

Essentials of INFORMATION TECHNOLOGY

Based on LibreOffice

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TEACHER MANUAL



EMPLOYABILITY SKILLS

CHAPTER 1: Communication Skills-I

Unsolved Questions

Ans 1. The basic elements of a communication cycle are as follows:

- (i) *Sender:* This is the individual or entity who initiates the communication, intending to convey information or express their thoughts, emotions or ideas.
- (ii) *Encoding:* The sender's role is to transform his thoughts or ideas into a format suitable for transmission and comprehension. This transformation may involve converting the message into spoken words, written text or non-verbal signals.
- (iii) *Message:* The message is the actual content that the sender wishes to communicate. This content can take various forms, including spoken words, written text or non-verbal cues.
- (iv) *Channel:* The channel is the medium through which the message is transmitted. It could be through speaking, writing or using gestures, among other methods.
- (v) *Receiver:* The receiver is the individual or entity at the other end of the communication. Their task is to receive the message and decode it, making sense of its meaning and context.
- (vi) *Feedback:* Feedback refers to the response given by the receiver to the sender. It can take the form of verbal or non-verbal signals. This feedback is vital because it enables the sender to evaluate the effectiveness of the communication and make adjustments, if necessary.

Ans 2. Communication is the most important factor in various aspects of our lives, whether it involves relationships, work, education or personal development. Some key advantages of effective communication include the following:

- (i) *Building and Sustaining Relationships:* Communication is the fundamental basis of all kinds of human relationships—personal or professional. Effective communication helps in building and sustaining these relationships.
- (ii) *Sharing Information:* The ability to communicate is the primary means for exchanging information and knowledge. It is only through communication that we can share our thoughts, experiences and insights while learning from others in return.
- (iii) *Problem-solving and Decision-making:* Effective communication is essential for collaboration and teamwork. It aids in problem identification, exploring solutions and collectively making decisions through discussions and exchanging ideas.
- (iv) *Conflict Resolution:* Communication is an essential tool for resolving conflicts and disagreements. While it allows us to express our needs and viewpoints clearly, it also helps us to understand others' perspectives. By actively listening to others, we can discover common ground and reach mutually acceptable solutions.
- (v) *Personal Growth and Development:* Communication also serves as a foundation for personal growth and self-expression. Through self-expression and meaningful conversations, we can nurture our own ideas, gain a deeper sense of self-awareness and evolve as individuals.

Ans 3.

Verbal Communication	Non-verbal Communication
This mode of communication relies on spoken words to transmit information. It is used for a wide range of interactions, including face-to-face conversations, telephone calls and public speaking. Some advantages of verbal communication are immediate feedback, non-verbal cues, personal connection and clarity. Example: public speaking, telephonic interview, etc.	Non-verbal communication doesn't rely on spoken words. Instead, it involves the use of body language, gestures, facial expressions and other non-verbal hints to convey information. Non-verbal hints play a significant role in adding meaning and context to non-verbal communication. Examples include crossed arms, smiling, fidgeting, etc.

Ans 4. Some advantages of verbal communication are as follows:

- (i) *Immediate Feedback:* Verbal communication allows for instant feedback and response. This enables real-time conversations and allows for clarification of misunderstandings as they occur during the conversation.
- (ii) *Non-verbal Cues:* Verbal communication usually incorporates tone, manner and other non-verbal hints to complement the information being conveyed. These elements make it possible to additionally convey emotions and nuanced details that may not be expressed verbally.
- (iii) *Personal Connection:* Verbal communication plays a vital role in building personal relationships and developing a sense of connection between people. It allows for a more personal and human connection, as voice and presence add depth to interaction.
- (iv) *Clarity:* Verbal communication can be an effective way to ensure that everyone has a clear understanding of the information being conveyed. It allows for immediate clarification and questions, reducing the likelihood of misinterpretation.

While verbal communication has its share of advantages, it is also accompanied by the following challenges:

- (i) *Misunderstandings:* Verbal communication can result in misunderstandings, especially when language/accents are involved. Differences in pronunciation, vocabulary or interpretation can lead to confusion between those conversing.
- (ii) *Emotional Influence:* Emotions can impact verbal communication, making it challenging to express oneself clearly and effectively. Emotions like anger, nervousness or excitement can interfere with the delivery of the intended message.
- (iii) *Lack of Record:* Unlike written communication, verbal exchanges are usually not recorded. This can be a drawback when it is necessary to have a documented record of what was discussed. Verbal agreements or important details might be forgotten or disputed.
- (iv) *Distance Limitation:* Verbal communication is limited by physical distance. It is generally only possible to communicate with individuals who are within hearing range, which can be a constraint in certain situations. However, this constraint has been overcome using technology where telecommunication and the internet have brought the world closer together.

Ans 5. Here are some common forms of non-verbal communication:

- (i) *Facial Expressions:* Our face is highly expressive during any communication and can convey a wide range of emotions, such as happiness, sadness, anger and fear.

(ii) *Eye Contact:* Eye contact or the lack of it adds a lot of value in a conversation. The way a person looks at someone can communicate interest, attentiveness, confidence or even anger.

(iii) *Posture:* How one holds oneself can convey various qualities, including confidence, dominance or submissiveness, as observed in body stance and gestures.

Non-verbal communication, at times, complements verbal communication, especially when the information can be conveyed with a nod, tone of voice, eye contact or touch.

Ans 6. Visual communication has the potential to have a significant impact on individuals across all levels of literacy. As visual communication makes use of visual aids, including images, graphics and videos, to transmit information and ideas, those who are not educated enough to gather information from the written text, can easily grasp what is being conveyed. It offers distinct advantages, including:

(i) *Accessibility:* Visual communication can enhance accessibility, making information more comprehensible, especially for individuals with limited education.

(ii) *Engagement:* Visual communication tends to be more engaging than other forms of communication since it appeals to people's visual senses and can capture and sustain their attention more effectively.

(iii) *Memory:* Visual communication has the advantage of being more memorable compared to other communication forms, as images and graphics are easy to remember and recall.

(iv) *Clarity:* Visual communication serves as an effective method to clarify complex information and ideas by simplifying and breaking down the content into more manageable components.

Ans 7. In communication, there are four primary types of sentences, each with its own purpose, as outlined below with examples. We may use these to express ourselves.

(i) *Declarative Sentences:* Declarative sentences make statements or express ideas.

Example: "The cat sleeps peacefully on the windowsill."

(ii) *Imperative Sentences:* Imperative sentences give commands or make requests.

Example: "Please close the door quietly."

(iii) *Interrogative Sentences:* Interrogative sentences ask questions.

Example: "Where are you going this evening?"

(iv) *Exclamatory Sentences:* Exclamatory sentences express strong emotions or convey surprise. Example: "How incredible the fireworks display was!"

Ans 8. *Simple Sentence:* A simple sentence consists of a single independent clause and is typically punctuated with a period (.) at the end.

Example: "The sun sets in the west."

Compound Sentence: A compound sentence includes two or more independent clauses, joined by a coordinating conjunction (and, but, or, nor, for, yet, so). It is often punctuated with a comma (,) followed by a conjunction. Example: "The sun sets in the west, and the moon rises in the east."

Ans 9. A paragraph is a structured and meaningful unit of writing. It is correctly defined as "a logically cohesive group of sentences or text that centres around one main idea or topic and comprises one or more sentences that support or elaborate on that central concept."

The essential components and purpose of a paragraph are:

- (i) Typically, a paragraph begins with a topic sentence that states the main idea and is followed by supporting sentences that provide details or examples.
- (ii) Paragraphs serve to organize written content and facilitate the comprehension of the logical flow of ideas within a written work.

Ans 10. Some key guidelines for writing effective paragraphs are presented below:

- (i) *Clear Topic:* Always start the paragraph with a clear topic that introduces the primary idea and conveys the focus of the writing.
- (ii) *Supporting Sentences:* Subsequent sentences should offer details, examples and explanations that add value to the topic.
- (iii) *Specific Details:* It is always useful to provide specific details as they are more impactful than abstract or general information.
- (iv) *Maintain Focus:* Throughout the writing, it is important to sustain concentration on the main idea of the paragraph, ensuring that each sentence pertains to the topic.
- (v) *Transitional Words and Phrases:* Use transitional words and phrases to connect sentences and ideas within the paragraph, guiding the reader through the content.
- (vi) *Sentence Length:* To make the paragraph interesting to read and to enhance reader engagement, we may try writing sentences with a variety of length.
- (vii) *Concluding Sentence:* It is also worthwhile to conclude the paragraph with a sentence that provides closure and either summarizes the main idea or smoothly transitions to the next paragraph.

Ans 11. The following table provides examples of how perspectives can affect communication. Recognizing and respecting these diverse perspectives is key to fostering effective communication and avoiding potential misinterpretations.

Perspective	Effect on Communication
(i) Cultural differences	Different cultural norms and values may lead to misinterpretations.
(ii) Emotional state	Emotional states like happiness or sadness can affect how a message is received.
(iii) Beliefs and values	Differing personal beliefs can lead to contrasting interpretations.
(iv) Biases	Biases can influence how a message is perceived, potentially causing misunderstandings.
(v) Status and authority	Variations in status or authority can impact the perceived importance of the message.
(vi) Expertise	Differences in expertise may lead to variations in how the message is valued and understood.

Perspectives can have a significant impact on communication as they influence how people perceive, interpret and respond to information. Diverse perspectives can lead to varying interpretations of the same message, potentially resulting in misunderstandings and miscommunication. It is important to understand and appreciate these perspectives because they are influenced by an individual’s life experiences, faith, culture, environment and numerous other factors. For instance, people may possess different norms, values and beliefs. They may also be influenced by biases or emotions, which can impact how they perceive and interpret a message.

