

Comprehensive Notes On Information and Communication Technology Skills

Class IX - Employability Skills

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1 Session 1: Introduction to ICT

1.1 What is ICT?

What It Is: ICT stands for **Information and Communication Technology**. It involves all the tools and resources used to communicate, create, disseminate, store, and manage information.

Why It Matters: From ordering food online to studying via e-learning, ICT runs our daily lives. Without it, you wouldn't have smartphones, social media, or internet!

How It Works / Analogy: Think of ICT as the digital brain and nervous system of the modern world. It connects everyone and everything globally.

Digital vs Analog Technology

- **Digital Technology:** Translates information into binary format (0 or 1), where each bit represents two distinct amplitudes.
- **Analog Technology:** Translates information into electric pulses of varying amplitude.

1.2 ICT at Workplace and Home

- **At Workplace:** Used for online banking, making documents, calculations, tables, graphs, processing data, and developing research papers.
- **At Home:** Used for smartphones, social media networks (Facebook, Instagram, Twitter), watching videos, listening to music, and playing games.

2 Session 2 & 3: ICT Tools - Smartphones and Tablets

2.1 Smartphones vs Tablets

What It Is: Mobile devices that allow you to make calls, browse the web, send e-mails, and much more.

Why It Matters: These devices are your pocket-sized computers. They keep you connected and productive on the go.

How It Works / Analogy: A smartphone is like a Swiss Army knife—small but packed with tools (apps). A tablet is like a slightly larger digital notebook—great for reading and watching videos.

Feature	Smartphone	Tablet
Main Usage	Phone with additional features like camera, apps.	Wireless portable personal computer with a touchscreen.
Screen Size	Smaller.	Bigger screen.
Photos/Videos	Watching movies/editing is slightly difficult.	Better and easier due to the larger screen.
Battery Life	Needs charging more often.	Usually has a longer battery life.
Storage	Storage expansion can be costly.	Usually has higher storage capacity.

2.2 Basic Features of a Mobile Device

-  **Bluetooth:** Short-range wireless technology (within 30 feet).
-  **Chargeable Battery:** Portable power pack.

-  **Wi-Fi:** Wireless network technology for local area internet connection.
-  **Touch Screen:** Output display that also takes touch input.
-  **Camera:** Front and back cameras for photos and videos.
-  **GPS (Global Positioning System):** Navigation system for finding directions.

Basic Touch Gestures

- **Tap:** Touch the screen once (like a mouse click).
- **Tap and hold:** Similar to right-clicking.
- **Drag:** Tap, hold, and move your finger across the screen.
- **Swipe:** Slide finger right, left, up, or down.
- **Double tap:** Tap twice quickly to zoom out.
- **Pinch:** Bring thumb and finger together to zoom in (reduce size).

3 Session 4: Parts of a Computer and Peripherals

3.1 The Computer System

What It Is: A programmable machine designed to store, retrieve, and process data.

Why It Matters: Computers are the backbone of modern ICT, doing everything from complex math to rendering 3D games.

How It Works / Analogy:

- **Input Unit:** Like your eyes/ears (taking in information). Example: Keyboard, Mouse, Scanner, Microphone.
- **Central Processing Unit (CPU):** The brain. It consists of the Control Unit (manager), Processing/ALU (accountant), and Memory Unit (storage room).
- **Output Unit:** Like your mouth/hands (giving out results). Example: Monitor, Printer, Speaker, Projector.

3.2 Understanding RAM and ROM

RAM (Random Access Memory)	ROM (Read Only Memory)
Temporarily stores information.	Permanently stores information.
Information is lost when computer is switched off (Volatile).	Information is stored even when computer is off (Non-Volatile).
Information can be changed easily.	Information cannot be changed easily.
Used when doing tasks on your computer (like the kitchen counter).	Mainly used when starting the computer (like the kitchen shelf).

