Class X

Essentials of

INFORMATION TECHNOLOGY

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PREETI ARORA

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Information Technology
Teacher's Manual
Book X

EMPLOYABILITY SKILLS

CHAPTER 1: Communication Skills–II

Unsolved Questions

Ans 1. Communication forms the foundation of a society, facilitating the exchange of information, ideas and emotions. This sharing of information allows individuals to understand each other and work collectively towards common goals.

Effective communication facilitates the transfer of knowledge and understanding, allowing individuals to collaborate, make decisions and solve problems together. People use communication to convey their needs, share experiences, build relationships and convey emotions.

Moreover, communication is crucial for the transmission of culture and knowledge from one generation to the next. Through spoken and written communication, older members of the society can pass down their experiences, wisdom, traditions and values. This passing on of knowledge helps maintain the identity and continuity of a society over time.

Ans 2.

		Verbal Communication	Written Communication
(i)	Definition	Involves spoken words to convey information, ideas and emotions.	Involves written or printed words to convey messages.
(ii)	Dynamics	Dynamic and immediate interaction.	Static and provides a permanent record.
(iii)	Modes	Face-to-face conversations, phone calls, video calls, presentations, etc.	Emails, letters, reports, essays, social media posts, etc.
(iv)	Feedback and Clarification	Allows real-time feedback and clarification.	Feedback is delayed and might not be immediate.
(v)	Emotional Connection	Allows emotional connection.	Lacks immediate emotional impact.

Ans 3. Non-verbal communication refers to the transmission of messages and information through means other than words. It involves using various non-verbal cues such as facial expressions, gestures, body language, posture, eye contact, touch and vocal cues like pitch, tone and rhythm, in addition to proxemics (the use of space). These cues can convey emotions, attitudes, intentions and other information without the need for explicit verbal expression.

Some essential parts of non-verbal communication include:

Facial Expressions	Our faces express how we feel. For example, when we smile, it usually means we're happy or friendly. When we frown, it might mean we are sad or upset.
Gestures	We use hand movements and gestures to express ourselves. For instance, waving "hello" is a friendly gesture. Thumbs up is a sign of approval while pointing can show you're indicating something specific.
Eye Contact	When we look someone in the eyes, it usually means we are paying attention to them. It shows we are interested in what they are saying. But if we avoid eye contact, it might mean we are shy or not very interested.
Body Language	How we stand or sit can say a lot. For instance, if we stand up straight and look confident, it shows we are self-assured. But if we slouch and look down, it might mean we are feeling unsure or sad.
Tone of Voice	How we say something matters. If we say "thank you" with a happy and grateful tone, it sounds sincere. But if we say it with an annoyed tone, it might not be as genuine.
Distance	How close or far we stand from someone can convey a message. If we stand really close, it might show we are comfortable with them. If we keep our distance, it might mean we want some space.

Ans 4. Visual communication is a method of conveying information, ideas or messages through visual elements such as images, graphics, charts, diagrams and symbols, rather than through words or text. Visual communication can be highly effective because it appeals to our sense of sight, making complex information more understandable and engaging.

Visual communication offers several important benefits over verbal and non-verbal communication as listed below.

(*i*) *Universally Understandable:* Visuals can be understood across cultures and languages, making them universally accessible and eliminating language barriers.

(*ii*) *Engagement:* Visuals capture attention and keep the audience engaged, enhancing message retention and understanding. They further help in reaching a wide audience.

(*iii*) *Immediate Comprehension:* Visuals are processed quickly by the brain, allowing for rapid understanding of the intended message.

(*iv*) *Inclusivity:* Visual communication includes individuals with varying levels of literacy making information accessible to a broader audience.

(*v*) *Memorability:* People tend to remember visual information better than text, making it an effective way to convey important information that needs to be retained.

(*vi*) *Simplicity and Clarity:* Visuals can simplify complex concepts or instructions, making them easier to comprehend and follow.

(*vii*) *Safety and Emergency Situations:* In situations where immediate action is required, visual symbols and signs can convey critical instructions swiftly, potentially preventing accidents or harm.

Ans 5. Feedback is the guiding compass in communication, pointing you in the right direction and helping you understand where you need to adjust. Feedback is important in communication for several reasons, as listed below:

 (*i*) Clarity and understanding

 (*ii*) Correcting mistakes

 (*iii*) Building relationships

 (*iv*) Encouraging communication

 (*v*) Understanding others

 (*vi*) Effective problem-solving

Feedback Example 1:

Consider a teacher explaining a new topic in class, like how the water cycle works. While teaching, the teacher might realise some students have not understood the topic properly. He might say, "Does anyone have any questions or want this part to be explained again?"

This is a way for the teacher to get feedback from the students. If a few students raise their hands and say they are confused, it helps the teacher understand that particular topic needs to be explained in a different manner. So, feedback helps the teacher know if their teaching is clear and if students are able to understand the lesson properly.

Feedback example 2:

Consider a teacher giving feedback on a student's presentation. The teacher might say, "Your content was good, but you can improve your speaking skills." This helps the student understand how they should prepare their presentations and improve upon the skills they are currently lacking.

Ans 6. Communication barrier is an obstacle that gets in the way of effective communication between two or more persons. It makes it difficult for information and thoughts to be understood by both parties. Communication barriers can take various forms, such as language differences, misunderstandings and confusions.

Given below are the types of communication barriers and their examples:

 (*i*) **Internal Barriers**

 Example: Yash, a student, has been asked to share his thoughts in class, but he gets really nervous and his mind goes blank. This feeling of nervousness is an internal barrier. It is like a mental wall that can make it tough to speak up, even though he knows what he wants to say. To overcome this, it is best to take a deep breath, practise the speech and remind yourself that it is okay to make mistakes—to err is human!

 (*ii*) **External Barriers**

 Example: When a classroom is located near a busy road, the noise from the traffic outside makes it difficult for students to hear and concentrate on the teacher's lecture.

Ans 7. The role of feedback in overcoming communication barriers is:

 (*i*) *Understanding:* It helps the receiver understand what they did right and what they need to work on, without any confusion.

 (*ii*) *Motivation:* It encourages them because it shows they are doing well in some areas and gives tips to improve in others.

 (*iii*) *Focused Improvement:* It tells the receiver exactly where to focus their efforts to get better.

(*iv*) *Two-way Talk:* The receiver can ask questions and have a real conversation about the feedback.

(*v*) *Continuous Learning:* It helps the receiver keep learning and getting better over time.

(*vi*) *Better Results:* By following the advice, they can get better results in their work.

Example 1: If a teacher gives descriptive feedback on a student's assignment, they might say, "Your introduction and first two paragraphs are great! But for a stronger ending, summarize your main points and give a clear final thought. Keep it up!" This helps the student know exactly what to do to improve their writing.

Example 2: If a teacher gives constructive feedback on a student's drawing, they might say, "You used bright colors nicely, but try making your lines straighter for neater edges." This helps the student realize his area of improvement.

Ans 8. The communication cycle is a model that helps us understand how communication works between individuals or groups. Any exchange of ideas between two or more people can be characterized with the help of a back-and-forth process, which allows the exchange to proceed gradually. This back-and-forth exchange is known as the communication cycle.

Each communication cycle has some essential elements which contribute to the overall process of effective communication:

(*i*) *Sender:* The cycle begins with the sender—the person who initiates the communication by encoding a message. Encoding means putting thoughts and ideas into words or symbols that convey meaning.

(*ii*) *Message:* The sender formulates a message, which contains the information or ideas they want to communicate.

(*iii*) *Channel:* The message is transmitted through a communication channel, which could be verbal (speaking, writing) or non-verbal (gestures, body language).

(*iv*) *Receiver:* The message reaches the receiver—the person or group for whom the message is intended. The receiver decodes the message, interpreting the words or symbols to understand the intended meaning.

(*v*) *Feedback:* After understanding the message, the receiver provides feedback to the sender. Feedback is a crucial part of the communication cycle as it helps the sender know if the message was understood as intended.

Ans 9. Sentences can be categorized into four basic types, based on their purpose and structure. These types are assertive/declarative, interrogative, imperative and exclamatory sentences.

(*i*) *Assertive/Declarative Sentences:* Declarative sentences make statements or express facts, opinions or ideas. They typically end with a period (.) to indicate a complete thought. For example, *She enjoys reading books*.