Ans 12. The following are the 7Cs of effective communication:

- (i) *Clarity*: The message should be clear, concise and easily understood.
- (ii) *Completeness*: The message should contain all the necessary information, leaving out no crucial details.
- (iii) *Conciseness*: Keep the message brief and to the point, avoiding unnecessary details that may clutter the information.
- (iv) *Correctness*: Ensure that the message is accurate and free from errors or mistakes.
- (v) *Concreteness*: Make the message specific and concrete, supporting it with examples and details to reinforce its meaning.
- (vi) *Consideration*: Take into account the needs, interests and values of the audience when crafting the message.
- (vii) *Courtesy*: Communicate in a polite, respectful and considerate manner towards the audience.

The following examples explain how the 7Cs of communication contribute to effective communication:

Perspective	Effect on Communication
(i) Clarity	"I need you to submit the homework by 1 pm on Friday."
(ii) Completeness	"Here's the report you requested. It includes the data you asked for and my analysis of the results."
(iii) Conciseness	"Can we meet at 2 pm to discuss the assignments?"
(iv) Correctness	"The budget for the project is 50,000, not 500,000."
(v) Concreteness	"The students' performance increased by 10% in the last semester and we expect them to continue growing at the same rate next semester."
(vi) Consideration	"I know you're busy with other assignments but I would really appreciate it if you could review this report and give me your feedback by Monday."
(vii) Courtesy	"I appreciate your hard work on this project. I have a few suggestions that I think could help us improve the final submission."

Ans 13. A sentence consists of various essential components known as the parts of a sentence. The components which may be included in a sentence are presented below with examples:

- *Subject*: The subject is the element of the sentence that focuses on a person, place, thing or idea.
Example: 'Hiral' in "Hiral is painting a picture."
- *Verb*: The verb signifies the action or the state being carried out by the subject.
Example: 'is painting' in "Hiral is painting a picture."
- *Object*: The object relates to the person, place, thing or concept upon which the action of the verb is performed or to which it pertains.
Example: 'a picture' in "Hiral is painting a picture."

Ans 14. Phrases are used to enhance the meaning and clarity of sentences but are unable to function as complete sentences independently. They play a crucial role in providing context and details within a sentence structure. For example, the phrase "with a smile" describes someone's manner but needs more context to make sense.

There are various types of phrases, including:

- *Noun Phrases:* These phrases revolve around a noun and its associated words, providing more information about the noun.
- *Verb Phrases:* Verb phrases encompass the verb and its related words, such as auxiliary verbs or adverbs, to convey the action in greater detail.
- *Adjective Phrases:* Adjective phrases modify nouns or pronouns, offering descriptions or details about them.
- *Adverb Phrases:* Adverb phrases modify verbs, adjectives or other adverbs, enhancing the meaning of the sentence.

Ans 15. Here are some types of non-verbal communication and their significance in conveying information:

- Facial Expressions:* Our face is highly expressive during any communication and can convey a wide range of emotions, such as happiness, sadness, anger and fear.
- Eye Contact:* Eye contact or the lack of it adds a lot of value in a conversation. The way a person looks at someone can communicate interest, attentiveness, confidence or even anger.
- Posture:* How one holds oneself can convey various qualities, including confidence, dominance or submissiveness, as observed in body stance and gestures.
- Gestures:* Hand movements, like pointing, waving or using thumbs-up or thumbs-down, convey different meanings based on context and cultural norms.
- Touch:* Physical contact, such as a handshake, hug or a pat on the back, can convey affection, respect or even aggression, depending on the context and the relationship between individuals.
- Physical Distance:* The physical distance between people can communicate intimacy, comfort or hostility. Standing close to someone or maintaining a safe distance sends different signals.
- Tone of Voice:* The way a person speaks, including volume, pitch and rhythm, can convey various emotions and attitudes, such as confidence, nervousness or anger.

Ans 16. A compound-complex sentence features two or more independent clauses and one or more dependent clauses and is often punctuated with a combination of commas (,) and conjunctions (and, but, or, nor, for, yet, so). Example: “She sang beautifully, but her voice wavered when she reached the high note.”

CHAPTER 2: Self-Management Skills-I

Unsolved Questions

Ans 1. Self-management means being in charge of your thoughts, feelings and actions to reach your goals. It also involves handling yourself in relation to others and the resources around you. This skill allows you to take charge of your life, set your priorities and make good choices.

Some self-management skills are:

- (i) *Time Management:* Time management means using your time wisely to reach your goals. This includes deciding what is most important, making a schedule and saying a firm 'NO' to activities that waste time. A great way to manage your time is to make a list of things you need to do each day and then prioritize them based on their importance and when they are due.
- (ii) *Goal-Setting:* Goal-setting is about figuring out what you want to achieve and making a plan to get there. It keeps you on track and motivated by giving you a clear path and purpose. To set effective goals, use the SMART criteria, which means they should be Specific, Measurable, Achievable, Realistic and Time-bound.
- (iii) *Decision-Making:* Decision making involves evaluating options and choosing the best course of action. It is an essential skill for self-management because it helps you make good decisions that align with your values and goals.
- (iv) *Problem-Solving:* Problem-solving is about identifying problems, coming up with probable solutions and picking the best one. It is an important skill for self-management because it helps you tackle difficulties and roadblocks.

Ans 2. Self-management is important because it keeps a person on track, organized and motivated. Without self-management, one might struggle to finish tasks on time. However, by developing self-management skills, anyone can increase their productivity, reduce stress levels and improve their overall well-being.

Self-management can help achieve long-term goals if practised in everyday life, for example, by using their time and resources well, students can finish assignments on time and get better grades, which may help them in getting admission to good colleges/institutes, paving the way for a remarkable career for them. Similarly, self-managed professionals can set clear goals and make good choices that match their long-term plans.

Besides, self-management lets people work on projects by themselves, without constant supervision. Self-management also helps you to understand what you are good at, where you need improvement and how you can grow.

Ans 3. By encouraging students to follow the given guidelines, teachers and parents can help students to develop good self-management habits:

- (i) *Time Management:* Time management means using your time wisely to reach your goals. This includes deciding what is most important, making a schedule and saying a firm 'NO' to activities that waste time. A great way to manage your time is to make a list of things you need to do each day and then prioritize them based on their importance and when they are due.
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Ans 4. Self-awareness is the ability to recognize and understand one’s thoughts, emotions and behaviours and how they impact oneself and others. It involves being aware of one’s strengths, weaknesses and limitations, as well as one’s values and beliefs. Self-awareness is important because knowing yourself is a skill that can help you grow, get better and have better relationships with people. To be self-aware, you need to be open to thinking about yourself honestly and without being too critical. You also have to think about how others see you. It can involve practices such as writing a journal, being mindful and asking people you trust for their thoughts and feedback.

“Your vision will become clear only when you can look into your own heart. Who looks outside, dreams; who looks inside, awakes.” —C.G. Jung

Ans 5. Self-awareness comes in two forms: internal and external.

- Internal self-awareness is about knowing your values, beliefs, emotions and why you do things.
- External self-awareness is about knowing how others see you and how your actions affect them.

Ans 6. Self-awareness is the ability to recognize and understand one’s thoughts, emotions and behaviours and how they impact oneself and others. It involves being aware of one’s strengths, weaknesses and limitations, as well as one’s values and beliefs. Being self-aware is a skill that can help you grow and have better relationships with people. For a self-aware student, it will help them have better relationships with other students as well as family members, friends and acquaintances.

Ans 7. Stress is a natural reaction to challenging or threatening situations. While a bit of stress can be helpful, too much stress can harm students’ physical and mental health.

Negative Stress (Distress): Long-lasting or severe stress that feels like it is too much to handle and can harm your physical and mental health.

- Higher chance of heart problems
 - A weaker immune system
 - Issues with your stomach and digestion
- Feelings of anxiety, depression, helplessness and hopelessness
 - Increased irritability and anger
 - Decreased self-esteem

Ans 8. Stress management refers to the ability to cope with stress and reduce its negative impact. Stress management is another crucial part of self-management.

Some common stress management techniques and their impact on us are presented in the table below:

Stress Management Techniques	Their impact
(i) Deep Breathing	Inhaling and exhaling slowly and deeply to calm the mind and reduce physical tension <ul style="list-style-type: none"> • Lowers heart rate • Reduces muscle tension • Improves focus and concentration

(ii) Exercise	Engaging in physical activities such as yoga, walking, playing favourite sports, swimming, dancing, etc. <ul style="list-style-type: none"> • Improves overall physical health and well-being • Reduces tension • Promotes better sleep
(iii) Mindfulness & Meditation	Focusing on the present moment and acknowledging thoughts and emotions without judgment <ul style="list-style-type: none"> • Reduces anxiety and depression • Improves sleep quality • Increases self-awareness
(iv) Social Support	Connecting with others and seeking emotional support from friends, family or mental health professionals <ul style="list-style-type: none"> • Reduces feelings of loneliness and isolation • Provides a sense of community • Promotes healthy coping mechanisms
(v) Time Management	Organizing and prioritizing tasks, setting realistic goals and managing time effectively <ul style="list-style-type: none"> • Increases productivity • Promotes a sense of accomplishment • Increases a sense of control
(vi) Journaling/Diary	Writing down thoughts and emotions to increase self-awareness and release negative feelings <ul style="list-style-type: none"> • Improves self-awareness • Reduces anxiety and depression • Promotes emotional regulation
(vii) Relaxation Techniques	Engaging in activities such as listening to music or spending time in nature to promote relaxation and reduce stress <ul style="list-style-type: none"> • Reduces physical tension • Promotes relaxation • Improves mood and overall well-being
(viii) Sleep Routine	Developing healthy sleep habits such as sticking to a regular sleep schedule in a relaxing sleep environment <ul style="list-style-type: none"> • Improves sleep quality • Reduces anxiety and depression • Promotes overall physical and mental health

Ans 9. Stress is a natural reaction to challenging or threatening situations. While a bit of stress can be helpful, too much stress can harm one's physical and mental health affecting performance at work or in school.

