Cbse Class 11 Biology Practical Lab Manual

Cbse Class 11 Biology Practical Lab Manual CBSE Class 11 Biology Practical Lab Manual A Guide to Handson Learning This manual serves as a comprehensive guide for CBSE Class 11 students undertaking their Biology practical experiments It aims to provide a structured approach to conducting experiments analyzing results and fostering a deeper understanding of biological concepts through practical application This manual is organized into distinct sections each covering a specific aspect of the practical syllabus 1 Safety Precautions and Laboratory Etiquette Importance of Safety Emphasis on adhering to laboratory safety guidelines to ensure a secure environment for all Laboratory Rules Clear guidelines on proper conduct use of equipment and waste disposal within the laboratory Personal Protective Equipment Importance of wearing lab coats goggles gloves and other protective gear when necessary Handling Chemicals and Biological Specimens Detailed instructions on safe handling storage and disposal of chemicals biological specimens and glassware Emergency Procedures Guidelines for handling accidents fire and other emergencies within the laboratory 2 Essential Laboratory Techniques Microscopy Detailed explanation of different types of microscopes their use and techniques for preparing slides and observing specimens Dissection Stepbystep instructions for dissecting various biological specimens emphasizing careful observation and recording of anatomical features Staining Techniques Exploration of different staining methods for enhancing visibility of cellular structures and components Quantitative Analysis to basic statistical techniques for analyzing data including mean standard deviation and graphical representations 2 3 Practical Experiments Experiment 1 Study of the External Morphology of a Cockroach This experiment involves detailed observation of a preserved cockroach identifying its external features and understanding their functions Experiment 2 Study of the Structure of a Compound Microscope This experiment focuses on understanding the components of a compound microscope their functions and how to use the microscope effectively Experiment 3 Preparation of a Temporary Mount of a Leaf Peel to Observe Stomata This experiment demonstrates the process of preparing a temporary mount and observing stomata under the microscope Experiment 4 Study of the Pollen Grains This experiment involves observing pollen grains from different flowering plants understanding their structure and significance in pollination Experiment 5 Observation of Different Types of Plastids This experiment explores the various types of plastids found in plant cells their functions and how to distinguish them under the microscope Experiment 6 Observation of Different Types of Bacteria This experiment introduces students to the diversity of bacteria focusing on morphology staining techniques and their role in various environments Experiment 7 Study of the Root Tip

for Observing Different Stages of Mitosis This experiment showcases the process of cell division specifically mitosis through observation of a prepared root tip slide Experiment 8 Study of the Structure of a Flower This experiment involves dissecting a flower identifying its parts and understanding the role of each part in reproduction Experiment 9 Study of the Anatomy of the Human Heart This experiment examines the structure of a preserved human heart identifying its chambers valves and blood vessels 4 Viva Voce and Practical Examination Viva Voce This section provides a framework for preparing for oral examinations on the practical syllabus including key concepts experimental procedures and expected questions Practical Examination Guidance on the practical examination format evaluation criteria and tips for success 5 Appendices Glossary of Terms Definitions of key biological terms used throughout the manual Table of Reagents and Chemicals A comprehensive list of reagents and chemicals used in the experiments including their safety information and disposal procedures 3 Reference Materials A list of relevant textbooks journals and online resources for further study and exploration Conclusion This manual serves as a valuable resource for CBSE Class 11 students guiding them through the intricacies of Biology practical experiments It aims to enhance their understanding of theoretical concepts by applying them in a handson environment fostering scientific inquiry and preparing them for future scientific endeavors Note This manual is a framework and should be tailored to the specific requirements and resources available in individual schools The experiments mentioned here are merely examples and can be modified or supplemented with additional experiments to cater to specific learning objectives and curriculum