(*ii*) *Interrogative Sentences:* Interrogative sentences ask questions and seek information. They typically start with a question word (who, what, when, where, why, how) or an auxiliary verb and end with a question mark (?). For example, *Where is the nearest library*?

(*iii*) *Imperative Sentences:* Imperative sentences give commands, instructions or make requests. They usually start with a verb (the base form) and can be either a direct command or a more polite request. For example, *Close the door*. (command) / *Please pass me the salt*. (request)

(*iv*) *Exclamatory Sentences:* Exclamatory sentences express strong emotions or excitement. They typically end with an exclamation mark (!) to emphasize the emotion. For example, *What a beautiful sunset*!

Ans 10. In English, a phrase is a group of words that works together, but it doesn't have both a subject and a verb. It is a small piece of sentence. The role and importance of phrases in constructing sentences are as follows:

(*i*) They describe actions.

(*ii*) They give additional information.

(*iii*) They show relationships between words.

Examples of Phrases:

• *Under the table* (describes where)

• *Very slowly* (describes how)

• *In the garden* (describes where)

On the other hand, a sentence is a complete thought or idea that contains a subject (who or what the sentence is about) and a verb (what the subject is doing). A sentence can stand alone and make sense by itself.

Ans 11. Articles are words that are used to specify a noun as definite (the) or indefinite (a, an). They provide important information about the noun they precede.

(*i*) Definite articles refer to specific or particular nouns and are represented by the word "the". Use "the" when referring to a specific noun that is known to both the speaker and the listener or that has been previously mentioned in the conversation.

For example, I saw the cat on the roof. Here, "the" is used because it is a particular cat that both the speaker and the listener know or have been discussing.

(*ii*) Indefinite articles include the words "a" and "an". They are used to refer to non-specific or unspecified nouns, indicating any member of a group.

Ans 12. A paragraph is a distinct section of text that presents and discusses a single main idea or topic. It is a fundamental unit of writing and is composed of one or more sentences that revolve around a central point. Within a paragraph, there is a logical flow of related thoughts.

Before writing a paragraph, several basic considerations should be taken into account to ensure clarity, coherence and effectiveness in communication.

(*i*) *Define the Topic or Main Idea:* Clearly understand and define the main idea or topic that the paragraph will revolve around. This provides a clear direction for your writing.

(*ii*) *Consider the Audience:* Think about the audience that will be reading the paragraph. Adapt the language, style and level of detail to suit their needs and understanding.

(*iii*) *Plan the Structure:* Outline the structure of the paragraph, including the topic sentence, supporting sentences and a concluding or transition sentence.

(*iv*) *Organize Supporting Ideas:* Arrange the supporting ideas or details in a logical order that strengthens the main point.

(*v*) *Ensure Cohesion and Flow:* Use appropriate transitional words and phrases to ensure smooth transitions between sentences and ideas.

(*vi*) *Stay Focused and Relevant:* Keep the paragraph focused on the main idea, avoiding irrelevant or off-topic information. Each sentence should contribute to the central point.

CHAPTER 2: Self-Management Skills–II

Unsolved Questions

Ans 1. Stressors are events, situations or conditions that trigger stress responses in individuals. These stress-inducing factors can vary widely in nature and intensity, and are perceived as challenges or threats by the person experiencing them. Recognizing the specific stressors that affect an individual is a dire necessity for effective stress management.

Identifying stress is important to address it effectively. Stress can present itself and affect a person in various ways. Thus, recognizing these signs is crucial. Stress may affect a person physically, mentally and emotionally. It may also cause changes in the behaviour of a person with others while interacting.

Ans 2. Some commonly observed symptoms of stress are presented below:

Physical Symptoms
- Headaches or migraines
- Muscle tension or body aches
- Fatigue and low energy levels
- Trouble sleeping or excessive sleep
- Changes in appetite—eating too much or too little

Emotional Symptoms
- Feelings of anxiety or nervousness
- Irritability or quick temper
- Sadness, low mood or frequent crying
- Difficulty concentrating or making decisions
- Feeling overwhelmed or out of control
- Difficulty in maintaining relationships
- Increased conflicts with family, friends or peers

Behavioural Symptoms
- Changes in academic performance or motivation
- Avoiding tasks or responsibilities
- Increased use of substances like caffeine, alcohol or drugs
- Withdrawal from social activities or isolating oneself

Cognitive Symptoms
- Racing thoughts or constant worrying
- Forgetfulness or memory problems
- Negative self-talk or pessimistic outlook

Identifying stress is important to address it effectively and it also aids in stress management. If one notices these signs, it is important to take them seriously and seek professional help. Talking to a trusted friend or supporting adults like parents, teachers or school counsellors is recommended as a first step in managing stress effectively.

Ans 3. Deep breathing involves taking slow, deep breaths. Inhale through your nose, hold for a few seconds and exhale slowly through the mouth. This relaxation technique helps in stress reduction by calming your mind and body. Managing stress is crucial for the overall well-being of humans.

Ans 4. Effective allocation of time and resources to accomplish tasks and goals while maintaining a balance between work, personal life and leisure forms a key aspect. The process of defining clear and achievable objectives, which provide direction and motivation for self-improvement, is imperative.

This helps in the ability to make thoughtful and informed decisions that align with personal values and long-term objectives. Thus, effective time management ultimately contributes to stress management and achieving personal goals.

Ans 5. The foundation of self-management, self-awareness is the ability to recognize and understand one's emotions, strengths, weaknesses, values and goals.

This skill involves managing and controlling one's emotions in a healthy way, allowing for effective responses to challenging situations.

It is essential to understand your strengths, weaknesses, values and beliefs. Knowing yourself well helps you make informed decisions that align with your true self. Self-management is essential for the personal development and well-being of human beings. It helps us in the following ways:

(*i*) *Enhanced Resilience:* The ability to recover from setbacks and adapt to challenges is a key component of self-management.

(*ii*) *Stress Reduction:* Self-management techniques help in managing and reducing stress, which is essential for both mental and physical health.

Ans 6. Emotional Regulation involves managing and controlling one's emotions in a healthy way, allowing for effective responses to challenging situations.

It is the ability to recover from setbacks and adapting to challenges is a key component of self-management. It contributes to a sense of personal fulfilment and satisfaction as individuals align their actions with their values and passions, thus leading to better decision-making and reducing stress levels.

Ans 7. Developing a growth mindset helps in learning and improvement. It is essential to understand your strengths, weaknesses, values and beliefs. Knowing yourself well helps you make informed decisions that align with your true self.

Learn to negotiate and stand up for what you believe is right. It is always helpful to surround yourself with supportive and encouraging people who believe in you and your capabilities. Learn to bounce back from setbacks and keep going in the face of challenges. Resilience is a key trait for independence. Thus, a growth mindset helps an individual to approach challenges with a positive mindset and also aids in managing stress.

Ans 8. Becoming independent is a gradual process that involves developing various skills and adopting certain attitudes. It involves taking responsibility for one's actions, time and outcomes, demonstrating a high degree of autonomy and self-reliance.

Embracing self-reliance and independence cultivates confidence and autonomy. Working independently encourages continuous learning and personal growth. You seek out information, acquire new skills and develop a deeper understanding of your strengths and weaknesses.

Ans 9. The key traits that help one to become independent are:

(*i*) *Manage your Goals and Time:* Clearly define your short-term and long-term goals. Understand what matters most to you and what you want to achieve. Learn to manage your time effectively by setting realistic goals, creating schedules and prioritizing tasks. Avoid procrastination and stay organized.

(*ii*) *Take Responsibility:* Acknowledge that you are in control of your choices and actions. Avoid blaming others for your circumstances and take responsibility for your decisions.

(*iii*) *Develop Self-Awareness:* It is essential to understand your strengths, weaknesses, values and beliefs. Knowing yourself well helps you make informed decisions that align with your true self.

(*iv*) *Make your Own Decisions:* Practice making decisions independently, starting with small choices and gradually tackling more significant ones. Consider the pros and cons before making a decision. Work on your critical thinking and problem-solving skills. Analyze situations, consider various solutions and take the time required in choosing the best ones.

(*v*) *Keep Learning:* Be curious and eager to learn. Read books, take courses, attend workshops and seek knowledge in areas that interest you. Develop a growth mindset that embraces learning and improvement.