Self-management techniques, such as exercise, time management, journaling/writing diary, relaxation techniques, sleep routine, go a long way in overcoming the impact of stress.

Ans 10. Positive thinking is a way of thinking in which you concentrate on the good parts of situations and experiences and don't give much attention to the negative parts. It is about having a mindset that sees opportunities and chances in each situation, rather than getting stuck on failures, problems or things that didn't work out.

Positive thinking brings many benefits, including greater self-confidence, less stress, improved physical health and better relationships. It is a key part of your journey to self-improvement.

Ans 11. Self-confidence is your own belief in your abilities and skills. It is a big part of self-management because it keeps you feeling motivated and focused on your goals. Self-confidence can also help you deal with tough situations and challenges by giving you a sense of determination.

Positive thinking is a way of thinking in which you concentrate on the good parts of situations and experiences and don’t give much attention to the negative parts. It is about having a mindset that sees opportunities and chances in each situation, rather than getting stuck on failures, problems or things that didn’t work out.

Positive thinking helps in challenging negative thoughts, paying attention to negative self-talk and countering it with positive and empowering thoughts. Positive thinking brings many benefits, including greater self-confidence, less stress, improved physical health and better relationships. It is a key part of your journey to self-improvement.

Ans 12. Personal hygiene refers to the practices that we undertake to maintain cleanliness and promote good health. Personal hygiene is a crucial aspect of our lives and it is important to learn the basics of hygiene from an early age. Maintaining personal hygiene is an important part of taking care of your health and well-being.

Ans 13. Personal hygiene refers to the practices that we undertake to maintain cleanliness and promote good health. Personal hygiene is a crucial aspect of our lives and it is important to learn the basics of hygiene from an early age. Maintaining personal hygiene is an important part of taking care of your health and well-being.

The following are some good personal hygiene practices:

- (i) Taking a shower or bathing each day removes dirt, sweat and bacteria from your skin, preventing body odour.
- (ii) Brushing your teeth twice daily and flossing once a day removes food bits and plaque, which can cause tooth decay, bad breath and gum issues.
- (iii) Daily washing your face helps get rid of dirt, oil and makeup that can block pores and cause acne or other skin troubles.
- (iv) Regularly washing your hands with soap and water stops germs from spreading and lowers the risk of getting sick.
- (v) Keeping your nails short helps prevent dirt and bacteria from gathering underneath, which can lead to infections.

Ans 14. Teachers and parents can go a long way in inculcating in students the habit of maintaining personal hygiene. Some examples are:

At home, parents can ensure that their child brushing his teeth, taking a bath daily and washing his hands after playing and before having their meal and keep their surroundings clean.

In school, teachers can discuss the benefits of keeping oneself clean, washing hands to prevent diseases, citing communicable diseases like COVID-19 as an example, to stay healthy. Another step that teachers can take to ensure that the students are conscious about personal hygiene is checking their nails randomly.

Unsolved Questions

Ans 1.

Input Device	Output Device	Storage Device
Microphone	Plotter	Flash Drive
Touch screen	Speaker	Hard disk
Bar Code reader	Printer	
Light Pen	Projector	

Ans 2. (a) *RAM (Random-Access Memory)*: RAM is volatile in nature and hence holds the data till the computer is switched on.

The data to be worked upon is brought into primary memory or RAM.

ROM (Read-Only Memory): ROM is permanent in nature as its contents are retained even after the system gets switched off.

Some preliminary steps for booting process, *i.e.*, startup or warm-up session, resides in ROM and are read from the ROM.

(b) *Plotter*: Plotters are the output devices that are used for producing vector graphics, good-quality images and drawings like architectural designs, maps, computer-aided designing (CAD), etc., by plotting lines using a pen. Unlike printers, they support printing of large-sized papers. The pens in plotters use different-colored ink to draw in different colors.

Printer: A printer is an output device which is used to generate hard copies (printout) of the output generated by the computer system. The printer can generate both text and images on paper.

(c) *Web Page*: A web page is an electronic document/page designed using HTML. It displays information in textual or graphical form. Traversal from one web page to another is possible through hyperlinks. The first page of a website is called home page. It generally contains information and links of all the related web pages. Each web page has a unique address that is visible on the address bar.

Website: A website is a collection of various web pages, images, video, audio and other kinds of digital assets that are hosted on one or several web servers. The first page of a website is known as home page where all the links related to other documents are displayed. The web pages of a website are written using HTML and the information is transferred over the internet through the HTTP protocol. HTML documents consist of several hyperlinks that are accessed through the HTTP protocol. Examples of various websites are *cbse.nic.in*, *google.com*, *amazon.in*, etc.

Ans 3. ICT stands for Information and Communication Technology. The world around us revolves around computers and it has become an indispensable part of our life. ICT skills have made our lives better and easier as it helps us in doing our day-to-day tasks flawlessly, efficiently and quickly. The best examples are smartphones that have become the most important and indispensable hand-held devices.

The following are the areas where ICT is being used:

Role of ICT in Personal Life:

- (a) Online Financial Services
- (b) Communication
- (c) Healthcare
- (d) Education
- (e) Entertainment
- (f) Social Networking Platforms

Role of ICT in Industries and Businesses:

- (a) Banking Industry
- (b) E-commerce
- (c) Accounting Tools
- (d) Training and Education
- (e) Travel and Ticketing
- (f) Research
- (g) Defence

Ans 4. A light pen is a pointing device that can be used to select anything on the computer screen by simply pointing at it or for drawing figures directly on the screen. The tip of the light pen, termed as stylus, contains a light-sensitive element which, when placed on the screen, detects light from the screen, enabling the computer to identify the location of the pen on the screen. Clicking is performed by pressing the pen on the screen. A light pen is mostly used by engineers, architects or designers.

Ans 5. Laser printers use laser technology to produce printed documents. They work just like a photocopy machine and print good-quality images at high speed.

Laser printers are used both in offices and homes. Color laser printers too produce very good result.

Ans 6. (a) ALU: Arithmetic Logic Unit

(b) CU: Control Unit

(c) CPU: Central Processing Unit

Ans 7. *Central Processing Unit (CPU):* A computer receives data and instructions through input devices which get processed by the CPU and the result is shown through the output devices. The main/primary memory and secondary/auxiliary memory are used to store data inside the computer.

The CPU is the control centre/brain of a computer. It guides, directs, controls and governs all the processing that takes place inside the computer.

Ans 8. *Email (Electronic mail):* Short for electronic mail, e-mail or email is the information stored on a computer that is exchanged between people over a network. It is a fast and efficient way to communicate with multiple users at the same time and is the cheapest and fastest method to send files that may contain text, images and other information across the network.

Postal mail, as we all know, is slow as compared to electronic mail. Thus, matters of urgency cannot be left to postal mail. However, sending parcels, etc, is not possible through electronic mail, where postal mail comes in handy.

Ans 9. Web browser is a software that helps in accessing web pages and thus, is also called web client. It helps the user to navigate through the world wide web and displays web pages. Some popular web browsers are Google Chrome, Mozilla Firefox, Opera, AOL, WebKit, etc.

The site to be searched is done by typing the address of the web page (URL) in the address bar. Clicking on Go or pressing Enter from the keyboard shall take you to the destined website and the home page will be loaded on your browser window.

Ans 10. The role of ICT at home:

- (a) *Online Financial Services:* One of the most sought-after services provided by ICT is online financial transactions. You can pay your bills online from the comfort of your home, without standing and waiting in long queues. Banking transactions are all done online using smartphones and computers. In addition to this, loan services, insurance and social welfare schemes can be accessed online.

(b) *Communication*: Sending and receiving messages with the click of a mouse has become easy and instant whether it is about updating meeting timings, communicating via email in offices, looking for information online, doing research work or seeking help and consultation. Sharing and collaborating information with each other through online mode has become faster and easier with time.

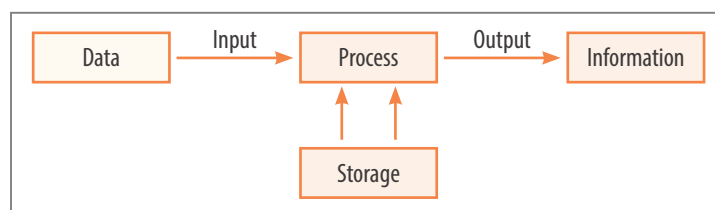
Ans 11. ICT plays a significant role in industrial set-ups and businesses as described below:

- (i) *Banking Industry*: With e-banking, it is no longer required to wait in queues. You can do all banking transactions online now. Even new accounts can be opened online.
- (ii) *E-commerce*: With e-commerce, all types of business transactions are carried out very easily, accurately and by ensuring proper sales and services. Buying and selling of products through online mode has become very convenient.
- (iii) *Accounting Tools*: Handling of accounts is easily done through customized accounting tools that run on computers, which are required for business and personal purposes.
- (iv) *Training and Education*: Computers play significant roles in providing professional trainings, skill development, capacity-building programs, organizing workshops and online training sessions at school and college levels. Online tutorials, digitized content, e-libraries, multimedia tablets and user-friendly learning platforms have changed the face of education.
- (v) *Travel and Ticketing*: The IRCTC/Indian Railways portal is one of the most popular applications for booking online tickets, thanks to easy access through the internet, secured payments and instant services. Besides booking air tickets, hotel reservations and cab booking are just a click away.

Ans 12. A computer is an electronic device that takes input in the form of data and generates output in the form of information. This process of converting data into some meaningful information is called Information Processing Output cycle or IPO cycle. This is performed by the fundamental units or the basic components of a computer system.

Basic Operations of a Computer

Every task given to a computer follows an Input → Process → Output Cycle (IPO cycle).