Storage Units

Bits and Bytes:

- 1 Bit = 0 or 1 (Smallest unit)
- 8 Bits = 1 Byte (1 character)
- 1024 Bytes = 1 Kilobyte (KB)
- 1024 KB = 1 Megabyte (MB)
- 1024 MB = 1 Gigabyte (GB)
- 1024 GB = 1 Terabyte (TB)

3.3 Ports and Connections

Ports are slots where peripheral devices are plugged in:

- **USB Port:** Universal Serial Bus, for mouse, keyboard, printer.
- **Display Port:** VGA or HDMI, for connecting monitors.
- **Audio Port:** For microphone, speakers, and headphones.
- **Ethernet Port:** For high-speed wired internet connection.
- **Power Port:** For connecting the computer to the power supply.

4 Session 5 & 6: Basic Computer Operations & File Management

4.1 Hardware vs Software

What It Is: **Hardware** is the physical machinery you can touch (Monitor, CPU). **Software** is the set of instructions that makes the hardware work (Operating System, Apps).

Why It Matters: Hardware without software is just a dead plastic box. Software brings it to life!

Booting Up

When you switch on a computer, it automatically runs a basic program called **BIOS** (Basic Input/Output System) which does a self-test. If fine, it loads the **Operating System** (OS) like Windows or Ubuntu.

4.2 Keyboard Keys

- **Function Keys (F1-F12):** Perform specific functions depending on the program.
- **Control Keys:** CTRL, SHIFT, SPACEBAR, ALT, CAPS LOCK, TAB.
- **Navigation Keys:** Arrow keys, HOME, END, PAGE UP, PAGE DOWN.
- **Command Keys:** INSERT, DELETE, BACKSPACE.

4.3 Files and Folders

- **File:** A document on a computer. Every file has a name and an **extension** (e.g., .txt for text, .jpg for images).
- **Folder:** A location to organize and store multiple files.

5 Session 7 & 8: Networking and Internet Browsing

5.1 The Internet and WWW

What It Is: The **Internet** is a huge global network of connected computers. The **World Wide Web (WWW)** is a massive library of web pages hosted on the internet.

Why It Matters: It is the ultimate source of knowledge, entertainment, social networking, and e-commerce.

Connecting to the Internet

- **ISP:** Internet Service Provider (provides the connection).
- **Modem:** Device that connects your computer to the ISP.
- **Bandwidth:** The amount of data that can be transmitted in a certain amount of time (measured in bps, Kbps, Mbps).

5.2 Internet Browsers

A **Web Browser** (like Google Chrome, Mozilla Firefox) is a software application used to view web pages.

- **Address Bar:** Where you type the URL (Uniform Resource Locator) or website address.
- **Hyperlinks:** Underlined or highlighted words that take you to another page when clicked.
- **Tabbed Browsing:** Viewing multiple pages in the same window (Ctrl+T).

6 Session 9 to 12: E-Mail Operations

6.1 What is E-mail?

What It Is: Electronic mail used to send text, images, and attachments over the internet instantly.

Why It Matters: It is faster, free, eco-friendly (no paper), and can be sent to multiple people at once unlike traditional postal mail.

Postal Mail	E-Mail
Needs a physical street address.	Needs an e-mail ID (e.g., name@gmail.com).
Written with pen and paper.	Typed on a computer or mobile.
Sent via physical transport (bus, train).	Travels digitally over the internet.
Delivered by a postman to a letterbox.	Received instantly in the digital Inbox.

6.2 E-mail Actions

- **To:** The main recipient's e-mail address.
- **Cc (Carbon Copy):** Sending copies of the mail to other people.
- **Subject:** A short title for the e-mail.
- **Attachment:** Adding a file (photo, document) using the **paperclip** icon.
- **Reply / Reply All:** Responding to the sender (or everyone in the loop).
- **Forward:** Sending an e-mail you received to someone else.