(*vi*) *Learn to Advocate for Yourself:* Express your needs, opinions and desires assertively and respectfully. Learn to negotiate and stand up for what you believe is right. It is always helpful to surround yourself with supportive and encouraging people who believe in you and your capabilities. Learn to bounce back from setbacks and keep going in the face of challenges. Resilience is a key trait for independence.

Ans 10. Positive self-talk involves challenging yourself to face adversities, keeping in mind the bright side of things. This further fosters a growth mindset, for there is no growth without challenges. Growth mindset realizes the importance of hard work and dedication. Thus, both positive self-talk and growth mindset further promotes foster self-reliance and resilience.

CHAPTER 3: ICT Skills–II

Unsolved Questions

Ans 1. The role of an operating system in a computer is:

(*i*) *Managing Hardware:* The operating system ensures that all parts inside the computer, like the keyboard, screen and memory, work together smoothly.

(*ii*) *Running Programs:* OS helps us open and use software like games, word processors and web browsers.

(*iii*) *File Management:* It organizes and stores our files and folders, making it easy to find and use them.

(*iv*) *Memory Management:* OS decides which programs can use the computer's memory (RAM) and how much of it they can use.

(*v*) *User Interface:* OS provides an interface for us to interact with the computer via icons, buttons and windows.

(*vi*) *Security:* It helps protect our computer from viruses and makes sure that only authorized users can access it.

(*vii*) *Networking:* If we connect our computer to the internet, the OS manages the connection so that we can browse the web and send emails.

Ans 2. Single-user operating systems are designed to support only a single user at a time. For example, MS-DOS. On the other hand, multi-user operating systems allow multiple users to use the computer simultaneously. It ensures user isolation and resource sharing. Unix/Linux systems are known for multi-user capabilities, where multiple people can log in and use the computer concurrently.

Ans 3. Real-time Operating System (RTOS) is designed for systems where responses must be guaranteed within strict time constraints. It is common in embedded systems, robotics and industrial control.

Real-time operating systems (RTOS) like FreeRTOS and QNX are used in devices like robots and medical equipment.

Ans 4. The Recycle Bin is a virtual trash can for your computer. When you delete a file or folder, Windows does not immediately erase it. Instead, it sends it to the Recycle Bin. This provides a safety net in case you accidentally delete something important.

You can access the Recycle Bin from your desktop or from File Explorer. Inside the Recycle Bin, you can view, restore or permanently delete the files that you have previously deleted. Restoring a file from the Recycle Bin returns it to its original location, while permanently deleting it removes the file from your computer entirely. It is a useful feature for file management and recovery.

Ans 5. Copying and pasting files or folders is useful because it helps you keep a backup in case something goes wrong. Copying files might come in handy if you accidentally delete something.

It also helps organize different folders, thus making them easy to find. In addition, you may share these copies with friends by sending them through email or putting them on a USB drive.

There are three different methods to copy and paste files or folders in Windows: using keyboard shortcuts, using right-click context menu and using drag-and-drop method.

Ans 6. Temporary files are created by various applications and the operating system itself to store data temporarily or perform specific tasks. Temporary files may include cached web pages, log files, setup files and more. Temporary files can be regularly cleaned with a simple yet powerful tool in Windows called Disk Cleanup.

These files serve specific purposes but can accumulate over time, consuming disk space unnecessarily. Thus, regularly clearing temporary files is important to clear space and remove unwanted files.

Ans 7. A computer virus is a type of malicious software (malware) designed to replicate itself and spread from one computer to another. It can attach itself to installed programs or files. When these infected files are executed or opened, the virus activates, causing various harmful effects on the computer.

Detecting the presence of a virus on your computer is difficult. However, you have to keep observing unusual or unexpected behaviour since it can be harmful to your computer system. Some common signs of a virus infection include a sudden decrease in system performance, frequent crashes or freezes, unexpected pop-up ads, unexplained changes to system settings or files and unusual network activity.

Regularly scanning your computer with antivirus software and keeping your system updated can help you identify and address virus infections early.

Ans 8. Firewalls are essential for computer security as they help prevent unauthorized access. They act as a filter, allowing only legitimate and safe network traffic to pass through while blocking malicious or suspicious activity. They are particularly valuable for safeguarding sensitive data, preventing malware infections and maintaining the confidentiality and integrity of network communications.

Firewalls protect the system/network from hackers who take the help of viruses, phishing emails, spams and the like.

Ans 9. Internet cookies, often simply referred to as "cookies", are small pieces of data stored on your computer by the websites you visit. They are created by web servers to remember certain information about your interactions with the site, such as login credentials, site preferences and items in a shopping cart. Cookies typically store anonymous data or user preferences. They do not store sensitive personal information like Aadhaar numbers or credit card details.

Cookies serve various useful purposes in enhancing your online experience. They do so by helping websites access and gain insights into user preferences. Moreover, they facilitate seamless navigation and personalized interactions.

Ans 10. The components of Windows' user interface and their respective functions are:

(*i*) *Desktop:* The desktop is the primary screen that you see after logging into Windows. It serves as the main workspace where you can place icons, shortcuts and files. You can customize the desktop with wallpapers and arrange icons according to your preference.

(*ii*) *Icons and Shortcuts:* Icons represent files, folders, applications or other items on your desktop. Shortcuts are icons that point to programs or files, making them easily accessible.

(*iii*) *Start Button:* It is located on the lower-left corner of the desktop. Clicking the start button opens the Start Menu. The Start Menu in a Windows operating system acts as a host to essential elements for navigating and accessing various features and functions.

In most versions of Windows, the Start Menu houses the following buttons:
- *Search Box:* The search box allows you to quickly search for files, applications, settings or even web content.
- *Power Button:* The power button allows you to shut down, restart or put your computer to sleep.
- *User Account Picture/Name:* This button displays the currently logged-in user's account picture or name.

(*iv*) *Taskbar:* The taskbar runs along the bottom of the screen, offering easy access to running applications, the Start button, system notifications and the system tray (where you can find system icons like volume control and Wi-Fi status).

(*v*) *Notification Area:* Located on the right side of the taskbar, it displays icons for system notifications, such as updates, messages and alerts. You can also access quick settings like Wi-Fi and volume controls from here.

(*vi*) *Date/Time:* Displayed in the notification area, it provides the current time and date.

(*vii*) *Recycle Bin:* The Recycle Bin is a virtual trash can for your computer. When you delete a file or folder, Windows does not immediately erase it. Instead, it sends it to the Recycle Bin. This provides a safety net in case you accidentally delete something important.

Ans 11. Microsoft Windows is undoubtedly one of the most popular operating systems today. The earlier versions of Windows offered a user-friendly Graphical User Interface (GUI) that made computers more accessible to users, as opposed to the prevalent command-line interfaces.

Additionally, Microsoft's strategic partnership with computer manufacturers came in handy, ensuring Windows came pre-installed on many PCs. This further expanded its reach. Besides, continued improvement made Microsoft Windows a familiar and dependable choice for personal and business computing.

Key features and advantages of Windows OS are:
  (*i*) User-friendly interface and easy to use
  (*ii*) Compatible to all hardware
  (*iii*) Supports Plug and Play feature
  (*iv*) Provides software development support

Ans 12. The Start button is located on the lower-left corner of the desktop. Clicking the start button opens the Start Menu. The Start Menu in a Windows operating system acts as a host to essential elements for navigating and accessing various features and functions. In most versions of Windows, the Start Menu houses the following buttons, which further aid in computer navigation:
  (*i*) *Search Box:* The search box allows you to quickly search for files, applications, settings or even web content. Simply type what you are looking for and Windows will provide relevant results.
  (*ii*) *Power Button:* The power button allows you to shut down, restart or put your computer to sleep.
  (*iii*) *User Account Picture/Name:* Displays the currently logged-in user's account picture or name. Clicking on this button can provide quick access to user-related settings and options, such as signing out or changing your account settings.

Ans 13. Proper maintenance extends the lifespan of devices in the same way human health requires maintenance. Preventive maintenance of computers and smartphones through regular updates, cleaning and optimizing their performance prevents technical issues and vulnerabilities. A well-maintained device operates efficiently. When devices run smoothly, they facilitate productivity as well.

