

Chapter 6:

LIST OF PRACTICALS AND APPARATUS: _____

PRACTICALS XI-XII

Grade XI

Chapter 1: Cell Structure and Functions

1. Use of graticule and micrometer to study stomata and cells
2. Measuring the size of primary, secondary cell walls and middle lamella by micrometry
3. Preparation and examination of the slides of animal and plant cells using differential staining

Chapter 2: Biological Molecules

4. Performing Benedict's test for reducing sugars and confirmation of the presence of starch through Iodine test
5. Confirmation of the presence of proteins through Biuret test
6. Confirmation of the presence of lipids through Emulsion test
7. Demonstration of the presence of nucleic acids in biological materials

Chapter 3: Enzymes

8. Performing of chemical test to demonstrate that enzymes are proteins
9. Performing amylase test on starch with boiled amylase and un-boiled amylase in separate test tubes and confirmation through iodine test

Chapter 4: Bioenergetics

10. Extraction of the leaf pigments and their separation by paper chromatography

Chapter 5: Acellular Life

- No Practical Activity

Chapter 6: Prokaryotes

11. Identification of bacteria from curd, mouth, or bacterial culture and observation of bacterial culture for different shapes and sizes
12. Staining bacteria using Grams staining technique
13. Preparation and observation of the temporary mount of root nodule bacteria
14. Study of Nostoc, Oscillatoria and Anabaena from fresh or preserved material

Chapter 7: Protists and Fungi

15. Observation and drawing of representative members of each group of protists
16. Observation and drawing labeled diagrams of the life cycle of black bread mold and *Penicillium* from fresh culture and prepared slides

Chapter 8: Diversity among Plants

17. Identification of the vegetative and reproductive structures of *Marchantia* and *Funaria* by examining the fresh or preserved material
18. Identification of the vegetative and reproductive structures of a local fern and a *Pinus* and relate them with the concerned life cycles
19. Study of different types of inflorescence of *Cassia*, *Brassica*, *Achyranthus*, *Morus*, Candytuft, *Helianthus* and *Avena sativa*
20. Describing the flowers of Rose, *Cassia fistula*, *Solanum nigrum* and *Avena sativa*

Chapter 9: Diversity among Animals

21. Classifying the given invertebrates into phyla and given chordates into classes by using classification key

Chapter 10: Form and Functions in Plants

22. Demonstration of the evolution of CO₂ from leaf discs placed in dark and light, with the help of indicator (hydrogen carbonate)
23. Microscopic observation of the slide of LS of a dicot stem, identifying and drawing vessel element, vessel, and phloem sieve tubes
24. Locating annual rings in the log of a tree and calculation of the age of a plant by counting number of annual rings
25. Demonstration of phototropism, geotropism and thigmotropism in plants
26. Demonstration of the folding of leaf after touch in *Mimmosa pudica*

Chapter 11: Digestion

27. Tests to locate buds on tongue for detection of salt, sweet, sour and bitter taste
28. Microscopic observation of the villi, liver and pancreas from prepared slides

Chapter 12: Circulation

29. Correlating the *lub-dub* sounds of the closing of heart valves with the monitoring of the heartbeat
30. Identification of the phases of heartbeat on a printed ECG and comparison of the ECG of a cardiac patient with that of a healthy man
31. Dissection of the heart of sheep and describing its internal structure
32. Differentiation of an artery and a vein by observing prepared slides
33. Measuring blood pressure by using sphygmomanometer

Chapter 13: Immunity

34. Recognizing phagocytes and lymphocytes while observing prepared slides

Grade XII

Chapter 14: Respiration

35. Identification of different parts of the respiratory and reproductive system of a dissected frog (dissection would be done by the teacher)
36. Examination of sheep lungs
37. Comparison and interpretation of the X-ray films of lungs of a smoker with that of a healthy man

Chapter 15: Homeostasis

- ☛ No Practical Activity

Chapter 16: Support and Movement

38. Identification of the bones of the pelvic girdles, pectoral girdle, arms and legs by using the model of human skeleton
39. Comparison of the structure of skeletal, smooth and cardiac muscles with the help of prepared slides

Chapter 17: Nervous Coordination

40. Observation of the MRI scan of the brain of a sleeping human and compare it with that of a fully awake individual

Chapter 18: Chemical Coordination

- ☛ No Practical Activity

Chapter 19: Behavior

41. Observation of a spider's web and recording the instincts by providing it various stimuli.

Chapter 20: Reproduction

42. Examination of the prepared slides of histology of ovaries and drawing its structures

Chapter 21: Development and Aging

43. Identification of the group of vertebrates, through diagrams of different blastula.
44. Identification of the different stages in chick development through observation of prepared slides

Chapter 22: Inheritance

45. Evaluation of the inheritance of genes and their mixing during fertilization as based on mathematical probabilities
46. Calculation of probability by using the dice to calculate how many times out of 100 throws can students get sixes
47. Data collection from the class to see how many individuals have AB blood group and construction of a pie chart and histogram for the collected data
48. Testing of blood group using Antisera and performing agglutination reaction for Rh factor

Chapter 23: Chromosomes and DNA

- ☛ No Practical Activity

Chapter 24: Evolution

49. Interpretation of different homologous and analogous structures through observation in plants

Chapter 25: Man and His Environment

- ☛ No Practical Activity

Chapter 26: Biotechnology

- ☛ No Practical Activity

☛ **Chapter 27: Biology and Human Welfare**
No Practical Activity