subjects and chose sparrows instead.

Q69

Which mosquito species did Ross use in his experiments with sparrows?

A Anopheles

B Culex ✓

C Aedes

D Culiseta

Explanation Ross used female Culex mosquitoes to bite sparrows suffering from malaria, later allowing infected mosquitoes to bite healthy sparrows.

Q70

In Ross's sparrow experiment, where did he find that Plasmodium had moved after multiplying in the mosquito's stomach?

- A** Into the mosquito's salivary glands ✓
- B** Into the sparrow's feathers
- C** Into the water
- D** Into the quinine supply

Explanation Ross found that Plasmodium multiplied in the mosquito's stomach walls and then moved into its salivary glands, from where it could be transmitted.

Q71

What did Ross conclude after his sparrow experiments?

A

Mosquitoes are not involved in the spread of malaria

B

Mosquitoes transmit Plasmodium and are involved in the spread of malaria ✓

C

Quinine transmits Plasmodium

D

Sparrows are immune to malaria

Explanation Ross's sparrow experiments proved that mosquitoes transmit Plasmodium and are involved in spreading malaria.

Q72

In 1898, Italian biologists confirmed mosquito transmission of malaria to humans using which mosquito?

A Culex

B Aedes

C Anopheles



D Mansonia

Explanation In 1898, Italian biologists allowed an infected Anopheles mosquito to bite a healthy man, who later became ill with malaria — confirming transmission in humans.

Q73

According to Figure 1.3 in the chapter, which mosquito is shown transmitting malaria between sparrows?

A Anopheles

B Culex ✓

C Aedes

D Mansonia

Explanation Figure 1.3 shows malaria being transmitted between sparrows by the Culex mosquito, and between humans by the Anopheles mosquito.

Q74

Which of the following was an early observation about malaria mentioned in the chapter (before the cause was known)?

A

Malaria and marshy areas have some relation ✓

B

Malaria only affects children

C

Malaria has no connection to mosquitoes at all

D

Malaria was completely understood by ancient physicians

Explanation Among the early observations were: malaria and marshy areas have some relation, quinine is effective against it, and Plasmodium was seen in patients' blood.

Q75

The observation that drinking marsh water does NOT cause malaria helped biologists realize:

A That Plasmodium must be transmitted some other way, not through drinking water ✓

B That malaria has no real cause

C That marshes are irrelevant to malaria entirely

D That quinine causes malaria

Explanation Since drinking marsh water did not cause malaria, biologists reasoned Plasmodium was not present in the marsh water itself, prompting further investigation into how it spreads.

CHAPTER 1 COMPLETE

Well Done!

You've worked through all 75 solved MCQs on *The Science of Biology*. Keep this bank handy for quick revision before quizzes and tests.

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