SCERT Kerala · Class 10 · ICT

ICT Part 2

PADIKAM
ICT
PART II
Complete Study Notes | Standard X | English Medium
SCERT Kerala 2025 syllabus coverage
Original explanations, revision tools, exam focus and practice

PADIKAM | CLASS 10 ICT - PART II
Contents
Four practical chapters use digital tools for science learning, animation, databases and free-software citizenship.
Chapter 7 | Learning Science Through Computers
Chapter 8 | Let's Give Life to Pictures
Chapter 9 | To the Information Storehouse
Chapter 10 | Software and Freedom
How to use this book
• Read the chapter mission first to understand the learning target.
• Study the core notes and pause at every table, formula or process map.
• Use the exam focus list for last-minute revision.
• Answer the practice questions without looking back, then revise weak areas.
Official textbook links
SCERT Kerala Class 10 PART II
SCERT Kerala Standard 10 textbook catalogue

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CHAPTER 7
Learning Science Through Computers
Chapter mission: use simulation and mathematical software to investigate scientific and geometric ideas.
Simulation as a model
• A simulation represents selected features of a real system. It allows safe, repeatable exploration but remains limited by assumptions.
• Change one variable at a time, predict first, observe carefully and record evidence.
• A visual result is not automatically proof; compare it with theory or real observations.
Stellarium
• Set observation location, date and time before selecting a celestial object.
• Use search, time controls, coordinate grids and labels to study sky position and motion.
• Changing location or date can model seasons, polar daylight and different sky views.
GeoGebra and virtual labs
• GeoGebra links construction, algebra, measurement and graphs dynamically.
• Create free and dependent objects, drag permitted points and observe which relationships remain invariant.
• A virtual lab supports hypothesis testing when real equipment is unavailable, but measurement uncertainty and real-world conditions still matter.
Investigation record
• Write question, prediction, controlled variables, procedure, observation and conclusion.
• Capture screenshots only when they support a labelled explanation.
• Save editable project files so the investigation can be repeated.
Exam focus

• State software settings that affect a result.
• Distinguish model evidence from direct observation.
• Describe an investigation as question-to-conclusion.

Practice

1. How would you use Stellarium to study the midnight sun?
2. Design a GeoGebra test of a circle theorem.
3. State two advantages and one limitation of a virtual laboratory.

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CHAPTER 8

Let's Give Life to Pictures

Chapter mission: plan and produce a short animation using frames, layers, timing and movement principles.

Animation principles

• Animation creates apparent movement from a sequence of still images. Frame rate controls how many frames display per second.
• Key frames define important states; in-between frames create transition.
• Timing, spacing, anticipation and follow-through make movement easier to understand and more natural.

OpenToonz structure

• A scene uses levels for artwork, columns/layers for separate elements and an Xsheet or timeline for frame timing.
• Vector levels support scalable drawing; raster levels support pixel-based painting.
• Keep background and moving objects separate to animate them independently.

Production workflow

• Write a short script and storyboard with shots, actions and duration.
• Set project folders, canvas size and frame rate before detailed work.
• Create/import assets, place key frames, add in-betweens or transformations, preview and refine timing.
• Add audio only with permission, then render to the required video or image sequence format.

Quality checks

• Look for unwanted jumps, object-size changes, missing frames and elements leaving the camera area.
• Save versions and preserve source assets. Credit reused media.

Exam focus

• Differentiate key frame, in-between and frame rate.
• Explain columns/levels through independent control.
• Include storyboard and preview in workflow answers.

Practice

1. How does frame rate affect an animation?
2. Why should a moving cloud be on a separate level from the background?
3. Prepare a storyboard for a five-second science animation.

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CHAPTER 9

To the Information Storehouse

Chapter mission: design a relational database and retrieve reliable information using forms and queries.

Database concepts

• A database stores organised related data. A table contains records (rows) and fields (columns).
• A primary key uniquely identifies each record. A foreign key links a record to another table.
• Good design reduces duplication and prevents inconsistent updates.

Data types and validation

• Choose types such as text, number, date or Boolean according to meaning, not appearance alone.
• Validation rules, required fields and input formats reduce errors at entry.
• A code or phone number may need text type when arithmetic is not meaningful.

Forms, queries and reports

• Forms simplify controlled data entry and viewing.

• Queries filter, sort, calculate or combine data to answer a question. Criteria should be tested on known examples.
• Reports format selected information for printing or sharing; they do not replace the underlying data.

Responsible data handling

• Collect only necessary data, restrict access and keep secure backups.
• Personal data requires a lawful purpose, informed handling and appropriate retention.
• Test database results for missing records, duplicates and incorrect relationships.

Exam focus

• Distinguish field, record, table and database.
• Explain primary and foreign keys.
• Write query criteria as a clear information question.

Practice

1. Design tables for a school library database.
2. Why might a phone number be stored as text?
3. Describe a query to list overdue books by class.

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CHAPTER 10

Software and Freedom

Chapter mission: understand software rights, free-software principles, licensing and responsible digital participation.

Software and source code

• Source code is human-readable program text; compiled or interpreted software turns instructions into executable behaviour.
• Proprietary software generally restricts access or modification according to its licence.
• Free software focuses on users' freedoms, not necessarily zero price.

Four freedoms

• Freedom to run a program for any purpose.
• Freedom to study how it works and adapt it, which requires source-code access.
• Freedom to redistribute copies.
• Freedom to distribute modified versions so improvements can benefit others.

Licences and communities

• Copyright remains with creators; licences grant specified permissions.
• Copyleft licences require derivative distributions to preserve defined freedoms; permissive licences usually impose fewer conditions.
• Open collaboration uses version control, documentation, issue tracking, review and community rules.

Open formats and digital independence

• Open standards and formats reduce lock-in and improve long-term access and interoperability.
• Schools and public institutions consider cost, localisation, transparency, security, support and accessibility when selecting software.
• Respect every licence: freedom includes obligations such as attribution or sharing source when required.

Exam focus

• Explain free as freedom, not merely price.
• State all four freedoms clearly.
• Differentiate copyright, licence, open source and public domain.

Practice

1. Why is source-code access necessary for studying software?
2. Compare copyleft and permissive licensing.
3. How can open formats support long-term public access?

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Final Revision Checklist

• I can conduct a digital science investigation.
• I understand frames, timing and animation workflow.
• I can design tables, keys, forms and queries.

• I can explain software freedom and follow licence conditions.

Padikam Learning Content

Prepared as an independent learning companion using the SCERT textbook only as the syllabus and notation reference.