The following are some examples of routine maintenance tasks:

(*i*) *Turn Off and Restart:* Start your computer fresh by shutting it down at the end of the day and restarting it in the morning to refresh system resources.

(*ii*) *Check for Updates:* Regularly check for and install operating system and software updates.

(*iii*) *Scan for Malware:* Run a quick antivirus or anti-malware scan to ensure your system is free of threats.

(*iv*) *Clear Unnecessary Files:* Delete temporary files, clear browser caches and empty the Recycle Bin to free up disk space and improve system performance.

(*v*) *Backup your Data:* If you work with important files daily, make sure they are backed up either to an external drive or cloud storage to protect against data loss.

(*vi*) *Clean the Physical Computer:* If you are using a desktop computer, dust off the exterior and clean the keyboard and screen when necessary.

(*vii*) *Password Management:* Be mindful of strong password practices and consider using a password manager to keep your online accounts secure.

(*viii*) *Close Unnecessary Programs:* Ensure that unnecessary programs or applications are closed to conserve system resources.

(*ix*) *Check Security Alerts:* Keep an eye on security alerts or notifications from your antivirus software and operating system for any immediate actions required.

Ans 14. An unmaintained computer may suffer from reduced performance, frequent crashes and hardware failure due to overheating or dust buildup. It is also vulnerable to a range of other threats. Over time, it accumulates digital clutter, outdated software and security weaknesses, making it an easy target for malware and cyberattacks. Viruses, spyware and ransomware can infiltrate and compromise an unattended system. This could potentially lead to data theft, loss or corruption.

Regular maintenance helps reduce these risks by extending the lifespan of devices in the same way human health requires maintenance. Preventive maintenance of computers and smartphones through regular updates, cleaning and optimizing their performance prevents technical issues and vulnerabilities. A well-maintained device operates efficiently. When devices run smoothly, they facilitate productivity as well.

Ans 15. Cleaning the external components of your computer, taking your keyboard, mouse, camera and storage media under the umbrella, is essential to maintain hygiene and functionality. The following are some cleaning tips for computers:

Cleaning the computer monitor/screen:
- Turn off the monitor before cleaning.
- Use a microfibre cloth and screen cleaning solution to gently clean the screen. Avoid using paper, towels or rough materials that can scratch the screen.
- Gently wipe the monitor screen in a straight, horizontal or vertical motion. Avoid applying excessive pressure.

Cleaning the keyboard and mouse:
- Turn off or unplug the keyboard or mouse before cleaning.
- Use compressed air and a small brush to remove dust and debris from the keyboard and mouse.
- Wipe down the surfaces with a damp, lint-free cloth to clean the keyboard and the mouse, including keys and buttons.

CHAPTER 4: Entrepreneurial Skills–II

Unsolved Questions

Ans 1. The significance of entrepreneurship is:

(i) *Economic Growth:* Entrepreneurship drives economic growth by creating new businesses, industries and jobs.
Example: N.R. Narayana Murthy co-founded Infosys, one of India's largest IT companies, which has contributed significantly to the growth of the IT sector in the country.

(ii) *Innovation:* Entrepreneurs develop new products, services and technologies that enhance our quality of life, solve problems and drive progress in various fields.
Example: Chetan Maini, the founder of Reva Electric Car Company, introduced electric vehicles to combat air pollution and reduce India's reliance on fossil fuels.

Ans 2. Some common myths associated with entrepreneurship are given below, along with why they can be misleading:

(i) *Entrepreneurs are born, not made:* This myth suggests that entrepreneurship is an inborn trait. This can be misleading because while some natural skills may help, entrepreneurship can be learned and developed through education, experience and mentorship.

(ii) *You need a brilliant idea to start:* Many believe they must come up with a ground-breaking, revolutionary idea to start a business. This is misleading because in reality, successful ventures often improve existing ideas or address common problems creatively.

(iii) *Only young people succeed:* Entrepreneurship is not limited by age. This is misleading since successful entrepreneurs come from various age groups and backgrounds, and experience can be an advantage in certain industries.

(iv) *Entrepreneurs are all tech geniuses:* Technology does play a significant role in some ventures. However, this is myth is misleading because not all entrepreneurs are tech experts. Many successful businesses operate in traditional industries.

(v) *Failure means the end:* Failure is a part of the entrepreneurial journey. It doesn't mean the end of your career but an opportunity to learn and pivot. Many successful entrepreneurs faced failures before achieving success.

(vi) *Entrepreneurship requires massive capital:* People often think they need substantial capital to start a business. This is misleading because many successful businesses began with minimal funds.

(vii) *Success happens overnight:* Entrepreneurship is often glamorized, making it seem like success happens quickly. However, in reality, most entrepreneurs face challenges and setbacks, navigating their way through them.

(viii) *It is a solo journey:* Entrepreneurship doesn't have to be a solitary endeavour. Successful entrepreneurs often collaborate with partners, teams, mentors and advisors to achieve their goals.

(ix) *It is all about money:* While financial success is a goal for many entrepreneurs, it is not the only motivation. Entrepreneurs often start ventures to pursue their passions, make a positive impact or address a personal mission.

(x) *You must have extensive experience:* While experience can be helpful, it is not a strict requirement. This myth can be misleading since entrepreneurship often thrives on fresh perspectives and innovative ideas from individuals with diverse backgrounds.

Ans 3. The following are some key qualities or skills that successful entrepreneurs possess:

- *Vision:* Successful entrepreneurs have a clear vision of what they want to achieve. They can see opportunities and possibilities that others may miss.
- *Risk-taking:* Entrepreneurs understand that not every venture will succeed but they are prepared to take risks, learn from failures and keep trying.
- *Problem-solving:* Entrepreneurs are problem-solvers. They are resourceful and creative in finding ways to overcome obstacles.
- *Decisiveness:* Entrepreneurs need to make important decisions quickly. They gather information, analyze it and then make confident decisions.
- *Leadership:* As leaders of their ventures, entrepreneurs must inspire and motivate their teams. Effective leadership is essential for the success of a business.
- *Continuous Learning:* Entrepreneurship is a journey of learning and growth. Successful entrepreneurs are curious and committed to continuous self-improvement.

Ans 4. The following are the roles that entrepreneurs often play in their ventures:

(i) *Innovator:* Entrepreneurs often introduce new ideas, products or services to the market.

(ii) *Visionary:* Entrepreneurs set the vision and long-term goals for their businesses.

(iii) *Marketer:* Entrepreneurs create marketing strategies, develop branding and promote their products or services to reach a wider audience.

(iv) *Financial Manager:* Entrepreneurs manage the financial aspects of their businesses. This includes budgeting, financial forecasting, securing funding and monitoring cash flow.

(v) *Adaptability:* The business world is constantly changing. Successful entrepreneurs are adaptable and can change strategy in the face of unexpected challenges. Thus, being adaptable forms the most essential role of an entrepreneur.

Ans 5. The various categories of entrepreneurs and their unique contributions are as follows:

(ii) *Social Entrepreneurs:* Social entrepreneurs are driven by a strong desire to address pressing social or environmental issues while also creating sustainable business models. They prioritize positive societal impact over profit. Example: Arunachalam Muruganantham, known as the "Padman" of India, created low-cost sanitary napkins for rural women, addressing menstrual hygiene issues and empowering women in rural areas.

(ii) *Women Entrepreneurs:* Women entrepreneurs are those who start and manage businesses, contributing not only to economic growth but also challenging gender stereotypes and promoting gender equality. Example: Kiran Mazumdar-Shaw founded Biocon, a biotechnology company that focuses on affordable healthcare solutions. She is a prominent female entrepreneur who has broken barriers in a male-dominated industry.

(iii) *Environmental Entrepreneurs (Ecopreneurs):* Ecopreneurs prioritize environmental sustainability in their businesses, working to reduce environmental impact. Example: Chetan Maini, the founder of Reva Electric Car Company, introduced electric vehicles to combat air pollution and reduce India's reliance on fossil fuels.

(iv) *Tech Entrepreneurs:* Tech entrepreneurs leverage technology to develop innovative solutions, products or services. They often contribute to economic growth and job creation by establishing tech startups. Example: N.R. Narayana Murthy co-founded Infosys, one of India's largest IT companies, which has contributed significantly to the growth of the IT sector in the country.