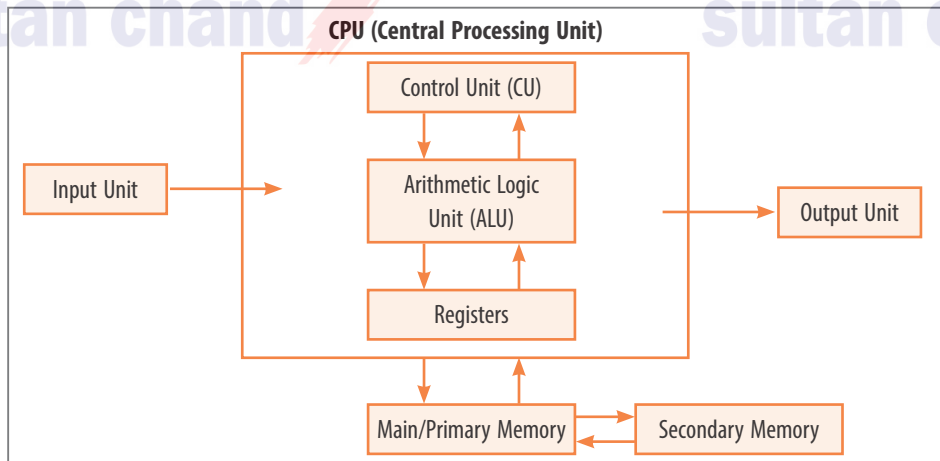
IPO Cycle

It accepts certain input (raw data), processes that input and produces the desired output (processed data or information).

The input unit takes the input, the Central Processing Unit (CPU) processes the data and the output unit produces the output. The memory unit holds the data and instructions during the processing.

A computer receives data and instructions through input devices which get processed by the CPU and the result is shown through the output devices. The main/primary memory and secondary/auxiliary memory are used to store data inside the computer, as shown in the given figure.

The main memory holds the input and intermediate output during the processing.



Functional Components of a Computer System

Ans 13. *Output Devices:* Output devices are the physical components that produce the output or processed data generated by the computer system in human readable form. Some of the most commonly used output devices are speakers, monitor, printer, etc.

Input Device: The input unit comprises devices attached to the computer. These devices help to provide instructions to the computer. Thus, it accepts input from the user and converts it into a form that can be understood by the computer (i.e., binary code/form). The term “Binary” means two states—ON/OFF or HIGH/LOW—voltage and, in turn, two bits or symbols, 1 for ON and 0 for OFF. Examples include keyboard, light pen, etc.

Ans 14. To turn off the computer completely, follow the given steps:

- (i) Click the **Start** button.
- (ii) Then, from the pop-up menu, click on **Shut Down** option. The computer desktop will disappear and the computer will gradually shut down.

Ans 15. An email address is a unique identifier for an email account. It is used for both sending and receiving email messages. Every email address has two main parts—a username and a domain name. The username comes before ‘@’ and the domain name comes after it. In the example given, ‘abc’ is the username and ‘gmail.com’ is the domain name: abc@gmail.com

CHAPTER 4: Entrepreneurial Skills-I

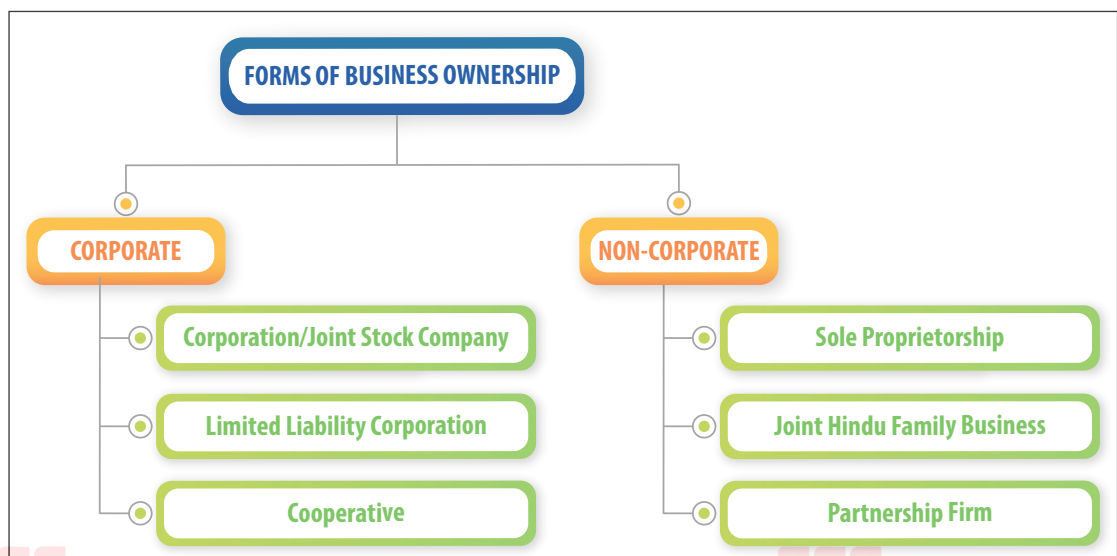
Unsolved Questions

Ans 1. The different types of businesses are:

- (i) *Manufacturing Business:* A manufacturing business is a kind of business that deals with the production of goods (make things/products) in a step-by-step approach using raw materials, labour, technology, capital and production overheads. The entire process leads to finished goods which are then sold to the consumers directly or indirectly through wholesalers and retailers.
- (ii) *Service Industry:* Service industry serves consumers with intangible products (products without physical form) or benefits. These business establishments offer consultation, accounting, professional expertise, skills, hospitality and more.
- (iii) *Merchandising Business:* Merchandising is the most common form of business where products are purchased and sold in bulk which is beneficial to all—wholesalers, retailers, shopkeepers and customers. In merchandising, finished products are purchased at wholesale price and sold to consumers at retail price.
- (iv) *Hybrid Business:* Hybrid business is a combination of the above business types, like service, manufacturing, merchandising or a combination of all three. It deals in both goods and services. The best example of a hybrid business is 'Patanjali Yogam'.

Ans 2. Entrepreneurship Development is the process of improving and enhancing the required skillset and knowledge of an entrepreneur with respect to starting and running an enterprise and generating maximum profit while taking into account the risks involved. This can be structured in-house trainings, classroom training programs and sessions which will help budding entrepreneurs to become successful. Entrepreneurship development becomes necessary to tackle the problem of unemployment, to overcome stagnation in the economy and to give a boost to business and industries. It is a tool for industrialization.

Ans 3. On a broader perspective, a business can be divided into **corporate** or **non-corporate** form.



Ans 4. To become a successful entrepreneur, the following characteristics should be imbibed:

- (i) *Risk-bearing Capacity:* Every business, whether small or big, involves risks to a certain extent. Thus, an entrepreneur should have enough courage to take risks while setting up a new venture and take calculative decisions to capture the market and succeed.
- (ii) *Innovation:* Entrepreneurship involves coming out with innovative ideas for setting up a new business with a creative blend to changes in the environment and market requirement. It involves introduction of services and products in a new, better and innovative way.
- (iii) *Purposeful and Goal-oriented:* Entrepreneurship is a purposeful and goal-oriented activity with a strong vision of earning maximum profits through innovative practices and eventually benefiting the society.
- (iv) *Leadership Qualities:* Entrepreneurship is all about managing a team with an intent to earn good profits. A successful entrepreneur should possess strong leadership qualities so that those working under their guidance strongly believe in them and respect them.
- (v) *Flexible and Dynamic Process:* Business is a dynamic activity that keeps on changing with respect to circumstances and market environment. Those changes create opportunities for entrepreneurs. So, a successful entrepreneur should be flexible and prepared in all situations and circumstances to work for the benefit of the business and society.
- (vi) *Gap-filling Activity:* An entrepreneur identifies and fills the gap between the requirement of society and what is available.
- (vii) *Awareness about Market Trends:* An entrepreneur fills the gap between what are the customers' needs and what is available to them. The entrepreneur should be aware of a product's market value and demand so that they can take better decisions and constantly improve their products based on customer feedback.
- (viii) *Multi-dimensional:* A multi-dimensional approach helps to improve the performance of an enterprise by taking care of all the important aspects related to it, viz. economic, psychological, social, cultural, etc. All these dimensions impact each other and eventually the growth of the business.

Ans 5. The following are the roles of entrepreneurship:

- (i) *Economic Development:* An entrepreneur acts as one of the pillars of economic development through efficient use of resources and arranging capital for fruitful long-term investments.
- (ii) *Generating Employment Opportunities:* An entrepreneur efficiently utilizes human resources as they are job creators and not job seekers.
- (iii) *Contribution towards Industrial Development:* An entrepreneur contributes significantly towards industrial development by setting up new business ventures and industrial units in backward and rural areas to bring balanced regional development.
- (iv) *Mobilizing Revenue:* Entrepreneurs significantly help in increasing national wealth by mobilizing the revenue of a country.
- (v) *Enhancing Standard of Living:* As more businesses are set up, the problem of unemployment gets resolved to a great extent.

The following are the rewards of entrepreneurship:

- (i) *Independence*: An entrepreneur is their own boss and takes independent decisions in terms of hours of work, team members, etc.
- (ii) *Passion*: Entrepreneurs are passionate about their dreams. As a job is performed with utmost sincerity and efforts, the results are also fruitful.
- (iii) *Adventure and Excitement*: There are numerous people who have given up their good jobs to nurture their dreams. They live up to their dreams and become successful entrepreneurs.
- (iv) *Freedom*: Entrepreneurship allows the freedom to implement one's ideas as per their area of interest and perspective.
- (v) *Profit-making and Financial Stability*: Successful entrepreneurs create and maintain a good bank balance for themselves and benefit their employees and staff.
- (vi) *Good Status*: Success in entrepreneurship brings considerable fame and prestige.