7 Comprehensive Question Bank

7.1 Multiple Choice Questions (MCQs)

1. Which of the following is NOT an input device?
 - A. Keyboard
 - B. Scanner
 - C. Printer
 - D. Microphone
2. What does ICT stand for?
 - A. Information and Commuting Technology
 - B. Information and Communication Technology
 - C. Internet and Computer Technology
 - D. Internal Communication Tools
3. Which memory is volatile and loses data when powered off?
 - A. ROM
 - B. Hard Disk
 - C. RAM
 - D. Flash Drive
4. The brain of the computer is called:
 - A. Monitor
 - B. CPU
 - C. Keyboard
 - D. Mouse
5. Which of the following is a web browser?
 - A. Google
 - B. Windows
 - C. Mozilla Firefox
 - D. Microsoft Word
6. 1 Gigabyte (GB) is equal to:
 - A. 1024 Bytes
 - B. 1024 KB
 - C. 1024 MB
 - D. 1024 TB
7. The symbol used to separate the username and domain in an email is:
 - A. #
 - B. @
 - C. &
 - D. %
8. What is the shortcut key to 'Undo' an action?
 - A. Ctrl + C
 - B. Ctrl + V
 - C. Ctrl + X
 - D. Ctrl + Z
9. Which gesture is used to zoom in on a touch-screen?
 - A. Swipe
 - B. Drag
 - C. Pinch
 - D. Double tap
10. The first program that runs when a computer is turned on is:
 - A. Operating System
 - B. BIOS
 - C. Web Browser
 - D. Microsoft Office
11. Which port connects peripheral devices like a mouse or keyboard?
 - A. VGA Port
 - B. Audio Port
 - C. USB Port
 - D. Ethernet Port
12. What feature sends a copy of an email to someone else?
 - A. To
 - B. Subject
 - C. Cc
 - D. Attachment

13. Which device is used to scan barcodes in retail stores?
- A. Monitor
B. Barcode Reader
C. Speaker
D. Projector
14. A web page address is also known as:
- A. URL
B. USB
C. CPU
D. ISP
15. The paperclip icon in an email stands for:
- A. Deleting mail
B. Sending mail
C. Attaching a file
D. Forwarding mail

Answers: 1-C, 2-B, 3-C, 4-B, 5-C, 6-C, 7-B, 8-D, 9-C, 10-B, 11-C, 12-C, 13-B, 14-A, 15-C.

7.2 Assertion-Reasoning Questions

Directions: In the following questions, a statement of Assertion (A) is followed by a statement of Reason (R). Choose the correct option:

- Both A and R are true and R is the correct explanation of A.
 - Both A and R are true but R is NOT the correct explanation of A.
 - A is true but R is false.
 - A is false but R is true.
- Assertion (A):** A smartphone is considered an ICT tool.
Reason (R): Smartphones allow us to communicate, browse the internet, and manage information digitally.
Answer: (a) Both true, R is the correct explanation.
 - Assertion (A):** ROM is a volatile memory.
Reason (R): Data in ROM is permanently stored and not lost when the computer is turned off.
Answer: (d) A is false, R is true. ROM is non-volatile.
 - Assertion (A):** A printer is an input device.
Reason (R): It takes digital data from the computer and produces a hard copy on paper.
Answer: (d) A is false (printer is an output device), R is true.
 - Assertion (A):** Email is an eco-friendly mode of communication.
Reason (R): Sending an email does not require the use of physical paper or physical transport.
Answer: (a) Both true, R is the correct explanation.
 - Assertion (A):** The internet and the World Wide Web (WWW) are exactly the same thing.
Reason (R): The WWW is a collection of websites that you can access through the internet network.
Answer: (d) A is false, R is true.

7.3 One-Word / Brief Answer Questions

- What is the physical machinery of a computer called? **Answer:** Hardware.
- What do we call a document stored on a computer? **Answer:** File.