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an excellent book in accordance with the latest syllabus for class 11 prescribed by cbse ncert and adopted by various state education boards a basic laboratory techniques 1 to cut a glass tube or glass rod 2 to bend the glass rod at an angle 3 to draw a glass jet from a glass tube 4 to bore a cork and fit a glass tube into it b characterisation and purification of chemical substances 1 to determine the melting point of the given unknown organic compound and its identification simple laboratory technique 2 to determine the boiling point of a given liquid when available in small quantity simple laboratory method 3 to prepare crystals of pure potash alum k2so4 al2 so4 3 24h2o from the given impure sample 4 to prepare the pure crystals of copper sulphate from the given crude sample 5 to prepare pure crystals of benzoic acid from a given impure sample c measurement of ph values 1 to determine the ph value of vegetable juices fruit juices tap water and washing soda by using universal ph paper 2 to determine and compare the ph values of solutions of strong acid hci and weak acid ch3cooh of same concentration 3 to study the ph change in the titration of strong base vs strong acid by using universal indicator paper 4 to study the ph change by common ion ch3coo ion in case of weak acid ch3cooh 5 to determine the change in ph value of weak base nh4oh in presence of a common ion nh4 d chemical equilibrium 1 to study the shift in equilibrium between ferric ions and thiocyanate ions by changing the concentrations of either of the ions 2 to study the shift in equilibrium between co h2o 6 2 and cl ions by changing the

concentrations of either of the ions e quantitative analysis 1 to prepare m 10 oxalic acid solution by direct weighing method 2 to prepare m 10 solution of sodium carbonate by direct weighing method 3 to determine the strength of given solution of sodium hydroxide by titrating it against n 10 or m 20 solution of oxalic acid 4 to determine the strength of a given solution of hydrochloric acid by titrating it against a standard n 10 or m 20 sodium carbonate solution f qualitative analysis 1 analysis of anions 2 analysis of cations g detection of elements in organic compounds 1 to detect the presence of nitrogen sulphur and halogens in a given organic compound by lassaigne s test 2 to detect the presence of nitrogen sulphur and halogens in the given organic compound sample number by lassaigne s test investigatory projects a checking of bacterial contamination in water 1 to check the bacterial contamination in drinking water by testing sulphide ions b methods of water purification 1 to purify water from suspended impurities by using sedimentation 2 to purify water by boiling 3 to purify water by distillation method 4 to purify water by reverse osmosis technique 5 to purify water by gac method 6 to purify water by bleach treatment 7 to purify water by oxidising agent 8 to purify water by ozone treatment method c water analysis 1 to test the hardness of different water samples d foaming capacity of various soaps 1 to compare the foaming capacity of different washing soaps 2 to study the effect of addition of sodium carbonate on foaming capacity of washing soap e tea analysis 1 to study the acidity of different samples of tea leaves tea by using ph paper f analysis of fruits and vegetable juices 1 to analyse the fruit and vegetable juices for the constituent present in them g rate of evaporation 1 to study the rate of evaporation of different liquids h effect of acids and bases on tensile strength of fibres 1 to compare the tensile strength of natural fibres and synthetic fibres 2 to study the effect of acids and bases on tensile strength of different fibres log antilog table

changes in the organization of health services in developing countries have led to district levels assuming more responsibility for the planning delivery and quality of community health care this fully up dated new edition has been produced to help those working in the district laboratory and those responsible for the organization and management of community laboratory services and the training of district laboratory personnel replacing the previous publication medical laboratory manual for tropical countries this book provides an up to date practical bench manual taking a modern approach to the provision of a quality medical laboratory service

excerpt from a laboratory manual in practical botany tm course of botanical study here outlined is intended to give the student a general view of the subject and at the same time to lay a foundation upon which more advanced studies may be built the outline of classification is to serve as a chart in the practical work in the laboratory the book is a laboratory manual the stu dent s first work should be with the practical studies and these are not necessarily to be taken up in the order in which they occur in