Ans 6. The abilities of a successful entrepreneur are:

- (i) *Risk-bearing Capacity*: Every business, whether small or big, involves risks to a certain extent. Thus, an entrepreneur should have enough courage to take risks while setting up a new venture and take calculative decisions to capture the market and succeed.
- (ii) *Innovation*: Entrepreneurship involves coming out with innovative ideas for setting up a new business with a creative blend to changes in the environment and market requirement. It involves the introduction of services and products in a new, better and innovative way.
- (iii) *Purposeful and Goal-oriented*: Entrepreneurship is a purposeful and goal-oriented activity with a strong vision of earning maximum profits through innovative practices and eventually benefiting the society.
- (iv) *Leadership Qualities*: Entrepreneurship is all about managing a team with an intent to earn good profits. A successful entrepreneur should possess strong leadership qualities so that those working under their guidance strongly believe in them and respect them.
- (v) *Flexible and Dynamic Process*: Business is a dynamic activity that keeps on changing with respect to circumstances and market environment. Those changes create opportunities for entrepreneurs. So, a successful entrepreneur should be flexible and prepared in all situations and circumstances to work for the benefit of the business and society.
- (vi) *Gap-filling Activity*: An entrepreneur identifies and fills the gap between the requirement of society and what is available.
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- (viii) *Multi-dimensional*: A multi-dimensional approach helps to improve the performance of an enterprise by taking care of all the important aspects related to it, viz. economic, psychological, social, cultural, etc. All these dimensions impact each other and eventually the growth of the business.

Ans 7. The three types of business activities are as follows:

- (i) *Manufacturing Business:* A manufacturing business is a kind of business that deals with the production of goods (make things/products) in a step-by-step approach using raw materials, labour, technology, capital and production overheads. The entire process leads to finished goods which are then sold to the consumers directly or indirectly through wholesalers and retailers.
- (ii) *Service Industry:* Service industry serves consumers with intangible products (products without physical form) or benefits. These business establishments offer consultation, accounting, professional expertise, skills, hospitality and more.
- (iii) *Merchandising Business:* Merchandising is the most common form of business where products are purchased and sold in bulk which is beneficial to all—wholesalers, retailers, shopkeepers and customers. In merchandising, finished products are purchased at wholesale price and sold to consumers at retail price.

Ans 8. Atal Innovation Mission, Startup India, Mudra Yojana Scheme and Entrepreneurship-cum-Skill Development Programme (E-SDP) are some of the entrepreneurship development initiatives undertaken by the Government of India.

Ans 9. **Business** includes all those economic activities that comprise exchange, purchase, sale, production/creation of goods and services with the objective of making profits along with customer satisfaction. A factory, a shop, a transport company, an insurance company, a commercial bank, an advertising agency, etc., are all examples of business enterprises. Hence, business may be defined as an economic activity involving the production and sale of goods and services to earn profits after satisfying consumer needs.

On the contrary, **Entrepreneurship** is the process of discovering an opportunity, mobilizing resources and creating an establishment to exploit the opportunity. It is an attempt to create value. Business and entrepreneurship are both inter-related activities and cannot be separated.

Ans 10. The following is the role of an entrepreneur in a country's economic development:

- (i) *Resources and Capital:* An entrepreneur acts as one of the pillars of economic development through efficient use of resources and arranging capital for fruitful long-term investments.
- (ii) *Generating Employment Opportunities:* An entrepreneur efficiently utilizes human resources as they are job creators and not job seekers.
- (iii) *Industrial Development:* An entrepreneur contributes significantly towards industrial development by setting up new business ventures and industrial units in backward and rural areas to bring balanced regional development.
- (iv) *Mobilizing Revenue:* Entrepreneurs significantly help in increasing national wealth by mobilizing the revenue of a country.
- (v) *Enhancing Standard of Living:* As more businesses are set up, the problem of unemployment gets resolved to a great extent.

CHAPTER 5: Green Skills-I

Unsolved Questions

- Ans 1.** In broader terms, 'Environment' means 'surroundings' (environs). The word 'environment' has been derived from the French word 'Environia', which means 'to surround'. Hence, environment refers to our surroundings which consist of biotic (living) and abiotic (non-living) components.
- Ans 2. Biotic:** The living components of an ecosystem are called biotic components. Some of these include plants, animals as well as fungi and bacteria. Plants are autotrophs—they make their own food by absorbing carbon dioxide from the environment and releasing oxygen after the process of photosynthesis. Animals are mainly dependent on plants or on other animals for their food and existence.
- Abiotic:** Abiotic components constitute all non-living components of an ecosystem. It includes air, water, soil, minerals, sunlight, temperature, nutrients, etc.
- Ans 3.** Society and environment are interdependent. A society is a group of people living together in a community, sharing common interests and engaging in social interactions. Environmental changes, such as climate and weather, affect our lives. Conversely, our actions and activities impact the environment. For example, deforestation has led to soil erosion and changes in climatic conditions. Therefore, we can say that society and environment are interdependent and impact each other in equal measure.
- Ans 4.** The various factors causing ecological imbalance are:
- *Deforestation:* It is the outcome of population explosion. Due to rising population, forests and related ecosystems are cleared for urbanization and industrialization. This has resulted in land degradation and soil erosion and, in turn, has resulted in the extinction of many bird and animal species.
 - *Pollution:* It is defined as the contamination of environment, mainly air, water and soil, with undesirable addition of unwanted harmful substances or toxins that destroy the health of the environment and make it unfit and unhealthy for life sustenance and have long-lasting effects.
 - *Global Warming and Greenhouse Effects:* The increase in carbon dioxide content in the atmosphere due to emission of chlorofluorocarbons and other air pollutants, excessive use of fossil fuels like coal, petrol, oil and natural gas produces greenhouse gases like methane, carbon dioxide etc., and results in a sharp increase in greenhouse effect and, in turn, global warming.
 - *Mining:* It is the process of extracting minerals from the earth's surface. If we will keep extracting minerals at the current pace, it will lead to their depletion and create an ecological imbalance. Large-scale mining leads to long-term effects such as land erosion, dust contaminating the air and improper mining waste disposal.
 - *Radioactive and E-Waste:* The working of nuclear reactors produces a lot of radioactive waste which is highly dangerous for all living beings. It is not decomposed and stays intact for thousands of years. Thus, radioactive waste should be handled properly. Another waste of concern is e-waste. This is due to large scale usage of smartphones, laptops and other digital gadgets which generate a lot of e-waste and need proper management.

Ans 5. An ecosystem is an interdependent community of living and non-living organisms that interact with each other and create a balance in their surrounding environment. For example, gardens, ponds and forests are all ecosystems. Any imbalance created in any of the components shall disturb the entire ecosystem, which may hamper the existence of other living organisms.

An ecosystem comprises two major components:

- *Biotic*: The living components of an ecosystem are called biotic components. Some of these include plants, animals as well as fungi and bacteria.
- *Abiotic*: Abiotic components constitute all non-living components of an ecosystem. It includes air, water, soil, minerals, sunlight, temperature, nutrients, etc.

Ans 6. Human activities have contributed to creating ecological imbalance in the following ways:

- (i) *Deforestation*: It is the outcome of population explosion. Due to rising population, forests and related ecosystems are cleared for urbanization and industrialization. This has resulted in land degradation and soil erosion and, in turn, has resulted in the extinction of many bird and animal species.
- (ii) *Pollution*: It is defined as the contamination of environment, mainly air, water and soil, with undesirable addition of unwanted harmful substances or toxins that destroy the health of the environment and make it unfit and unhealthy for life sustenance and have long-lasting effects.
- (iii) *Global Warming and Greenhouse Effects*: The increase in carbon dioxide content in the atmosphere due to emission of chlorofluorocarbons and other air pollutants, excessive use of fossil fuels like coal, petrol, oil and natural gas produces greenhouse gases like methane, carbon dioxide etc., and results in a sharp increase in greenhouse effect and, in turn, global warming.
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- (v) *Radioactive and E-Waste*: The working of nuclear reactors produces a lot of radioactive waste which is highly dangerous for all living beings. It is not decomposed and stays intact for thousands of years. Thus, radioactive waste should be handled properly. Another waste of concern is e-waste. This is due to large scale usage of smartphones, laptops and other digital gadgets which generate a lot of e-waste and need proper management.

Ans 7. Green economy is described as an economy with low carbon emissions, less pollution, efficient use of resources and a healthy society. It can be achieved through clean energy to implement green initiatives.

Building green economy can be achieved by inculcating green skills and environment-friendly practices that require technical skills, knowledge, critical thinking and a problem-solving approach.

Examples of green economy are renewable energy, sustainable agriculture, public transportation, etc.

The important components of Green Economy are:

- *Renewable energy*: Renewable energy is a form of energy which is produced by renewable resources like wind, sunlight, water, geothermal heat, etc. Using these alternative green energy sources contributes to lowering the impact on the environment caused by the depletion of non-renewable sources of energy.

- *Green building and green transportation:* This includes the construction of buildings and developing a well-planned transportation system with minimum damage to the environment and forests. Green transportation ensures the use of fuel that produces minimum greenhouse gases and pooling, promoting alternative sources of energy and fuel like CNG, battery, etc. Green transportation lowers dependency on fossil fuels, is cheaper and helps in keeping the environment clean.
- *Waste management:* It means managing waste by following 4R's—Refuse, Reduce, Reuse and Recycle—and 1U—Upcycle—for minimal environment degradation.
- *Land management:* It relates to using land as a resource judiciously in terms of soil, forests and trees, farms, roads, etc., without causing harm to the environment.
- *Water management:* Water management means to reduce water wastage and replenish groundwater level by adopting rainwater harvesting mechanism for future use. Using rainwater for agriculture and wastewater for washing and cleaning purposes proves to be an effective mechanism for reducing water wastage which is responsible for the scarcity of water.

Ans 8. The need to develop green economy arises from the fact that it will help in conserving resources for future generations with improved social well-being and reduced environmental risks that will promote economic growth of a country, eradicate poverty and reduce carbon emissions and ecosystem degradation; In a green economy, growth in employment and income are driven by public and private investment into such economic activities, infrastructure and assets that allow reduced carbon emissions and pollution.

