

Introduction to Information Communications Technology (ICT)

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(A concise, easy-to-read study guide)

1. What Is ICT?

Aspect	Description
Definition	The integration of information technology (IT) and communication technologies to create, store, process, transmit, and retrieve data.
Core Components	• Hardware – computers, servers, routers, smartphones, sensors. • Software – operating systems, applications, databases, cloud services. • Networks – LAN, WAN, Internet, mobile networks, satellite links. • Data – raw facts, processed information, multimedia content.
Goal	Enable individuals, organizations, and societies to access, share, and use information efficiently and securely.

2. Historical Milestones

Year	Event	ICT Impact
1940s–1950s	Invention of the electronic computer (ENIAC, UNIVAC)	First digital data processing machines.
1960s	Development of ARPANET (precursor to the Internet)	Foundations of global networking.
1970s	Introduction of microprocessors & personal computers (PCs)	Computing moved from labs to homes/offices.
1980s	Rise of local area networks (LANs) & email	Real-time communication within organizations.
1990s	Commercial Internet , World Wide Web , mobile phones	Global information exchange; birth of e-commerce.
2000s	Broadband , Wi-Fi , smartphones , cloud computing	Ubiquitous connectivity; on-demand services.

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Year	Event	ICT Impact
2010s	Social media, big data, IoT, AI	Massive data generation, real-time analytics, intelligent devices.
2020s	5G, edge computing, digital twins, quantum-ready networks	Faster, low-latency services; new computing paradigms.

3. Key ICT Domains

Domain	Typical Tools / Technologies	Primary Uses
Computing	Desktops, laptops, servers, virtual machines	Data processing, software development, scientific modeling
Telecommunications	Cellular networks (4G/5G), satellite links, fiber optics	Voice, video, and data transmission across distances
Networking	Switches, routers, firewalls, VPNs, SDN	Connecting devices, managing traffic, securing links
Multimedia	Digital cameras, audio/video editors, streaming platforms	Creation and distribution of rich media content
Data Management	Relational DBMS (MySQL, Oracle), NoSQL (MongoDB), data warehouses	Storing, querying, analyzing large datasets
Software & Applications	Office suites, ERP, CRM, mobile apps, SaaS	Automating business processes, enhancing productivity
Security	Encryption, IDS/IPS, authentication, security policies	Protecting confidentiality, integrity, and availability of data

4. ICT Architecture – Layered View