3. Which device is used to record voice into a computer? **Answer:** Microphone.
4. Name the technology used for short-range wireless communication between devices. **Answer:** Bluetooth.
5. What does ISP stand for? **Answer:** Internet Service Provider.
6. Which folder contains emails that have been deleted? **Answer:** Trash.
7. What is the term for the amount of data transmitted over a network in a given time? **Answer:** Bandwidth.
8. Name the main circuit board inside a computer. **Answer:** Motherboard.
9. What is the shortcut key to copy selected text? **Answer:** Ctrl + C.
10. What type of port is used to connect a monitor to a CPU? **Answer:** Display port (VGA/HDMI).

7.4 Differentiate Between

1. Hardware vs Software

Hardware	Software
Physical parts of a computer.	Programs and instructions that run on the computer.
Can be touched and seen (e.g., Keyboard).	Cannot be touched physically (e.g., Windows OS).

2. RAM vs ROM

RAM (Random Access Memory)	ROM (Read Only Memory)
Temporary and volatile.	Permanent and non-volatile.
Data is erased when power is off.	Data is retained when power is off.

3. Input Device vs Output Device

Input Device	Output Device
Used to send data to the computer.	Used to display results from the computer.
Example: Keyboard, Mouse.	Example: Monitor, Printer.

4. Smartphone vs Tablet

Smartphone	Tablet
Primary function is calling, smaller screen.	Larger screen, better for reading/videos.
Less battery life, highly portable.	Longer battery life, slightly less portable.

5. CC vs BCC in E-mail

CC (Carbon Copy)	BCC (Blind Carbon Copy)
Recipients can see who else received the email.	Recipients cannot see who else is in the BCC list.

7.5 Short Answer Questions

1. **What is the function of the CPU? Answer:** The CPU (Central Processing Unit) is the brain of the computer. It processes instructions from the user, performs arithmetic and logical calculations, and coordinates between different hardware parts.
2. **List any three uses of the Internet. Answer:** 1. Searching for information. 2. Online shopping and banking. 3. Sending and receiving emails.
3. **What is a web browser? Give two examples. Answer:** A web browser is a software application used to view and navigate web pages on the World Wide Web. Examples include Google Chrome and Mozilla Firefox.
4. **Why do we use the 'Attach' option in an email? Answer:** The attach option (paperclip icon) is used to send files such as images, documents, or videos along with the email text to the recipient.
5. **What happens when a computer is booted up? Answer:** When switched on, the computer runs a BIOS self-test. If the hardware is working fine, the BIOS loads the Operating System (like Windows) into the memory, making the computer ready for use.
6. **Define a 'File' and a 'Folder'. Answer:** A file is a single document or data item stored on a computer (e.g., an image or text document). A folder is a digital directory used to store and organize multiple files.
7. **What are function keys on a keyboard used for? Answer:** Function keys (F1 to F12) are located at the top of the keyboard and are used to perform specific shortcut functions that vary depending on the software program currently in use.
8. **What is the difference between 'Reply' and 'Reply All'? Answer:** 'Reply' sends your response only to the original sender of the email. 'Reply All' sends your response to the sender and everyone else included in the 'To' and 'Cc' fields.
9. **Name two types of internet connections. Answer:** 1. Wired connection (using Ethernet cables). 2. Wireless connection (using Wi-Fi or cellular networks).
10. **What is a motherboard? Answer:** The motherboard is the main printed circuit board inside a computer. It connects the CPU, memory, hard drives, and peripheral ports, allowing them to communicate.

7.6 Long Answer Questions

1. **Explain the three main units of a computer system in detail. Answer:** 1. **Input Unit:** This unit allows users to feed data and instructions into the computer. Devices like the keyboard (typing) and mouse (clicking/selecting) act as input units. 2. **Central Processing Unit (CPU):** The core brain. It consists of the Control Unit (manages data flow), the Arithmetic Logic Unit (performs mathematical operations), and the Memory Unit (temporarily stores data being processed). 3. **Output Unit:** This unit displays the final results to the user. The monitor shows visual output, while the printer provides physical hard copies.