(*v*) *Rural Entrepreneurs:* Rural entrepreneurs establish businesses in rural areas, creating employment opportunities and preventing migration to urban centres. They often work with local resources and traditional practices. Example: Chetna Gala Sinha founded Mann Deshi Bank, which supports rural women entrepreneurs in Maharashtra.

(*vi*) *Youth Entrepreneurs:* Youth entrepreneurs are young individuals who start businesses at a relatively early age. They bring fresh perspectives, energy and creativity to entrepreneurship. Example: Ritesh Agarwal founded OYO Rooms, a tech-enabled budget accommodation platform, when he was just 19 years old.

Ans 6. Some significant impact of entrepreneurship on society include:

(*i*) *Job Creation:* When entrepreneurs start businesses, they often need help to run them. This is where job opportunities come in. An entrepreneur is a job creator as they provide work to many people, giving them a chance to earn a living, thus reducing unemployment.

(*ii*) *Innovation:* Entrepreneurs are problem-solvers. They come up with new ideas, inventions and services that can make life better. Innovation improves our quality of life and can even lead to exciting discoveries.

(*iii*) *Community Development:* Entrepreneurs often care about community development. They support local causes, sponsor events or help schools and charities, giving back to society and making the community stronger.

Ans 7. Although there are countless ways a society can benefit an entrepreneur, some key ones are listed below:

(*i*) *Infrastructure:* Entrepreneurs rely on the infrastructure that society builds and maintains. This includes roads, transportation systems, communication networks and utilities.

(*ii*) *Financial Resources:* Society often provides financial support to entrepreneurs through banks, investors, grants and subsidies.

(*iii*) *Market Opportunities:* Society provides entrepreneurs with a customer base for their products or services. Without consumers and businesses willing to buy what entrepreneurs offer, their ventures wouldn't succeed.

(*iv*) *Networking and Collaboration:* Entrepreneurs often collaborate with others in society, including suppliers, partners and other businesses. These relationships can lead to innovation and growth opportunities.

Ans 8. Society benefits entrepreneurs in many ways. Society provides entrepreneurs with a customer base for their products or services. It often provides financial support to entrepreneurs through banks, investors, grants and subsidies, etc. Moreover, entrepreneurs rely on the infrastructure that the society builds and maintains including roads, transportation system, etc.

However, entrepreneurship is not a one-way traffic. While society benefits entrepreneurs, they also return the favour. They are the driving force that can bring about positive changes in society. They help in creating job opportunities, encourage and foster innovation, boost economic growth, support communities and inspire people to take action through social causes.

Ans 9. Entrepreneurship is not a new phenomenon. Even before it was named so, entrepreneurship has always played a role in human history but its significance has evolved over time.

• *Ancient Times:* Early entrepreneurs engaged in trade, agriculture and craftsmanship. They contributed to the growth of cities and civilizations through their economic activities.

- *Industrial Revolution (18th-19th centuries):* The Industrial Revolution marked a significant shift, with entrepreneurs leading innovations in manufacturing and technology. This period saw the rise of factories and modern industry.
- *20th Century:* The 20th century witnessed the emergence of entrepreneurship as a driver of economic growth. Innovations in transportation, communication and technology paved the way for new business opportunities.
- *21st Century:* In the digital age, entrepreneurship has gained unprecedented importance. Technology startups, social entrepreneurship and global connectivity have transformed the entrepreneurial landscape.

Ans 10. Several myths and misconceptions about entrepreneurship can deter people from pursuing their venture ideas. It is essential to understand these myths, debunk them and also create awareness to encourage more individuals to explore entrepreneurship.

Example: Many believe they must come up with a ground-breaking, revolutionary idea to start a business. However, believing in such myths can discourage potential entrepreneurs because in reality, successful ventures often improve existing ideas or address common problems creatively. For example, Mark Zuckerberg co-founded Facebook, which became a global phenomenon. While Facebook's concept was innovative, it wasn't entirely new. Social networking existed before Facebook but Zuckerberg executed the idea exceptionally well, emphasizing user experience and privacy, proving that execution matters as much as the idea.

Ans 11. The following are some challenges faced by entrepreneurs:

(*i*) *Success cannot happen overnight:* Entrepreneurship is often glamorized, making it seem like success happens quickly. However, in reality, most entrepreneurs face challenges and setbacks, navigating their way through them.

(*ii*) *Fear of failure:* Failure is a part of the entrepreneurial journey. It doesn't mean the end of your career but an opportunity to learn and pivot. Failure is an essential rung of the ladder that leads to success.

(*iii*) *Market competition:* Market competition is a significant challenge faced by entrepreneurs. With many businesses being started, the business environment has become highly competitive.

The challenges mentioned above can be overcome with resilience and adaptability. Resilience refers to the ability that entrepreneurs must possess to overcome challenges and setbacks. Resilience must be accompanied with patience and perseverance. Moreover, the business world is constantly changing. Thus, successful entrepreneurs are adaptable and can change strategy in the face of unexpected challenges.

Ans 12. Thomas Edison faced numerous failures while inventing the light bulb. He famously said, "I have not failed. I've just found 10,000 ways that won't work." His persistence and ability to learn from failures eventually led to success.

Colonel Sanders, the founder of Kentucky Fried Chicken (KFC), did not find success until later in life. He began franchising KFC at the age of 65, proving that entrepreneurship is not limited by age.

Ans 13. The following are the benefits of choosing entrepreneurship as a career:

(*i*) *Independence and flexibility:* Entrepreneurs have the freedom to be their bosses and make decisions independently. Entrepreneurs often have flexibility in terms of work hours and location.

(*ii*) *Potential for financial reward and personal growth:* While entrepreneurship involves risks, it also offers the potential for significant financial rewards. It can also lead to personal growth, resilience and increased self-confidence.

(*iii*) *Job creation and legacy building:* Entrepreneurs contribute to the economy by creating jobs and employment opportunities for others, thereby making a positive impact on their communities. They can leave behind a business or innovation that continues to benefit society long after they have moved on.

(*iv*) *Passion, purpose and creativity:* Most entrepreneurs are driven by a sense of purpose and passion for their ventures. They pursue what they love and believe in, which can lead to greater job satisfaction. Entrepreneurship also allows individuals to express their creativity and vision through their business ventures.

The following are the drawbacks of choosing entrepreneurship as a career:

(*i*) *Risk and uncertainty:* Entrepreneurship comes with its own set of risks. With the market overflowing with nascent businesses, it is apparent that entrepreneurship as a career is full of risks and uncertainties.

(*ii*) *Wavering income:* Entrepreneurship can be rewarding but not always. The initial stages are full of stress, long hours of work and irregular income.

CHAPTER 5: Green Skills–II

Unsolved Questions

Ans 1. Natural resources form the foundation of human sustainability. Nature has showered us with abundant gifts in the form of natural resources that are the building blocks of our existence. They encompass everything—from water, air and soil to minerals, forests and wildlife. These resources provide us with the essentials for survival, like food, water, shelter and energy. For centuries, humans have relied on these resources to meet their needs and build civilizations.

Our dependence on natural resources has remained a question of survival since the early civilizations. With extreme exploitation of natural resources over centuries, humankind has reached a situation that is threatening our own existence. Unfortunately, climate change, resource scarcity and ecological imbalances have turned into stark realities.

Ans 2. The term "sustainable development" gained widespread recognition following the publication of the Brundtland Report in 1987. Officially titled, "Report of the World Commission on Environment and Development," it was named after its chair, Gro Harlem Brundtland. His report defines Sustainable Development as "the development that meets the needs of the present without compromising the ability of future generations to meet their own needs."

The significance of sustainable development in addressing global environment and social challenges lies in its three major objectives:

(*i*) *Economic Sustainability:* This pillar focuses on continued economic growth and prosperity while ensuring that it is sustainable over the long term. We have come to recognize that economic development is essential for improving living standards, eradicating poverty and providing opportunities for all.

(*ii*) *Social Sustainability:* This pillar focuses on improving the well-being and quality of life for all individuals within the society. It recognizes that sustainable development should prioritize the welfare of people by addressing their basic needs such as health, education and social inclusion.

(*iii*) *Environmental Sustainability:* This pillar focuses on preserving and protecting the natural environment, including ecosystems, biodiversity and the climate. It recognizes that human well-being is intricately linked to a healthy planet and aims to ensure that development does not harm the environment.

