Module 1: Introduction to ICT

1. What is ICT?

- **Answer**: ICT stands for **Information and Communication Technology**. It refers to the use of technology to handle telecommunications, broadcast media, audio-visual processing and transmission systems, intelligent building management systems, and more. It includes all technologies that facilitate communication and the processing of information.

2. Why is ICT important in today's world?

- **Answer**: ICT is critical because it drives communication, information sharing, and decision-making in almost every aspect of life. It enhances productivity, supports economic growth, aids in education, healthcare, and business, and connects people globally through the internet and digital technologies.

Module 2: Computer Hardware and Software

1. What are the main components of computer hardware?

- **Answer**: The main components of computer hardware include:
  - **Central Processing Unit (CPU)**: The brain of the computer that performs calculations and processes data.
  - **Memory**: RAM (Random Access Memory) for temporary storage, and ROM (Read-Only Memory) for permanent storage of critical system instructions.
  - **Storage devices**: Hard drives, solid-state drives (SSD), and external storage for long-term data storage.
  - **Input/Output Devices**: Keyboard, mouse, monitor, printer, etc.

2. What is the difference between system software and application software?

- **Answer**:
  - **System software** manages and controls computer hardware and serves as a platform for running application software. Examples include operating systems like Windows, Linux, and macOS.
  - **Application software** allows users to perform specific tasks, such as word processing, web browsing, or graphic design. Examples include Microsoft Word, Google Chrome, and Adobe Photoshop.

Module 3: Networking Fundamentals

1. What are the main types of computer networks?

- **Answer**: The main types of computer networks are:
    - **Local Area Network (LAN)**: A network that connects computers within a small geographic area, like an office or a home.
    - **Wide Area Network (WAN)**: A network that covers a broad area, such as connecting offices across cities or countries.
    - **Metropolitan Area Network (MAN)**: A network that covers a larger area than a LAN but smaller than a WAN, typically within a city.

2. What is the TCP/IP model?

- **Answer**: The **TCP/IP (Transmission Control Protocol/Internet Protocol)** model is the foundational suite of protocols that governs the internet and other networks. It consists of four layers:
    1. **Application Layer**: Deals with high-level protocols like HTTP and FTP.
    2. **Transport Layer**: Ensures reliable data transmission (e.g., TCP, UDP).
    3. **Internet Layer**: Manages logical addressing and routing (e.g., IP).
    4. **Network Access Layer**: Deals with physical transmission of data over networks (e.g., Ethernet).

Module 4: Data Communication

1. What is the difference between analog and digital data?

- **Answer**:
    - **Analog data** refers to continuous signals that vary smoothly over time, such as sound waves.
    - **Digital data** refers to discrete data represented in binary form (0s and 1s) and is easier to store and transmit over modern networks.

2. What is bandwidth?

- **Answer**: Bandwidth refers to the amount of data that can be transmitted over a network or communication channel in a given time period, typically measured in bits per second (bps). Higher bandwidth allows for faster data transmission.

Module 5: Cybersecurity and Privacy

1. What is a virus in the context of cybersecurity?

- **Answer**: A **virus** is a type of malicious software (malware) that attaches itself to a legitimate program or file and spreads to other programs or files. It can damage data, disrupt system operations, and be used for malicious purposes.

2. What are some methods of authentication in cybersecurity?

- **Answer**: Common methods of authentication include:
  - **Password-based authentication**: Using a password to verify a user's identity.
  - **Biometric authentication**: Using unique physical characteristics such as fingerprints, face recognition, or iris scans.
  - **Two-factor authentication (2FA)**: Combining something the user knows (password) with something the user has (a phone or authentication app).

Module 6: ICT in Business and Management

1. How do businesses use ICT to improve their operations?

- **Answer**: Businesses use ICT to streamline their operations by:
  - **Improving communication**: Email, instant messaging, and video conferencing tools for internal and external communication.
  - **Enhancing efficiency**: Automation of tasks using software tools (e.g., ERP systems).
  - **Data management**: Storing, analyzing, and managing data for better decision-making (e.g., CRM and Business Intelligence tools).

2. What is E-commerce?

- **Answer**: **E-commerce** refers to the buying and selling of goods or services over the internet. It includes online transactions, digital payment systems, and online marketplaces. Examples include websites like Amazon, eBay, and Alibaba.

Module 7: ICT in Education and Learning

1. What is E-learning?

- **Answer**: **E-learning** is the use of electronic media, typically the internet, to deliver educational content and resources. It includes online courses, virtual classrooms, and digital textbooks. Examples include platforms like Coursera, Khan Academy, and edX.

2. How can ICT enhance digital literacy in students?

- **Answer**: ICT helps improve digital literacy by:
  - Providing students with access to online learning resources and tools.
  - Enabling interactive learning via multimedia content.
  - Encouraging research and critical thinking through the use of online databases and resources.

Module 8: Future of ICT: Emerging Technologies

1. What is Artificial Intelligence (AI)?

- **Answer**: **Artificial Intelligence (AI)** is the simulation of human intelligence processes by machines, particularly computer systems. AI includes machine learning, natural language processing, and robotics. It enables machines to perform tasks that would typically require human intelligence, such as recognizing speech or making decisions.

2. What are the potential applications of Blockchain technology?

- **Answer**: **Blockchain** is a distributed digital ledger technology used for securely recording transactions. Applications include:
  - **Cryptocurrency** (e.g., Bitcoin)
  - **Supply chain management** for tracking products and goods
  - **Smart contracts** for automating business agreements
  - **Voting systems** to ensure transparency and security

Module 9: Ethics, Social Implications, and ICT

1. What is the digital divide?

- **Answer**: The **digital divide** refers to the gap between individuals who have access to modern information and communication technology and those who do not. It is often due to socioeconomic factors such as income, geography, and education, and can lead to inequalities in opportunities and access to services.

2. What are some ethical issues related to ICT?

- **Answer**: Ethical issues in ICT include:
  - **Privacy concerns** regarding the collection and use of personal data.
  - **Cybersecurity risks**, such as hacking and identity theft.
  - **Intellectual property** issues, like software piracy and plagiarism.
  - **Digital manipulation** such as fake news and deepfake technology.

Conclusion and Certification

Once the course is completed, the students should have a solid understanding of the core concepts of ICT, its applications across industries, and the ethical considerations that come with using and advancing technology.