THE SMART STUDY NOTES
CLASS 9th New BIOLOGY
Chapter 1: THE SCIENCE OF BILOLOGY

1.1 - BIOLOGY AND ITS BRANCHES

1. Which branch of Biology studies microorganisms like bacteria?
a) Botany b) Zoology c) Microbiology d) Ecology
Answer: c

2. Morphology deals with the study of:
a) Cell division b) Form and structure of organisms
c) Chemical reactions in cells d) Fossils
Answer: b

3. The study of tissues under a microscope is called:
a) Cytology b) Histology c) Anatomy d) Physiology
Answer: b

4. Which branch focuses on the classification of organisms?
a) Ecology b) Taxonomy
c) Genetics d) Molecular Biology
Answer: b

5. Palaeontology involves the study of:
a) Immune systems b) Fossils
c) Marine life d) Plant growth
Answer: b

6. The branch that examines drug effects on the body is:
a) Pathology b) Pharmacology
c) Immunology d) Embryology
Answer: b

7. Ecology is the study of:
a) Cell organelles b) Organisms and their environment
c) Genetic inheritance d) Human anatomy
Answer: b

8. Which branch investigates the immune system?
a) Immunology b) Pathology
c) Histology d) Biostatistics
Answer: a

9. Embryology focuses on:
a) Fossil records b) Development from fertilized egg
c) Animal behavior d) Plant reproduction
Answer: b

10. The study of marine life falls under:
a) Zoology b) Marine Biology
c) Biogeography d) Genetics
Answer: b

1.2 - RELATION OF BIOLOGY WITH OTHER SCIENCES

11. Biochemistry combines Biology with:
a) Physics b) Chemistry
c) Mathematics d) Geography
Answer: b

12. Bio-economics evaluates:
a) Genetic mutations b) Cost and profit of biological projects c) Drug interactions d) Ecosystem balance
Answer: b

13. Biophysics integrates Biology with:
a) Physics b) Computer Science
c) Economics d) Statistics
Answer: a

14. Computational Biology uses tools from:
a) Computer Science b) Chemistry
c) Geology d) Sociology
Answer: a

15. Biogeography links Biology with:
a) Geography b) Economics
c) Physics d) Medicine
Answer: a

1.3 - CAREERS IN BIOLOGY

16. A 5-year MBBS degree is required for:
a) Medicine and Surgery b) Dentistry
c) Pharmacy d) Physiotherapy
Answer: a

17. Genetic counselling involves:
a) Animal breeding b) Advising on genetic conditions
c) Drug development d) Soil analysis
Answer: b

18. Forensic scientists require a degree in:
a) Botany b) Forensic Science
c) Microbiology d) Agriculture
Answer: b

19. A BS in Biotechnology prepares students for:
a) Developing biological products b) Dental surgery
c) Wildlife management d) Teaching Mathematics
Answer: a

20. Animal Husbandry focuses on:
a) Crop production b) Livestock breeding
c) Marine conservation d) Drug testing
Answer: b

1.4 - QURANIC INSTRUCTIONS TO REVEAL THE STUDY OF LIFE

21. The Quran states that all living things were created from:
a) Clay b) Water c) Fire d) Air
Answer: b

22. The verse “He made man from clay” is in Sura:
a) Al-Nur b) Al-Rehman c) Al-Mominoon d) Al-Anbia
Answer: b

23. Which Quranic verse describes embryonic development?
a) Sura Al-Rehman:14 b) Sura Al-Mominoon:14
c) Sura Al-Nur:45 d) Sura Al-Anbia:30
Answer: b

24. The Quran links animal diversity to:
a) Human intervention b) Divine creation
c) Environmental factors d) Genetic mutations
Answer: b

25. Which verse mentions animals moving on two or four legs?
a) Sura Al-Nur:45 b) Sura Al-Rehman:14
c) Sura Al-Anbia:30 d) Sura Al-Mominoon:14
Answer: a

1.5 - SCIENCE AS A COLLABORATIVE FIELD

26. The Human Genome Project involved:
a) Molecular biologists and computer scientists
b) Ecologists and economists
c) Astronomers and geologists
d) Physicists and chemists
Answer: a

27. Climate change research requires collaboration with:
a) Atmospheric scientists and ecologists
b) Pharmacologists and dentists
c) Surgeons and nurses
d) Botanists and zoologists
Answer: a

28. Robotics integrates knowledge from:
a) Computer Science and Neuroscience
b) Pathology and Immunology
c) Agriculture and Forestry
d) Genetics and Taxonomy
Answer: a

29. Space exploration involves:
a) Astrophysics and Biology
b) Dentistry and Surgery
c) Marine Biology and Ecology
d) Pharmacology and Pathology
Answer: a

30. Cancer research is an example of collaboration between:
a) Oncologists and geneticists
b) Veterinarians and farmers
c) Dentists and surgeons
d) Botanists and microbiologists
Answer: a

1.6 - SCIENTIFIC METHOD

31. The first step in the scientific method is:
a) Hypothesis b) Recognition of a problem
c) Experimentation d) Observation
Answer: b

32. Quantitative observations involve:
a) Describing colors b) Numerical measurements
c) Subjective opinions d) Historical records
Answer: b

33. A hypothesis must be:
a) Always correct b) Testable
c) A proven fact d) A law of nature
Answer: b

34. Deductions in the scientific method follow:
a) If-then statements b) Random guesses
c) Statistical analyses d) Historical data
Answer: a