Ans 9. Green buildings refer to the construction of buildings and developing a well-planned transportation system with minimum damage to the environment and forests.

Green buildings support green economy by contributing effectively in the following areas:

- Wastewater treatment
- Using renewable energy (solar power and wind energy)
- Rainwater harvesting
- Use of clean energy and focusing on conserving energy
- Reducing all types of pollution, mainly air, water and soil

Ans 10. Air pollution is one of the most pressing environmental issues of our time. It not only affects the environment but also has a significant impact on human health. In recent years, there has been a growing awareness of the role of technology in reducing air pollution, which include:

- *Renewable energy sources like solar, wind and hydro power*—they can significantly help to reduce the amount of pollution generated by traditional power plants.
- *Electric vehicles*—they produce significantly less air pollution than traditional cars running on gasoline or diesel.
- *Air quality sensors*—these devices measure the levels of pollutants in the air and can help identify areas with high levels of pollution, allowing authorities to take action to reduce pollution levels.
- *Air quality maps*—they provide a visual representation of the levels of pollution in different areas and allow people to make informed decisions about their outdoor activity and take action to reduce pollution levels.

Ans 11. Upcycle means that a safe and eco-friendly alternative should be used in place of a non-biodegradable substance. Also, any product that is not usable can be upcycled with creativity and innovation. For example, using a cloth bag instead of a polythene bag.

Ans 12. A few green projects taken up in India for building a green economy include:

- (i) Digital Green aims at rural education, promoting education in rural areas through smart classrooms and video-based learning.
- (ii) Waste management and vermicomposting. Vermicomposting is a faster method for reducing organic waste than traditional composting. This approach utilizes the action of earthworms as well as bacteria to break down organic waste. The resultant material (vermicompost) can be a highly effective fertilizer or soil conditioner.
- (iii) Making solar energy accessible by providing customized solutions to industry clients.
- (iv) Banyan Nation is an initiative to work towards a pollution-free environment by collecting plastic waste from industries and recycling it for further use.
- (v) Bio toilet by Green Solution Foundation is an eco-friendly toilet. Its working is based on using aerobic bacteria. Its tank converts human waste into standard compatible water, which is used for flushing and even for irrigation.

Ans 13. Green skills aim at developing a framework for building and managing a sustainable green economy. Learning green skills is an important and indispensable method to enhance knowledge, abilities, values and attributes to develop and support organizations that focus on saving the environment and improving it to support life systems.

Some prominent areas in which green skills contribute to building a sustainable economy and improving environmental conditions are as follows:

- Wastewater treatment
- Using renewable energy (solar power and wind energy)
- Rainwater harvesting
- Green buildings and transportation
- Use of clean energy and focusing on conserving energy
- Reducing all types of pollution, mainly air, water and soil

Building green economy can be achieved by inculcating green skills and environment-friendly practices that require technical skills, knowledge, critical thinking and a problem-solving approach.

SUBJECT-SPECIFIC SKILLS

CHAPTER 1: Introduction to IT-ITeS Industry

Unsolved Questions

- Ans 1.** Software Development is the process of developing, designing and implementing software to solve a particular problem.
- Ans 2.** The significance of using ICT in teaching and learning is:
- (i) Classroom teaching has become more effective with smartboards and interactive whiteboards.
 - (ii) Online tutorials, videos and lesson plans have contributed significantly to make the teaching-learning process interesting and enriching.
 - (iii) Students can access any information through free and paid online educational services and portals like YouTube channels, online tutorials, apps, etc.
 - (iv) Online assessments, exams, workshops and interactive sessions for the students can also be conducted conveniently.
 - (v) With the implementation of information technology, the cost of accessing educational resources is very low. It also makes it easier for students to access these resources from anywhere.
 - (vi) To manage school systems, many countries are using a software application called Learning Management System (LMS). It offers many services for both students and teachers. To access LMS, students and teachers can register themselves on its official website.
- Ans 3.** The technological domains that provide opportunities within the IT industry are primarily based on three platforms:
- (i) Software or Application Development
 - (ii) IT Application and Implementation
 - (iii) Information Technology enabled Services (ITeS)
- Ans 4.** The types of BPO services that are offered in India are:
- (i) Online Data Entry and Processing
 - (ii) Maintaining Financial Ledgers and Accounting Books
 - (iii) Telemarketing
 - (iv) Call Centre
 - (v) Transaction and Payment Processing
 - (vi) Health and Healthcare
 - (vii) Online Research and Data Analysis
 - (viii) Customer Support
 - (ix) Documentation
- Ans 5.** IT organizations are classified based on the criteria or parameters given below:
- (i) The sector/area to which an organization is serving
 - (ii) The type of service an organization provides
 - (iii) The geographical span of an organization's operations
 - (iv) The scope and size of operations and profits generated
- Ans 6.** Examples of the uses of IT in schools are given below:
- (i) *Learning Management System (LMS)*: Schools are using LMS platforms to manage and deliver online course content, assignments and assessments.
 - (ii) *Digital Classroom tools*: Interactive whiteboards, projectors and educational software help in better understanding of concepts.
 - (iii) *E-books/Online resources*: This makes learning more dynamic and up to date.
 - (iv) *Augmented Reality (AR), Virtual Reality (VR) and Robotics*: These are the technologies that create interest and curiosity among children to learn and explore new concepts.

Ans 7. Classification of the IT industry into various sectors:

- (i) Software Development
- (ii) Hardware Manufacturing
- (iii) Cloud Computing
- (iv) Information Technology
- (v) Telecommunications
- (vi) Artificial Intelligence (AI) and Machine Learning (ML)
- (vii) Data and Analytics

Ans 8. Information Technology (IT) is extensively used in big malls and shopping outlets to enhance various aspects like operations, customer experience, security and management. There are several ways in which IT is applied in these environments, such as:

- (i) Barcode Scanning
- (ii) Dynamic Advertising
- (iii) Shopping and Mobile Payment apps
- (iv) Self-Service Kiosks

Ans 9. There are the various processes in education where the use of IT is prominent:

- (i) Learning Management System (LMS)
- (ii) Online Education and E-learning
- (iii) Library Management System
- (iv) Student Information System (SIS)
- (v) Smart Class and Smartboards
- (vi) Digital Content Creation

Ans 10. For digital communication, software tools and platforms like WhatsApp, Facebook, Email, Instagram, video conferencing, etc., are used, depending on the specific needs and preferences of users.

Ans 11. GIC stands for Global In-house Centres. GIC organizations work for their parent organization only and not for external clients. However, GICs can be a part of MNCs or ISPs, for example, Deloitte in India, GE, American Express based in the US, etc.

Ans 12. IT facilitates access to various services and technologies in our day-to-day lives. Some home computing activities supported by IT are described below:

- (i) World Wide Web (www) has made it simpler for us to do most of our tasks with a click of the mouse. We use online services to pay our electricity, gas and water bills, and to also pay income and property tax.
- (ii) We get online news through e-paper instantly and get continuously updated with notifications.
- (iii) Wildlife documentaries, playing online games using smartphones and bingeing on web series have gained immense popularity because of the internet.
- (iv) We do online shopping of household goods and grocery such as milk, fruit, vegetables, etc.

Ans 13. E-commerce platforms are online software applications or websites that facilitate buying and selling of goods and services over the internet. The various e-commerce platforms are listed below:

- (i) Amazon
- (ii) Flipkart
- (iii) Ajio
- (iv) Hopscotch
- (v) Myntra
- (vi) Lenskart

Ans 14. The statement ‘Society and its functioning will come to a standstill without IT’ reflects the dependency of modern society on Information Technology (IT). In this modern era, we are highly dependent on IT tools; without IT, many sectors would be adversely affected. Some of these sectors are listed below:

- (i) *Entertainment:* The entertainment sector is heavily dependent on IT for content creation and streaming. Lack of IT would impact the availability of movies and music.
- (ii) *Social Interaction:* Social media and online platforms have become essential for networking and community-building. Lack of IT would limit people’s ability to connect and share information.
- (iii) *Healthcare:* Information technology has transformed healthcare with electronic diagnostic tools and health records. Without IT, medical professionals would face challenges in efficiently managing patients.

Ans 15. The government uses Information Technology to provide better facilities and services to citizens. Through e-governance, many government services are available online, which save time and effort. People can apply for documents like PAN card and passport, check information and use different government services through online portals.

IT also helps the government work in a more transparent and efficient way. By promoting digital services and initiatives, the government makes information and services easily accessible to citizens. This helps in maintaining better living standards of its citizens.

Ans 16. Applications of IT in marketing are:

- (i) Digital Advertising and Marketing
- (ii) Customer Relationship Management (CRM)
- (iii) E-commerce platforms
- (iv) Customer Feedback and Surveys

Ans 17. Businesses use Information Technology to manage their work more efficiently. IT helps in activities like online marketing, e-commerce, communication through email and videoconferencing, financial forecasting, sales analysis and stock management. IT helps them keep records, manage sales and stock, communicate with customers, and carry out activities like payroll and budgeting. It also helps businesses analyse information and make better decisions.

Banks use IT to provide services like ATM transactions, debit and credit card payments, internet banking and mobile banking. Customers can transfer money, check their accounts and pay bills online. This makes banking faster and more convenient.

Ans 18. Since time immemorial, teaching and learning have been prevalent. Concepts and methodologies of teaching are changing in accordance with technological advancement. ICT contributes to effective teaching and learning in the following ways:

- (i) *Smartboards and projectors:* These interactive tools have replaced the earlier concept of teaching using chalk and blackboard. These technologies aid students in understanding the concepts by improving visualization.
- (ii) *Online learning applications/contents:* Online apps and contents allow students to learn beyond geographical limitations. Now, anyone can learn from anywhere.
- (iii) *Augmented Reality (AR) and Virtual Reality (VR):* The integration of AR and VR makes learning more interactive and engaging.