the classification to the writer it seems a good plan to use so much of the classification morphology and physiology as are given in these pages as the starting point to ask the student to read as many of the references given in connection with the various subjects as time per mits and to require him to embody the results of his reading and practical work in well considered essays so pursued the study of botany provides the means of developing habits of close and accurate observation of cultivating the reasoning powers and of teaching the pupil to use clear and correct english that can scarcely be claimed for any other subject pursued in the schools about the publisher forgotten books publishes hundreds of thousands of rare and classic books find more at forgottenbooks com this book is a reproduction of an important historical work forgotten books uses state of the art technology to digitally reconstruct the work preserving the original format whilst repairing imperfections present in the aged copy in rare cases an imperfection in the original such as a blemish or missing page may be replicated in our edition we do however repair the vast majority of imperfections successfully any imperfections that remain are intentionally left to preserve the state of such historical works

clinicians are becoming more aware and concerned about anaerobic bacterial infections as more is learned about these anaerobic bacteria an attempt will be made in this manual to provide the information to perform an evaluation for each individual laboratory concerning the possible addition of the routine culture of anaerobe to their laboratory analysis of body fluids and tissue specimens

defines a method for a first year course in practical organic chemistry with an emphasis on the logical relationship between the properties of the materials involved in a reaction and the manipulations undertaken for the isolation and purification of the desired product

this edited volume discusses major issues in present day science and technology education ste it is divided into three thematic sections philosophical foundations and curriculum development sustainable development technology and society and the learning sciences and 21st century skills section i examines the history and future of ste curriculum development along with specific issues within this dynamic area section ii explores sustainable development in three important aspects economic development social development and environmental protection section iii covers the 21st century skills that are of overarching importance to the success of learners in school and the world of work anchoring each chapter is an assemblage of veteran science and technology education specialists selected from across the world the book s target is a worldwide audience of undergraduate post graduate students and their teachers as well as researchers this book s exploration of the ever increasing advances in ste and its narrative writing style will be of interest to a broad range of readers

a list of experiments 1 study pollen germination on a slide 2 collect and study soil from at least two different sites and study them for texture moisture content ph and water holding capacity correlate with the kinds of plants found in them 3 collect water from two different water bodies around you and study them for ph clarity and presence of any living organism 4 study the presence of suspended particulate matter in air at two widely different sites 5 study the plant population density by quadrate method 6 study the plant population frequency by quadrate method 7 prepare a temporary mount of onion root tip to study mitosis 8 study the effect of different temperatures and three different ph on the activity of salivary amylase on starch 9 isolate dna from available plant material such as spinach green pea seeds papaya etc b study observation of the following spotting 1 flowers adapted to pollination by different agencies wind insects birds 2 pollen germination on stigma through a permanent slide 3 identification of stages of gamete development i e t s of testis and t s of ovary through permanent slides from grasshopper mice 4 meiosis in onion bud cell or grasshopper testis through permanent slides 5 t s of blastula through permanent slides mammalian 6 mendelian inheritance using seeds of different colour sizes of any plant 7 prepare pedigree charts of any one of the genetic traits such as rolling of tongue blood groups ear lobes widow s peak and colour blindness 8 controlled pollination emasculation tagging and bagging 9 common disease causing organisms like ascaris entamoeba plasmodium any fungus causing ringworm through permanent slides or specimens comment on symptoms of diseases that they cause 10 two plants and two animals model virtual images found in xeric conditions comment upon their morphological adaptations 11 two plants and two animals models virtual images found in aquatic conditions comment content experiments 1 to study pollen germination on slide 2 to study the texture moisture content ph and waterholding capacity of soils collected from different sites 3 to collect water from different water bodies and study them for ph clarity and presence of living organisms 4 to study the presence of suspended particulate matter in air at different sites 5 to study plant population density by quadrat method 6 to study plant population frequency by quadrat method 7 to study various stages of mitosis in root tip of onion by preparing slide in acetocarmine 8 to study effect of different temperature and three different ph onthe activity of salivary amylase 9 to study the isolation of dna from available plant material such as spinach green pea seeds papaya etc spotting 1 pollination in flowers 2 pollen germination 3 slides of mammal tissues 4 meiosis cell division 5 t s of blastula 6 mendel s inheritance laws 7 pedigree chart 8 controlled pollination 9 common disease causing organisms 10 xerophytic adaptation 11 aquatic adaptation

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