Ans 3. The three major objectives of sustainable development, also known as the "three pillars" or "triple bottom line" are:

(*i*) *Economic Sustainability:* This pillar focuses on continued economic growth and prosperity while ensuring that it is sustainable over the long term. We have come to recognize that economic development is essential for improving living standards, eradicating poverty and providing opportunities for all. Economic sustainability emphasizes responsible resource management and promotion of equitable economic systems, with the reduction of inequality as explained:

• *Responsible Resource Management:* Economic sustainability calls for the responsible use of natural resources, ensuring that resource extraction and consumption do not deplete or harm the environment beyond repair. This involves efficient resource utilization and minimizing waste.

(*ii*) *Social Sustainability:* This pillar focuses on improving the well-being and quality of life for all individuals within the society. It recognizes that sustainable development should prioritize the welfare of people by addressing their basic needs such as health, education and social inclusion.

- *Basic Needs:* Social sustainability aims to ensure that everyone has access to basic necessities such as clean water, food, shelter and healthcare. It also includes paying heed to issues like sanitation and hygiene.
- *Health and Education:* It promotes good health and quality education as fundamental rights. Ensuring access to healthcare and quality education eventually helps individuals lead productive and fulfilling lives.
- *Social Inclusion:* Social sustainability emphasizes creating inclusive societies wherein all individuals, regardless of their background, ethnicity, gender or other factors have equal opportunities and rights.

(*iii*) *Environmental Sustainability:* This pillar focuses on preserving and protecting the natural environment, including ecosystems, biodiversity and the climate. It recognizes that human well-being is intricately linked to a healthy planet and aims to ensure that development does not harm the environment.

- *Conservation of Ecosystems:* Environmental sustainability involves conserving ecosystems, including forests, wetlands, oceans and other habitats. This helps maintain biodiversity and preserves the services these ecosystems provide, such as clean air and water.
- *Mitigation of Climate Change:* It addresses the reduction of greenhouse gas emissions and the mitigation of climate change impacts. This includes transitioning to renewable energy sources and implementing strategies to adapt to changing climatic conditions.
- *Resource Efficiency:* Environmental sustainability promotes resource efficiency and the reduction of pollution and waste. This involves sustainable agriculture, responsible consumption patterns and the adoption of eco-friendly technologies.

Ans 4. One stark example showcasing the best practices of sustainable process implementation in Indian airports is the Cochin International Airport Limited (CIAL) in Kochi, Kerala. CIAL has gained international recognition for its sustainability initiatives, particularly in the area of environmental conservation and energy management.

Sustainable Practices at Cochin International Airport

(*i*) *Solar Power Generation:* CIAL houses one of the largest solar power plants at an airport in the world. It covers vast areas of airport land with solar panels, generating a significant portion of its energy needs from solar power. This initiative aligns with SDG 7 (Affordable and Clean Energy) by reducing the airport's carbon footprint and reliance on non-renewable energy sources.

(*ii*) *Waste Management:* The airport has implemented efficient waste management practices, including waste segregation and recycling. Organic waste is converted into biogas, which is used for cooking and power generation. Such practices align with SDG 12 (Responsible Consumption and Production), aiming to reduce waste and promote sustainable resource use.

(*iii*) *Biodiversity Conservation:* CIAL has undertaken initiatives to protect and enhance biodiversity on its premises. It has developed green zones, including a butterfly garden and a large area of mangrove forests. These efforts align with SDG 15 (Life on Land) by promoting the conservation and sustainable use of terrestrial and marine ecosystems.

(*iv*) *Water Conservation:* The airport has left no stone unturned while implementing rainwater harvesting and water recycling systems. This helps in reducing water consumption and dependence on external water sources. These practices align with SDG 6 (Clean Water and Sanitation) by promoting efficient water use.

(*v*) *Energy Efficiency:* CIAL has adopted energy-efficient technologies and practices, including LED lighting and energy-efficient air conditioning systems. These measures contribute to SDG 7 (Affordable and Clean Energy) by reducing energy consumption and emissions.

Ans 5. A green economy is an economic system that seeks to promote sustainable development by incorporating principles and practices that reduce environmental risks and ecological scarcities. It aims to enhance human well-being and social equity.

The essential components of a green economy include:

(*i*) *Renewable Energy:* The transition to renewable energy sources such as solar, wind, hydroelectric and geothermal power is the cornerstone of a green economy.

(*ii*) *Resource Efficiency:* Resource efficiency involves using resources such as water, energy and materials more effectively to minimize waste and reduce environmental impact.

(*iii*) *Clean Technologies:* The development and adoption of clean and eco-friendly technologies are crucial for reducing pollution and conserving resources.

(*iv*) *Sustainable Agriculture:* A green economy promotes sustainable farming practices that minimize the use of harmful chemicals, conserve soil and water, and protect biodiversity.

(*v*) *Circular Economy:* The Circular Economy model focuses on reducing, reusing and recycling products and materials to minimize waste and extend the life cycle of products. It creates a closed-loop system where no one is unfamiliar with reusing and recycling resources.

(*vi*) *Biodiversity Conservation:* Protecting and preserving biodiversity is integral to a green economy. It safeguards ecosystems, wildlife and natural habitats to maintain ecological balance and ecosystem services.

Ans 6. A green consumer, also known as an environmentally conscious or eco- conscious consumer, is an individual who makes purchasing decisions keeping in mind environmental and sustainability considerations. These consumers prioritize products and services that have a reduced impact on the environment and support sustainable practices. They play a significant role in driving demand for environmentally friendly products and services. Their choices can influence businesses to adopt more sustainable practices, leading to a more environmentally responsible economy.

Ans 7. Green skills are a set of knowledge, abilities and competencies that enable individuals to work in industries that prioritize environmental sustainability and address environmental challenges. These skills are essential for promoting eco-friendly practices, reducing environmental impact and supporting the transition to a greener and more sustainable economy. Green skills encompass a wide range of areas that describe their role in supporting eco-friendly professions:

(*i*) *Renewable Energy:* Skills related to the design, installation, maintenance and management of renewable energy systems such as solar, wind and hydropower.

(*ii*) *Energy Efficiency:* Abilities to improve energy efficiency in buildings, industrial processes and transportation systems, leading to reduced energy consumption and lower carbon emissions.

(*iii*) *Sustainable Agriculture:* Knowledge of sustainable farming practices, organic farming techniques and agroecology to minimize the environmental impact of agriculture while ensuring food security.

(*iv*) *Environmental Management:* Competencies in environmental assessment, conservation and compliance with environmental regulations in various industries.

(*v*) *Green Building and Design:* Skills in sustainable architecture and construction, including energy-efficient building design, use of eco-friendly materials and green building certifications.

(*vi*) *Waste Management:* Expertise in waste reduction, recycling and waste-to-energy technologies to minimize waste generation and promote recycling.

(*vii*) *Water Management:* Knowledge of water conservation, wastewater treatment and sustainable water usage practices for industries and municipalities.

(*viii*) *Sustainable Transportation:* Abilities to promote eco-friendly transportation options such as public transit, cycling, electric vehicles and the development of sustainable urban mobility solutions.

(*ix*) *Ecological Restoration:* Competencies in ecosystem restoration and biodiversity conservation to rehabilitate and protect natural habitats.

(*x*) *Climate Change Mitigation and Adaptation:* Knowledge and skills related to climate change science, adaptation strategies and emission reduction techniques.

These skills can be developed through education and experience as knowledge instils the desire to protect and save the environment—not only for oneself but also for future generations.

Ans 8. Ongoing professional development is crucial in the context of green skills and sustainability as it ensures professionals stay abreast of evolving practices, technologies, and regulations in environmentally-conscious fields. By continuously updating their knowledge and skills, individuals can effectively contribute to sustainable initiatives, such as renewable energy, waste reduction, and eco-friendly practices. Additionally, ongoing development fosters innovation, enabling professionals to devise creative solutions to complex environmental challenges. Ultimately, prioritizing professional growth in green skills promotes the long-term health of the planet and facilitates the transition towards a more sustainable future.

Ans 9. The 4Rs and 1U are a set of principles that guide sustainable resource management and waste reduction. These are strategies that help in minimizing the environmental impact of unnecessary resource consumption and waste generation.