CHAPTER 2: Data Entry and Keyboarding Skills

Unsolved Questions

Ans 1. The various types of keys present on a QWERTY computer keyboard are:

- (i) *Alphabet Keys/Character Keys:* These are 26 keys (A-Z) in total. They are used to type the alphabets.
- (ii) *Numeric Keys/Number Keys:* These are 10 keys (0-9) in total. They are used to type numbers.
- (iii) *Punctuation Keys:* Keys like comma (,), semicolon (;), full stop (.), etc., are called punctuation keys. These are used to correctly punctuate the written text.
- (iv) *Special Keys:* These keys are used to carry out special actions in the text editor. Examples: Spacebar key, Enter key, Escape key (Esc), Delete key and Backspace key.
- (v) *Modifier Keys:* These keys are used to modify the actions of another specific key for a temporary period. Examples: Shift keys, Symbol keys, Control key (Ctrl) and Alternate key (Alt).
- (vi) *Function Keys:* There are 13 Function Keys (F1-F12 and Fn key). Each of these has different functions.
- (vii) *Navigation Keys/Arrow Keys:* These keys are used to move the cursor left, right, up or down on a computer screen.
- (viii) *Toggle Keys:* These keys are designed for people with vision impairment. Examples: Num lock and Caps lock.
- (ix) *System and GUI Keys:* Windows key, print screen (PrtSc) and Break/Pause key are a few examples of it.

Ans 2. Guide keys refer to keys on a keyboard on which a touch typist can correctly place their fingers.

- (a) *Computer keyboard:* F and J Space bar, Shift key, Arrow key and Enter key are called guide keys for computer keyboards.
- (b) *Typewriter:* A and semicolon (;) are the guide keys for typewriters.

Ans 3. The steps to download RapidTyping Software are given below:

Step 1: On the web browser, type 'Rapid Tutor Typing' and search.

Step 2: Open the first link of Rapid Tutor Typing.

Step 3: Go to download section → download Rapid Tutor Typing (x32 or x64 as per device compatibility).

Step 4: Run the downloaded file and follow the instruction provided by the software for installation.

Ans 4. The drag-and-drop feature of the mouse allows selecting and moving an object or file. To do so, place the mouse pointer on the required file or folder, hold down the left mouse button and drag the mouse to drag the file or folder (dragging) and release it (dropping) at the required location. The file or folder will be placed at the new location.

Example: Move the desktop icons individually.

To do so, consider the given steps:

- (i) Place the mouse pointer over the icon to be moved.
- (ii) Left-click the mouse and drag the icon to the new position.
- (iii) Now, let go of the mouse button.

Ans 5. A typical mouse has two main buttons and a scroll wheel. Beneath the mouse, there is either a tracking ball or light beam to detect the motion of the mouse.

The common mouse operations are:

- (i) *Left-click*: To select an item.
- (ii) *Right-click*: To display a set of commands.
- (iii) *Double-click*: To open files or folders.
- (iv) *Drag and Drop*: Allows selecting and moving an item from one location to another.
- (v) *Scroll*: To scroll up or down the page.
- (vi) *Hover*: Allows to read the tool-tip text on moving the mouse on certain websites.
- (vii) *Blocking*: To select word, lines or paragraph by just clicking and dragging.

Ans 6. The three stages of Touch Typing are given below:

Stage One: In this stage, the home row of the keyboard, beginning with the Caps Lock key, is memorized. It is strictly forbidden to look at the keyboard. This is accompanied by memorizing the number row, lower and upper rows, special symbols, and uppercase letters.

Stage Two: In this stage, the frequently used syllables and the words containing these syllables are memorized.

Stage Three: This stage requires enhancing the skills acquired by typing the actual text.

Ans 7. The Error Overview tab shows all the correctly or incorrectly typed letters/characters. The correct keystrokes are displayed in green while the incorrect keystrokes are displayed in red. The exceeded timeframe for correct keystrokes is displayed in yellow while the exceeded timeframe for incorrect keystrokes is displayed in orange.

Ans 8. (a) *Lesson Control*: It is a panel that contains various controls to enable and disable sound, adjust the volume and pause/resume the current lesson.

(b) *Steps to create/add a new course*:

Step 1: Click on **Course** menu → **Create new course** option.

Step 2: Type the name of the new course that is to be added.

(c) *Virtual Keypad*: It highlights the characters used in the selected lesson. Keyboard language relies on the course language, which can be selected in the Keyboard layout.

Unsolved Questions

Ans 1. LibreOffice Writer provides the following three views to work easily and conveniently with a document:

- (i) Normal View
- (ii) Web View
- (iii) Full Screen View

Ans 2. The three features of a word processor are as follows:

- (i) It allows us to easily save a document and make modifications in an already created document.
- (ii) We can modify text by making it bold or italic, or by changing its color, size or style.
- (iii) Using a word processor, we can insert images, pictures, graphs, tables, etc., in a document.

Ans 3.

Copying Text		Moving Text	
(i)	Copying text means duplicating text.	(i)	Moving text means moving it from the original position to a new position.
(ii)	There is no change in the original position of the text.	(ii)	The position of the original text changes to a new position.
(iii)	Shortcut keys after selecting the text: Ctrl+C and Ctrl+V.	(iii)	Shortcut keys after selecting the text: Ctrl+X and Ctrl+V

Ans 4. Match Case option in the Find and Replace dialog box searches results which only include instances where the case matches exactly, such as 'kindness' but not Kindness or KINDNESS.

Ans 5. LibreOffice Writer supports the following six types of cases:

Let us take the sentence "I am the best" as an example.

- (i) *Sentence case*: Displays the first letter in uppercase.
"I am the best."
- (ii) *lowercase*: Displays all the letters in lowercase.
"i am the best."
- (iii) *UPPERCASE*: Displays all the alphabets in uppercase.
"I AM THE BEST."
- (iv) *Capitalize Every Word*: Displays the first letter of every word in uppercase.
"I Am The Best."
- (v) *tOGGLE cASE*: Reverses the existing case.
"i aM tHE bEST."
- (vi) *Cycle case*: Displays the text in three different cases, following a cycle, such as Uppercase, lowercase and Sentence case.
"I AM THE BEST."
"i am the best."
"I am the best."

Ans 6. The steps to insert line spacing and indentation in a paragraph are:

Step 1: Start by selecting the desired paragraph.

Step 2: Click **Format** → **Paragraph**; the Paragraph dialog box will appear.

Step 3: In the Paragraph dialog box, select the **Indents & Spacing** tab.

Step 4: In the **Indent** section, set the indent. The indent options available are:

- **Before Text:** This moves the text to the left side of the document. In the Indent section, specify the Before Text value.
- **After Text:** This moves the text to the right side of the document. In the Indent section, specify the After Text value.
- **First Line:** This moves the paragraph's first line to the right.

Step 5: Select the required line spacing from the **Line spacing** list box.

Step 6: Click **OK**.

Ans 7. Follow the given steps to create a numbered list in LibreOffice Writer document:

Step 1: Select the text or paragraph where you have to apply numbers. If the text has not been typed yet, position the cursor at the place in the document from where the text will commence.

Step 2: Click on **Format** → **Bullets and Numbering** option. This will display the **Bullets and Numbering** dialog box.

Step 3: The **Unordered** tab is selected by default. Select the desired numbering style by clicking the **Ordered** tab.

Step 4: Click **OK**. In the document, the required numbering style will appear.

Ans 8. You can add a word in Writer's standard dictionary by clicking **Tools** → **Options** → **Languages and Locals** → **Writing Aids**. Under **User-defined Dictionaries**, select the standard [All] checkbox and then click on New button. The New Dictionary dialog box appears, enter a word you want to add in a dictionary and click OK. Then click on Apply button.

Ans 9. The steps for creating data source for using the Mail Merge feature in Writer are:

Step 1: Select **File** → **Wizards** → **Address Data Source** in the Writer document window. This will display the Address Book Data Source Wizard dialog box.

Step 2: Select **Other external data source** radio button from the **Address Book Data Source Wizard** dialog box and on **Next**.

Step 3: Click on **Settings** in the next page of the wizard.

Step 4: Choose the **Database type** in the **Create Address Data Source** window. Click on **Next**.

Step 5: Click **Browse** to select the spreadsheet file to be used as data source. Then, click **Finish**.

Step 6: Click on **Next** in the following page that opens. Be mindful of not clicking **Field Assignment** since this is a spreadsheet.

Step 7: Once a database file is created, you need to give a name to this file in the **Location** field. Although **Addresses.odt** is the default file name, you may change it with a new name of your choice. The registered file name, which LibreOffice will display in data source listings, is the name in this field.

Step 8: The data source will get registered once you click the **Finish** button.

Ans 10.

Superscript		Subscript	
(i)	The tool is used to place the selected text just above the normal line of text.	(i)	The tool is used to place the selected text just below the normal line of text.
(ii)	Shortcut for applying Superscript: Ctrl+Shift+P.	(ii)	Shortcut for applying Subscript: Ctrl+Shift+B.

Ans 11. The four types of paragraph alignments in LibreOffice Writer are—Left, Center, Right and Justified.

Ans 12. Applying and modifying font style, type, size, color and other text attributes, *i.e.*, bold, italic, underline, etc., to the individual characters or set of characters is called Character Formatting.

Ans 13. *Header:* Header refers to the information at the beginning of the page that gives additional details about the page. It is at the top of a page in an electronic document or hard copy. For example, the headings of a topic.

Footer: It also provides additional information about the page. It is at the bottom of the page in an electronic document or hard copy. For example, the page number at the bottom of the page.

Ans 14. In LibreOffice Writer, paragraph spacing refers to the space before and after paragraphs. It improves readability and organization in a Writer document. We can specify the amount of space we want before and after each paragraph, in cms. This feature provides better control over the document’s layout, helping to clearly differentiate between sections and improving the overall presentation of a document. We can make changes in the paragraph spacing by clicking Format menu and select Paragraph option.



