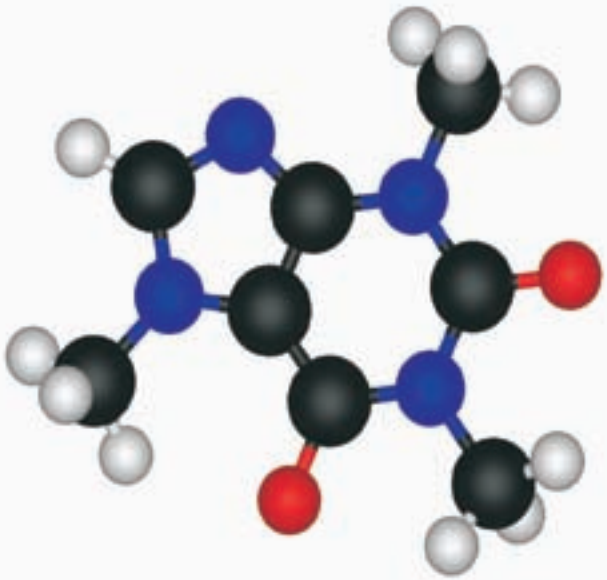
Comprehensive

As Per New Continuous and Comprehensive Evaluation (CCE) Scheme

PRACTICAL SCIENCE



Dr. N.K. Sharma

CLASS IX

Comprehensive

PRACTICAL SCIENCE

FOR

CLASS IX

Comprehensive

PRACTICAL SCIENCE

FOR

CLASS IX

Strictly according to new curriculum prescribed by

Central Board of Secondary Education (CBSE)

and

State Boards of Chhattisgarh, Haryana, Bihar, Jharkhand, Kerala, Mizoram, Meghalaya and other States following (CBSE) Curriculum

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Comprehensive **PRACTICAL SCIENCE CLASS IX**

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Letter to the Students

Dear students,

In this age of nail-biting competition, it really helps to be well equipped in subject knowledge in order to break the ice in the competitive area. So, while the market is flooded with numerous repetitions of books which mar your intellectuality and competency, we have endeavoured to reach out to widen your examination needs in this edition. Keeping in mind the broader comprehensive needs of subject knowledge, we have put in our best efforts in this book.

Present book, **Comprehensive Practical Science** for **Class IX** is strictly based on the new CBSE curriculum. An honest effort has been made in this book to attain underlying objectives of syllabus, such as developing *problem solving and decision making skills; understanding and appreciating the joint enterprise of science, technology and society; acquiring process skills which form part of the attitude for developing a scientific temper;* developing certain manipulative skills which are required in day-to-day life situations, etc. This practical book covers required practicals prescribed in the new syllabus in all the science disciplines *i.e.,* Physics, Chemistry and Biology. Multiple Choice Questions are also added with each practical to attempt well in **Multiple Choice Written Test** for testing practical skills. Thus, this book fully covers the **Scheme of Evaluation.**

Some of the salient features of the book are :

- ★ Practical exercises are *strictly according* to the **New CBSE Curriculum.**
- ★ Experiments are given **termwise.**
- ★ Practical Exercises/Experiments are *dealt very methodically i.e.,* according to scientific method/ process or/and pattern approved by the eminent experts. SI units are used where necessary.
- ★ Use of locally available required materials have been suggested, as far as possible, for conduction of experiments in the local laboratories.
- ★ Multiple choice questions related to experiment/theory of the practical/principles are given at the end of each experiment to test practical skills.
- ★ **Important Multiple Choice Question Papers**, based on practical skills are also included for practice.
- ★ Although we have taken care and laid down all efforts to remove any discrepancy which might have crept in, yet criticisms or suggestions are always solicited from your end. Thanking you in anticipation for your co-operation.

Please do write to the authors or our publishers. Wishing for your success.

—Authors

SYLLABUS

PRACTICALS

CLASS IX

FIRST TERM

Practicals should be conducted alongside the concepts taught in theory classes.

LIST OF EXPERIMENTS

1. To test (*a*) the presence of starch in the given food sample,
   (*b*) the presence of the adulterant metanil yellow in dal.
2. To prepare:
   (*a*) a true solution of common salt, sugar and alum.
   (*b*) a suspension of soil, chalk powder and fine sand in water.
   (*c*) a colloidal solution of starch in water and egg albumin/milk in water and distinguish between these on the basis of
      (*i*) transparency
      (*ii*) filtration criterion
      (*iii*) stability
3. To Prepare
   (*a*) a mixture
   (*b*) a compound
   using iron filings and sulphur powder and distinguish between these on the basis of :
      (*i*) appearance, *i.e.,* homogeneity and heterogeneity
      (*ii*) behaviour towards a magnet
      (*iii*) behaviour towards carbon disulphide as a solvent
      (*iv*) effect of heat
4. To carry out the following reactions and classify them as physical or chemical changes:
   (*a*) Iron with copper sulphate solution in water
   (*b*) Burning of magnesium in air
   (*c*) Zinc with dilute sulphuric acid
   (*d*) Heating of copper sulphate
   (*e*) Sodium sulphate with barium chloride in the form of their solutions in water.