- *Reduce:* The first principle of the 4Rs is reduce. It involves minimizing the consumption of resources by using them less or only whenever required.

- *Refuse:* The second principle is refuse and it involves saying no to unnecessary or harmful products or practices that contribute to resource depletion or environmental degradation.

- *Reuse:* The third principle is reuse, which emphasizes finding creative ways to use items multiple times instead of discarding them after a single use. Reusing can include repurposing old furniture, donating clothing or using refillable containers instead of disposable ones.

- *Recycle:* The fourth principle is recycle and it focuses on collecting and processing recyclable materials like paper, glass, plastic and metals to create new products.

- *Upcycle:* Upcycle is the innovative addition to the 4Rs, denoting the process of repurposing discarded or unused materials into products of higher value or quality than the original. It encourages creative thinking and transforms waste into unique and valuable items. For example, turning old denim jeans into fashionable bags or using discarded wood to craft decorative furniture.

Ans 10. The United Nations Sustainable Development Goals (SDGs) are a set of 17 global objectives. Adopted in September 2015 by the United Nations General Assembly, they are designed to address a wide range of global challenges.

(*i*) *No Poverty:* End poverty in all its forms everywhere.

(*ii*) *Zero Hunger:* End hunger, achieve food security and improved nutrition, and promote sustainable agriculture.

(*iii*) *Good Health and Well-being:* Ensure healthy lives and promote well-being for all.

(*iv*) *Quality Education:* Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all.

The importance of SDG goals is:

(*i*) They are universal and apply to all countries, regardless of their level of development.

(*ii*) They acknowledge the interdependence of social, economic and environmental issues, promoting a holistic approach to development.

(*iii*) They provide a long-term vision for addressing the world's most pressing issues by 2030, fostering a sense of urgency and commitment to action.

(*iv*) They hold governments and organizations accountable for their actions and commitment.

Ans 11. Although sustainable development is crucial for addressing global challenges, it is not unaccompanied by problems and challenges in its implementation. Some of the key issues associated with sustainable development implementation are presented below:

(*i*) *Difficult to Balance:* Sustainable development involves a complex web of social, economic and environmental factors that are interconnected. Finding solutions that balance these elements can pose a challenge, as decisions in one area may have unintended consequences in others.

(*ii*) *Short-Term vs. Long-Term Goals:* There are trade-offs between short-term economic interests and long-term sustainability objectives. Policymakers and businesses may prioritize immediate gains over long-term environmental and social benefits.

(*iii*) *Resistance to Change:* Transitioning to more sustainable practices often faces resistance from vested interests and traditional industries due to unwillingness to change age-old prevalent systems. This can form a hurdle in the progress towards sustainable development.

(*iv*) *Trade-Offs and Conflicting Objectives:* Finding the right balance between economic growth, social equity and environmental protection can be challenging. Trade-offs may be necessary and different stakeholders may have conflicting priorities.

(*v*) *Global Cooperation:* Many sustainability challenges, such as climate change and biodiversity loss, require international cooperation. Disagreements and geopolitical tensions can hinder effective global collaboration.

(*vi*) *Technological and Financial Barriers:* Access to sustainable technologies and financial resources can be limited in many regions and poor nations, which restricts their ability to adopt and implement sustainable practices.

Ans 12. A green economy is an economic system that seeks to promote sustainable development by incorporating principles and practices that reduce environmental risks and ecological scarcities. It aims to enhance human well-being and social equity.

The essential components of a green economy include:

(i) *Renewable Energy:* The transition to renewable energy sources such as solar, wind, hydroelectric and geothermal power is the cornerstone of a green economy.

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(iii) *Clean Technologies:* The development and adoption of clean and eco-friendly technologies are crucial for reducing pollution and conserving resources. Examples include electric vehicles, energy-efficient appliances and sustainable building materials.

(iv) *Sustainable Agriculture:* A green economy promotes sustainable farming practices that minimize the use of harmful chemicals, conserve soil and water, and protect biodiversity.

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Potential solutions to address these problems include following the SDGs with the aim to develop the community. SDGs provide a global framework for addressing interconnected issues such as poverty, inequality, environmental degradation and climate change. Tackling these issues require global cooperation.

CHAPTER 1: Digital Documentation (Advanced)

TEST YOUR KNOWLEDGE (Page 102)

Fill in the blanks

1. Styles
2. Manage Styles
3. Alt+2 or F11 Function Key
4. New Style from Selection
5. Update Selected Style

Short Answer Questions

1. Styles is a group of predefined formats saved by a specific name in the Styles Gallery. These Styles constitute a combination of font styles, colors, effects, indentation, alignment and suitable backgrounds that you can apply to selected pages, text, tables, lists, headings and other elements in a document to enhance their appeal.

2. Following are the steps to create new Styles:
   (*a*) Click on **Styles** menu, then select the **New Style** from **Selection** option.
   (*b*) Enter the new Styles name and click the **OK** button.
   (*c*) Click on the portion of the document from where Styles has to be copied.
   (*d*) A New Style from Selection pop-up appears on the screen.
   (*e*) Select the text on which the new Styles is to be implemented.
   (*f*) To apply, double-click on the Styles name.

3. To apply different formatting to newly created Styles, click on the **Styles menu** and then select **Update Selected Style** option or from **Styles actions** drop-down list displayed in the **Styles** pane of **Sidebar**.

4. To load Styles from an existing document, we follow the below-given steps:
   (*a*) Open the document in which you want to copy the Styles.
   (*b*) Open **Styles** pane by pressing **F11** key.
   (*c*) In the sidebar Styles pane, click on the Styles actions icon and select **Load Styles from Template** option from the drop-down menu. Then **Load Styles from Template** dialog box opens.
   (*d*) Select the desired **Styles** under **Categories** from **Load Styles from Template** dialog box and click **OK**.

5. To create Styles using drag-and-drop method, follow the given steps:
   (*a*) Open the **Styles** window.
   (*b*) Select the desired **Styles type** button.
   (*c*) Select the pre-formatted text to be used as new Styles and drag-and-drop it into the pane. As a result, **New Style from Selection** pop-up shall be displayed.
   (*d*) Give an appropriate name to your Styles and click **OK**.

TEST YOUR KNOWLEDGE (Page 121)

Fill in the blanks

1. Ctrl and Shift
2. Insert → Image
3. Insert → Media → Gallery
4. Drawing toolbar and Image toolbar
5. Save a Copy

Short Answer Questions

1. The various methods to insert an image in a Writer document are listed below:
   (*a*) Using Insert Menu
   (*b*) Using the Gallery
   (*c*) Linking Image
   (*d*) Using Scanner
   (*e*) Using Clipboard and Paste Special option
   (*f*) Using Drawing Toolbar for Shapes

2. The steps to add images from a file are as follows:
   (*a*) Click on the **Insert** menu and select the **Image** option.
   (*b*) An **Insert Image** dialog box appears.
   (*c*) Select an image from the file and click the **Open** button.
   (*d*) The selected image will be inserted in a document.

3. To insert images through Clipart in LibreOffice Writer, we need to perform the following steps:
   (*a*) Enable the Drawing Toolbar by **View → Toolbars → Drawing**.
   (*b*) Click on **Insert Fontwork Text**.
   (*c*) From the **Fontwork Gallery**, choose the appropriate clipart.
   (*d*) Enter the text and it will be displayed on the screen.

4. Sometimes, when we want a section of an image in our document then we cut off the unnecessary parts of the image. This is known as cropping an image.
   To crop the image in LibreOffice Writer, perform the following steps:
   (*a*) Right-click on the image.
   (*b*) Select the **Properties** option and **Image** dialog box will be displayed on the screen.
   (*c*) On the **Image** dialog box, modify the values for left, right, top and bottom as per requirement.
   (*d*) Click the **OK** button.

5. The Image toolbar is used to set the color, contrast, brightness as well as to crop and flip the image.
   The following options are present in the Image toolbar:
   (*a*) **Filter**—this is used to apply various filters on the selected image such as smooth, sharpen, aging etc.
   (*b*) **Image Mode**—this helps us to see the image in Default, Grayscale, Black/White and watermark mode.
   (*c*) **Crop Image**—it allows us to cut out some part of the image.
   (*d*) **Flip and Rotate**—these buttons help to flip the image vertically and horizontally and rotate the image at 90 degrees to left and right.