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CHAPTER 4: Electronic Spreadsheet

Unsolved Questions

Ans 1. Significance of using the spreadsheet software is given below:

- (i) It tabulates data to arrange it in an organized manner.
- (ii) It adds or deletes multiple sheets as and when required.
- (iii) It applies formulas and functions to perform automatic calculations with respect to changing data or figures.
- (iv) It works and arranges data in either ascending or descending order through sorting or other tools such as filters and macros.
- (v) It represents data pictorially in the form of graphs and charts.
- (vi) It filters the required data.
- (vii) It checks the validity of data to ascertain if it is correct or not.
- (viii) It uses passwords to provide data protection.
- (ix) It maintains, stores and saves data and records overtime for future use.

Ans 2. By default, LibreOffice Calc has one worksheet.

To insert a new worksheet, follow the given steps:

Step 1: Right-click on the current sheet tab which is displayed at the bottom of the spreadsheet window.

Step 2: Choose **Insert Sheet** option.

OR

Click on + symbol (Add new sheet). The new worksheet gets added in the workbook. The steps to rename the inserted new worksheet are:

Step 1: Right-click on the newly added worksheet and select **Rename Sheet** option.

Step 2: The **Rename Sheet** dialog box appears. Enter the desired name. Click OK.

Ans 3. The currently selected cell, highlighted with a thick, blue border around it, is called an Active Cell. Whatever data (numbers, text, formulas, etc.) is entered, it will be displayed in the active cell only.

Pressing the delete key or backspace key will delete the content of the active cell.

Ans 4. The two operations that can be performed on spreadsheet data are:

(i) Addition (+)

Example: =12+5 will give 17 as the output.

(ii) Subtraction (-)

Example: =12-5 will produce 7 as the output.

Ans 5. While writing formulas, be mindful of the following rules:

(i) An equal to (=) sign must be used in the beginning of a formula.

(ii) There must be some operator(s) to perform mathematical calculations on the data.

(iii) The data (usually a value) is handled and manipulated using cell addresses or a range of cells.

(iv) After entering the formula, press the Enter key so that the same cell will display the result.

(v) Press the F2 function key from the keyboard if you wish to edit the formula or data that you have entered. Formulas can also be edited using the Input line in the Formula bar.

Ans 6. Yes, a formula in spreadsheet can have more than one mathematical operator.

Ans 7. The steps to be followed to make the required toolbar visible in a LibreOffice Calc spreadsheet are:

Step 1: Open the spreadsheet on which you wish to work.

Step 2: Click on View menu and then select Toolbars option.

Step 3: A sub-menu appears with various toolbars options.

Step 4: Select the desired toolbar option such as Standard, Formatting, etc.

Ans 8. The steps to be followed to create a new spreadsheet:

Step 1: Click **File** menu → **New**.

Step 2: From the submenu that opens, click on **Spreadsheet**. Alternatively, from the Standard toolbar, you may click on the **New** shortcut button.

Step 3: A new sheet named **Untitled 1** shall be opened on the screen, ready for data entry with **A1** as the active cell.

OR

Alternatively, the shortcut key to create a new spreadsheet is **Ctrl + N**.

Ans 9. Chart in Calc offers the following advantages:

- (i) It represents data in a format that is easy to understand. One can easily interpret and analyze data by simply looking at the chart.
- (ii) It helps in summarizing data values and their relation with each other.
- (iii) It helps in a better analysis and comparison of data, which is useful in business forecasts, predictions, decision-making and in accessing the prevalent trends.
- (iv) It helps forecast trends based on the comparisons done.

Ans 10. For inserting a chart in Calc, follow the given steps:

Step 1: Click the **Insert** menu → select **Chart** option. The **Chart Wizard** dialog box shall be displayed.

Step 2: Select the desired **Chart Type** and **Shape**, and click **Next**. By default, the chart type is **Column** chart.

Step 3: Click on the **Data Range** field under the heading **Choose a Data Range** and select the desired Data Range. Select either of the options—**Data series in rows** or **Data series in columns**. Click **Next**.

Step 4: Give the cell range to be taken for **Data Range** for X-axis and Y-axis, respectively.

Step 5: Click **Next**.

Step 6: Give suitable Titles, Legend and Grid Settings for the Chart. Click **Finish**.

CHAPTER 5: Digital Presentation

Unsolved Questions

Ans 1. The three presentation software are LibreOffice Impress, Microsoft PowerPoint, OpenOffice Impress and Google Slides.

Ans 2. The following ways are used to create an empty presentation using LibreOffice Impress:

Open Impress Presentation and the screen (Select a Template) appears with a blank presentation slide.

OR

Click File menu → New → select Presentation.

OR

The shortcut key combination to create an empty presentation is Ctrl+N.

Ans 3.

Notes View		Handouts View	
(i)	This view is used to add and display speaker notes for each slide.	(i)	This view is used to view and organize slides in a thumbnail grid.
(ii)	It displays one slide with a notes section below it.	(ii)	It shows all slides in miniature, in a grid format.
(iii)	Notes are visible only to the presenter during a presentation.	(iii)	All slides are visible at once but not in detail.
(iv)	It is helpful for presenters to prepare notes for each slide.	(iv)	It is useful for managing the sequence and organization of slides.

Ans 4. The steps to insert a video in LibreOffice Impress are given below:

Step 1: Click on the slide in which you wish to insert a video.

Step 2: Click on **Insert** menu → **Audio or Video**.

Step 3: The **Insert Audio or Video** dialog box appears.

Step 4: Then select the video that is required to be inserted in a slide.

Step 5: Finally, click **Open**.

Ans 5. Slide Transition refers to the effects that are applied on the slides and are seen when one slide changes to the next slide in a presentation during a slide show whereas animation refers to the special effects that are applied to individual items on a slide such as text, shape, image, etc.

Ans 6. Consider the following steps to add transition effects to all the slides in a presentation:

Step 1: Click the slide on which you wish to apply the transition effect.

Step 2: On the extreme right of the Impress interface, click the Slide Transition button. This displays the Slide Transition docking tasks pane.

Step 3: From the Slide Transition list box, select the desired transition effect such as Wipe, Checkers, etc.

Step 4: Once you apply the selected transition effect, certain properties get activated under two sections—Modify Transition and Advance Slide.

Step 5: In the Modify Transition section, select the desired Variant and Duration of transition.

Step 6: If required, select the Sound alert that has to be played during the selected transition in the same section.

Step 7: The On mouse click option is selected by default in the Advance Slide section. Select the After radio button and specify the time for transition in seconds if you wish the slide transition to take place automatically.

Step 8: To apply transition to all the slides, click on Apply Transition to All Slides button.

Step 9: To preview the transition effect, click on the Play button.

Step 10: To start the slide show from the current slide, click on the Start from First Slide button to view the presentation in full screen.

Ans 7. An effective presentation possesses the following salient characteristics:

- (i) A presentation should be relevant and should adhere to the purpose and agenda for which it has been created.
- (ii) Effectiveness of a presentation relies on the command over the language being used. Thus, good communication skills, interpersonal skills and good command over the subject are of utmost importance.
- (iii) To engage the audience, the contents of the presentation should be eye-catching and effective, especially the opening or the introduction part of the presentation. This can be achieved by adding more images, precise text, short video clips and questions related to the content.
- (iv) The flow of the presentation, in terms of subtopics and their subheadings, should be proper and should carry the message that needs to be conveyed to the audience with clarity.
- (v) The content should be short and concise, preferably in the form of bullet points.
- (vi) More images, charts and infographics (graphical summary) should be added since they improve understanding and help while briefing the slide contents.
- (vii) A good presentation should have a well-defined beginning, brief body and an appropriate ending.
- (viii) The content of the presentation should make use of positive notions and avoid the use of negative phrases and words like do not, cannot, should not, etc.
- (ix) Overall, a presentation should be complete in terms of the required information, format and timings. Also, the presenter should anticipate possible questions. The presentation should not be under or overloaded with information and should include the element of audience involvement and interaction.

Ans 8. In LibreOffice Impress, the Master Slide is the most powerful tool. It helps to define and set the default look of slides in a presentation in terms of background color, images, styles, text formatting effects, etc. Once we make changes in the Master Slide, these changes will be automatically reflected in all the slides of the presentation.

Ans 9. We can create a new presentation in two ways—either an empty presentation or by using a template.

Here, we are creating a presentation using Template.

Step 1: Open the LibreOffice Impress. It will display Select a Template window for creating a presentation using Impress templates.

Step 2: Select the template from the All Categories drop-down list.

Step 3: Then click on Open button.

Step 4: The new presentation will be opened with a few slides; selected template is applied to them.

Step 5: We can also modify them and add new slides to work with.

For running a slide show from the start (Start from First Slide), press the F5 key.

OR

You can also click on **Slide Show** menu → **Start from First Slide** option. Press Escape (**Esc**) key to exit the slide show.

Ans 10. Slide Sorter View is used to view more than one slide in a small slide, termed as miniature slides or thumbnails, on the screen. The slide number appears at the top towards the left corner of each slide. This view helps in resetting or redefining the order of slides. In this view, the sequence of the slides can be cut, copied, pasted or even changed.

Ans 11. Follow the steps given below for inserting a table in a LibreOffice Impress slide:

Step 1: Click on **Insert** menu → **Table** option. This displays the **Insert Table** dialog box; now, enter the required number of columns and rows.

Step 2: Click the **OK** button. A table shall be inserted at the desired location on the currently selected slide.

OR

On the Standard toolbar, click the **Table** button to insert a table.

Ans 12. Special effects applied to different elements of a presentation such as text, pictures, tables, shapes or any other object in a slide are called custom animation.

Different animation effects of the custom animation available in LibreOffice Impress are:

- (i) Entrance Animation Effect
- (ii) Emphasis Animation Effect
- (iii) Exit Animation Effect
- (iv) Motion Paths Animation Effect
- (v) Misc Effect