5. To prepare stained temporary mounts of (*a*) onion peel and (*b*) human cheek cells and to record observations and draw their labelled diagrams.
6. To identify parenchyma and sclerenchyma tissues in plants, striated muscle fibres and nerve cells in animals from prepared slides and to draw their labelled diagrams.
7. To separate the components of a mixture of sand, common salt and ammonium chloride (or camphor) by sublimation.
8. To determine the melting point of ice and the boiling point of water.
9. To establish relationship between weight of a rectangular wooden block lying on a horizontal table and the minimum force required to just move it using a spring balance.
10. To determine the mass percentage of water imbibed by raisins.

SECOND TERM

Practicals should be conducted alongside the concepts taught in theory classes.

LIST OF EXPERIMENTS

1. To verify the laws of reflection of sound.
2. To determine the density of solid (denser than water) by using a spring balance and a measuring cylinder.
3. To establish the relation between the loss in weight of a solid when fully immersed in
   (*i*) tap water
   (*ii*) strongly salty water, with the weight of water displaced by it by taking at least two different solids.
4. To observe and compare the pressure exerted by a solid iron cuboid on fine sand/wheat flour while resting on its three different faces and to calculate the pressure exerted in the three different cases.
5. To determine the velocity of a pulse propagated through a stretched string/slinky.
6. To study the characteristic of Spirogyra/Agaricus, Moss/Fern, Pinus (either with male or female cone) and an Angiospermic plant. Draw and give two identifying features of groups they belong to.
7. To observe the given pictures/charts/models of earthworm, cockroach, bony fish and bird. For each organism draw their picture and record:
   (*a*) one specific feature of its phylum.
   (*b*) one adaptive feature with reference to its habitat.
8. To verify the law of conservation of mass in a chemical reaction.
9. To study the external features of root, stem, leaf and flower of monocot and dicot plants.
10. To study the life cycle of mosquito.

PRACTICAL SKILLS

A. Procedural and Manipulative Skills

To

- select appropriate apparatus/instruments for performing the experiment.
- know the limitations of the apparatus/instruments regarding their size, least count and accuracy.
- arrange/assemble/set and adjust the apparatus systematically.
- handle the apparatuses, instruments, chemicals carefully to avoid any damage or injury.
- perform the experiment with reasonable efficiency and accuracy.
- separate and remove desired parts of a specimen for detailed study without damaging it.
- use appropriate methods and materials for specimen mounting.
- locate and rectify the errors in apparatus, instruments, etc.
- add chemicals in appropriate quantity.
- dismantle the experimental set-up carefully.
- practise the precautions in handling sensitive apparatus or chemicals or flame.

B. Observational Skills

To

- find the least count of the instrument.
- read the instrument correctly.
- notice colour change, evolution of gases, formation of precipitates, chemical reactions, etc., carefully.
- notice the relevant details in the given specimens minutely.
- locate the desired parts in a specimen accurately.
- take observations carefully and in a systematic manner.
- read graph correctly.

C. Drawing Skills

To

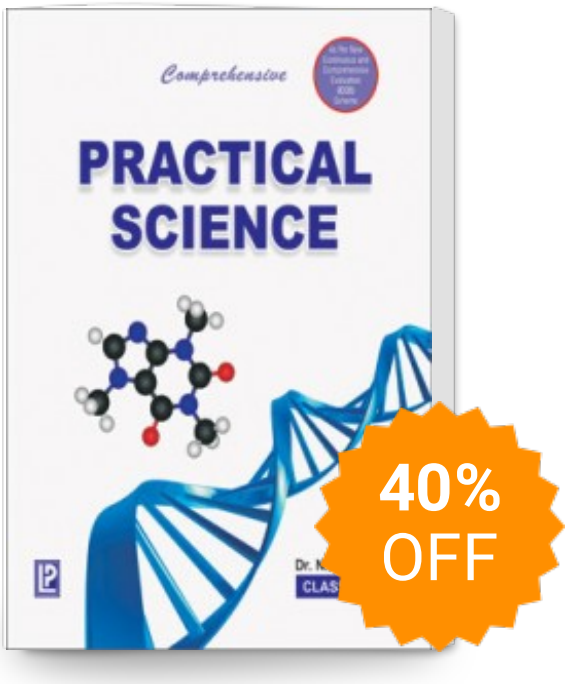
- make proper observation tables.
- draw circuit diagrams, ray diagram, experimental set-up, sketches, etc., correctly and proportionately.
- label sketches and diagrams correctly.
- draw graphs from observed data correctly.

D. Reporting and Interpretative Skills

To

- make a proper plan for recording the observations.
- record the observations/data/information correctly and systematically.
- classify and categorize organisms.
- make correct calculations/predictions.
- use proper formulae and mode of summarising and reporting the result.
- report the result using correct symbols, units, terms and chemical equations.
- interpret the observations and results correctly.

Comprehensive Practical Science Class 9th



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