35. Control groups are used to:
a) Compare with experimental groups
b) Replace hypotheses
c) Validate laws d) Classify organisms
Answer: a

1.7 - THEORY AND LAW

36. A scientific theory is:
a) A random guess
b) Supported by extensive evidence
c) The same as a hypothesis d) A legal regulation
Answer: b

37. Mendel's laws of inheritance are an example of:
a) Hypothesis b) Scientific law c) Theory d) Deduction
Answer: b

38. A hypothesis becomes a theory after:
a) Repeated validation b) One experiment
c) Publication in a journal d) Government approval
Answer: a

39. The theory of evolution explains:
a) Cell structure b) Species change over time
c) Chemical reactions d) Fossil preservation
Answer: b

40. A scientific law is:
a) A tentative explanation
b) A constant fact of nature
c) A collaborative project
d) A Quranic instruction
Answer: b

1.8 - MALARIA CASE STUDY

41. Plasmodium was discovered by:
a) Ronald Ross b) Laveran
c) A. F. A. King d) Charles Darwin
Answer: b

42. Ronald Ross used _____ in his experiments:
a) Humans b) Sparrows c) Frogs d) Fish
Answer: b

43. Malaria transmission involves:

a) Mosquitoes b) Contaminated water
c) Airborne bacteria d) Direct contact
Answer: a

44. King's hypothesis linked malaria to:
a) Dirty water b) Mosquito bites
c) Cold weather d) Poor diet
Answer: b

45. The mosquito genus transmitting malaria is:
a) Aedes b) Anopheles c) Culex d) Tsetse
Answer: b

Miscellaneous Key Points

46. Hardy-Weinberg law is related to:
a) Population genetics b) Cell division
c) Photosynthesis d) Fossil dating
Answer: a

47. Biotechnology includes:
a) Genetically modified organisms
b) Fossil analysis
c) Disease diagnosis d) Animal classification
Answer: a

48. The oldest fossil discovered is a:
a) Dinosaur b) Cyanobacterium
c) Fern d) Human ancestor
Answer: b

49. Immunology helps in developing:
a) Vaccines b) Antibiotics c) Fertilizers d) Pesticides
Answer: a

50. Biostatistics applies:
a) Statistical methods to biological data
b) Economic theories to ecosystems
c) Physics principles to cells
d) Chemical reactions to tissues
Answer: a

Exercise MCQ's (Pages 22-23)

1. Which branch of Biology focuses on the study of the structure and function of cells?
a) Cytology b) Microbiology
c) Histology d) Ecology
Answer: a) Cytology
Explanation: Cytology is defined as the study of cells (Key Points, Page 3).

2. The study of heredity and variation in living organisms is known as:
a) Ecology b) Genetics
c) Anatomy d) Embryology
Answer: b) Genetics
Explanation: Genetics deals with the transfer of characteristics from parents to offspring (Page 3).

3. Insulin made through bacteria is an example of the technique of:
a) Parasitology b) Biotechnology
c) Biochemistry d) Histology
Answer: b) Biotechnology
Explanation: Biotechnology involves using biological processes to develop products (Page 6).

4. "Heart pumps blood, stomach digests food" relates to:
a) Physiology b) Anatomy
c) Morphology d) Histology
Answer: a) Physiology
Explanation: Physiology studies the functioning of body parts (Page 3).

5. Which branch of Biology involves the study of the classification of organisms?
a) Taxonomy b) Physiology
c) Palaeontology d) Biogeography
Answer: a) Taxonomy
Explanation: Taxonomy classifies organisms based on similarities and differences (Page 3).

6. Which step comes between making a hypothesis and doing experiments?
a) Making deductions b) Making observations
c) Summarizing results d) Analysing data
Answer: a) Making deductions
Explanation: Deductions follow hypotheses in the scientific method (Page 12).

7. Which is NOT a characteristic of the scientific method?
a) It relies on evidence
b) It involves formulating hypotheses
c) Hypothesis will always be correct
d) It requires rigorous testing
Answer: c) Hypothesis will always be correct
Explanation: Hypotheses are testable and can be disproven (Page 11).

8. Choose the correct sequence of steps of the scientific method:
a) Observations – hypothesis – deduction – experiments
b) Observations – hypothesis – law – theory
c) Hypothesis – observations – deduction – experiments
d) Law – theory – deduction – observations
Answer: a) Observations – hypothesis – deduction – experiments
Explanation: The sequence aligns with the scientific method steps (Page 10-12).

9. Why did people near smoky fires have less chance of suffering from malaria?
a) Smoke kills Plasmodium in their blood

b) Fire increases temperature and Plasmodium are killed in air

c) Mosquitoes cannot tolerate smoke and are repelled

d) Smoke kills Plasmodium present in mosquitoes

Answer: c) Mosquitoes cannot tolerate smoke and are repelled

Explanation: Smoke repels mosquitoes (Page 15).

10. Experiments are important in the scientific method because a researcher:

a) Always gets correct results

b) Disproves many hypotheses and gets some hypothesis proved

c) Is sure that he will prove the hypotheses

d) Gets a chance to work in the laboratory

Answer: b) Disproves many hypotheses and gets some hypothesis proved

Explanation: Experiments validate or reject hypotheses (Page 12).