2. **Describe the structure of an email address and outline the steps to create a new Gmail account.** **Answer:** An email address consists of a username, the '@' symbol, and the domain name (e.g., student123@gmail.com). **Steps to create:** 1. Open a web browser and go to www.gmail.com. 2. Click on "Create an account". 3. Fill in the sign-up form with your name, desired username, and a strong password. 4. Complete verification steps (like phone number). 5. Accept the Terms of Service. 6. Click "Continue to Gmail" to access your new inbox.
3. **What are the different types of keys on a keyboard? Explain each category.** **Answer:** 1. **Function Keys (F1-F12):** Used for specific shortcuts depending on the app. 2. **Control Keys:** Keys like Ctrl, Alt, Shift, and Windows key, used alone or in combination to trigger special commands. 3. **Navigation Keys:** Arrow keys, Home, End, Page Up/Down, used to move the cursor around a document. 4. **Command Keys:** Insert, Delete, and Backspace, used for editing and removing text. 5. **Alphanumeric Keys:** Standard letter and number keys for typing text.
4. **Discuss the advantages of using email over traditional postal mail.** **Answer:** Email offers several massive advantages: 1. **Speed:** Emails are delivered globally in seconds, whereas postal mail takes days or weeks. 2. **Cost:** Emails are virtually free to send, requiring only an internet connection. 3. **Mass Communication:** You can send a single email to hundreds of people simultaneously using the Cc/Bcc fields. 4. **Attachments:** You can instantly attach multimedia files (photos, videos) without printing or paying extra postage. 5. **Eco-Friendly:** It completely eliminates the need for paper and physical transport, saving trees and reducing carbon footprint.
5. **Explain the concept of 'Bandwidth'. How does it affect internet speed?** **Answer:** Bandwidth is the maximum amount of data that can be transmitted over a network connection in a given amount of time. It is measured in bits per second (bps, Mbps, Gbps). You can think of bandwidth like the diameter of a water pipe: a wider pipe allows more water to flow through at once. Similarly, higher bandwidth allows more data to be downloaded or uploaded simultaneously, resulting in a faster internet experience, quicker file downloads, and smoother video streaming.

7.7 Case-Study / Competency-Based Questions

Case Study 1: The School Project Setup *Radhika's teacher has assigned a group project on "Global Warming". Radhika needs to gather information, create a presentation, and share it with her group members who live in different parts of the city. Her father bought her a new laptop to help her.*

1. Which software application should Radhika use to search for information on "Global Warming"? **Answer:** A Web Browser (like Google Chrome or Firefox).
2. Which component of her laptop will permanently store her presentation file? **Answer:** The Storage Device (Hard Disk or SSD).
3. How can Radhika share her completed presentation file with her group members instantly? **Answer:** By sending an email and using the "Attach File" (paperclip) feature to include the presentation.
4. To ensure all group members get the email at the same time, which feature should she use in the email composition window? **Answer:** She should add all their email addresses in the "To" or "Cc" section.

Case Study 2: Troubleshooting at Home *Rohan is trying to type a document but nothing is appearing on his screen. He then tries to listen to a song, but he cannot hear any sound. His computer is switched on and the operating system has loaded successfully.*

1. Which input device is likely disconnected or malfunctioning when Rohan tries to type? **Answer:** The Keyboard.

2. Which output device is likely disconnected when Rohan cannot hear the song? **Answer:** The Speakers or Headphones.
3. To which type of port should Rohan check the connection for his speakers? **Answer:** The Audio Port.
4. Rohan decides to search for a solution online. He opens his browser, but the web page says "No Internet". Which peripheral device or connection should he check? **Answer:** He should check his Router/Modem or the Ethernet/Wi-Fi connection.