(*e*) **Transparency**—it helps to deal with the opacity of the image.

(*f*) **Color**—it helps to change the color as well as brightness and contrast of the selected image.

TEST YOUR KNOWLEDGE (Page 135)

Fill in the blanks

1. Table of Contents, Index or Bibliography
2. 10
3. Starting
4. Paragraph
5. Heading

Short Answer Questions

1. Table of Contents can be described as a list with the headings of a document. It has title, headings and sub-headings placed in a document in a hierarchical manner. A Table of contents holds the numbered list of topics in a document and the page number with which they are associated.
2. Table of Contents depends on the headings in the document. Before using the Table of Contents feature one should make sure that the headings are indented properly and have the same styles.
3. Headings are elements used to organize and structure written content. Headings help readers gain a clear understanding of the document by giving some insights to the topics that are going to be covered in each paragraph.

TEST YOUR KNOWLEDGE (Page 147)

Fill in the blanks

1. Template
2. New → Templates
3. Templates
4. Manage Templates
5. Edit Template

Short Answer Questions

1. Templates help us in saving a lot of time as it contains all the text, images, formatting, design and layout features imbibed in them.
2. The steps to create a new template are:
   (*a*) Open a document.
   (*b*) Modify the document and Styles according to the preference.
   (*c*) Click on **File → Save As** option. Enter the relevant name of the template in the **Save As** dialog box.
   (*d*) Select the **ODF Text Document Template (.ott) (.*ott)** from the Save As type drop-down list.
   (e) Click on **Save** to save the new template.
3. The steps to change the default template to a custom default template are as follows:
   (*a*) Select **File menu → Templates → Manage Templates** option.
   (*b*) Open the Category **My Templates** containing the saved template.
   (*c*) Right-click on that template and click on **Set as Default** option from the pop-up menu displayed.

Unsolved Questions

Ans 1. The steps to create a new style in LibreOffice Writer are given below:

(*a*) Click on **Styles menu**.

(*b*) Select **New Style from Selection** option.

(*c*) Then **New Style from Selection** dialog box appears or press Shift+F11 function key.

(*d*) Enter a new style name and click **OK** button.

Ans 2. To apply different formatting to newly created Styles or to update them, follow the given steps:

(*a*) Go to the **Styles** pane by pressing **F11**. You can also click **Styles** menu and then select Manage Styles option which will display the Styles pane.

(*b*) Select the **Update Selected Style** option from Styles menu or select the **Update Selected Style** option from Styles actions drop-down list displayed in the Styles pane of the sidebar.

(*c*) Do the required changes to the document.

(*d*) Click Save button to update the style.

Ans 3. The steps to load Styles from an existing document are as follows:

(*a*) Go to the **Styles** pane by pressing **F11**. You can also click **Styles** menu and then select Manage Styles option which will display the **Styles** pane.

(*b*) Select the **Load Styles from Template** option from Styles menu or select the Load Styles from Template option from Styles action drop-down list displayed in the **Styles** pane of the sidebar.

(*c*) From the **Load Styles from Template** pop-up, select the desired template style under **Categories** and click **OK**.

Ans 4. Table of Contents (ToC) is a list of first-level headings of a document. A Table of Contents, like the Index or Contents, holds the numbered list of topics in a document and the page number with which they are associated. Similarly, each entry in a document relates the internal link to its contents.

Ans 5. Table of Contents (ToC) depends mainly on the headings in a document. Before using this feature, make sure that the headings are indented properly and have the same Styles. LibreOffice Writer contains predefined standard headings such as Heading 1, Heading 2, Heading 3, etc.

Ans 6. Headings in LibreOffice Writer are titles or labels that are applied to different sections of a document to organize and structure content. These are formatted differently from regular text, helping to highlight their importance or hierarchy. In LibreOffice Writer, these headings are used to create a Table of Contents (ToC). LibreOffice provides ten levels of headings.

Ans 7. (*a*) **Anchoring:** Anchoring is a reference point for shapes/images. This reference point can be page or frame and the object can be a paragraph or character. You can always find an anchor point for an image. Anchor option present in Format menu provides various options such as Bring to Front, Forward One, Back One, Send to Back and To Background.

(*b*) **Text wrapping:** With the help of the Wrap option available in the Format menu, the inserted object, shape or image will be arranged with respect to the text. It provides various types of text wrapping such as text flows around the image/shape, may be placed before or after the image, beside the image, etc.

Ans 8. A template is a blank document with applied formatting that acts like a fill-in-the-blank document that you can use to create other documents. Templates contain elements that regular documents usually comprise such as text, graphics, headings, titles, a set of styles, and other set-up information like language, default printer and toolbar menu customization.

The advantages of using a template are—it saves time and money, it improves execution of a document and the chances of errors are reduced while creating new documents.

Ans 9. Difference between Styles and Templates

Styles	Templates
Styles are defined as the collection of predefined formats.	Templates are defined as the predesigned documents.
They are applied to text or objects of a document.	They are used as starting point for new documents
They can be customized.	They can be created or updated.
Examples: Paragraph Styles, Character Styles, etc.	Examples: Business Correspondence, Localization, etc.

Ans 10. The steps to group drawing objects in LibreOffice Writer are as follows:

(*a*) Select the first object, press and hold the Shift key and then select the other objects that we want to group.

(*b*) Click the Group button on the Object Properties Toolbar.

OR

Right-click the selected objects and choose the Group option from the context menu.

Ans 11. Follow the given steps to create a new template:

(*a*) Open a new text document of LibreOffice Writer.

(*b*) Click on **File → New → Templates**.

(*c*) Templates dialog box will appear.

(*d*) Choose the category from the All Categories drop-down list and then select any template of the chosen category by double clicking on it.

Then click on the **Open** button and it displays the selected template document.

Ans 12. Styles can be created using the drag-and-drop method by following these steps:

(*a*) Open the **Styles** window.

(*b*) Select the desired **Styles type** button.

(*c*) Select the pre-formatted text to be used as a new Styles, and drag-and-drop it into the pane. As a result, the **New Style from Selection** pop-up will appear.

(*d*) Give an appropriate name to your Styles and click **OK**.

Ans 13. Graphics or images add clarity and better understanding to the text in a document. Images make documents attractive by breaking up text monotony, capturing attention and aiding in information comprehension. They illustrate concepts, support ideas and enhance the overall visual appeal of the document.

Ans 14. Images can be inserted in a Writer document by using any of the following methods:

(*a*) Using Insert Menu for getting images from a file.

(*b*) From the LibreOffice Gallery option present on the right sidebar.

(*c*) From Link Image by clicking on the Link check box which inserts the image through the insert menu.

(*d*) If a Scanner is attached to the computer, directly scan and place an image in the document.

(*e*) Using Clipboard and Paste special option.

(*f*) Using a Drawing Toolbar for Shapes.

Ans 15. To insert images from a file, follow these steps:

(*a*) In the document, place the cursor where you want to insert an image.

(*b*) Click on the **Insert** menu and select the **Image** option.

(*c*) The screen will display the **Insert Image** dialog box. Choose the required image from the displayed options (choose from a sub-folder/image) and click on the **Open** button. The image will be inserted at the desired place in the document.

Ans 16. The steps to group drawing objects in Writer are as follows: (CBSE 2024)

(*a*) Select the first object, press and hold the Shift key and then select the other objects that we want to group.

(*b*) Click the Group button on the Object Properties Toolbar.

OR

Right-click the selected objects and choose the Group option from the context menu.

CHAPTER 2: Advanced Electronic Spreadsheet

TEST YOUR KNOWLEDGE (Page 167)

Fill in the blanks

1. Consolidating data
2. Subtotals
3. Columns
4. Link to source data
5. Data
6. Group By
7. Outline

Short Answer Questions

1. Data Consolidation is the process of combining varied data organized in different sheets or sources into one worksheet or a single destination.
2. Subtotals is a powerful feature of LibreOffice Calc software to analyze data. It is an easy and quick method that automatically organizes the selected data range into groups to calculate automatic subtotals by applying common functions like Sum to the grouped data.
3. The significance of selecting the Function option present in the Consolidate dialog box is that the dialog box provides several types of functions that can be applied to the table. Some of the functions include Sum, Count, Average, Max, Min, etc.
4. To add data from one worksheet to another worksheet, we can use the following syntax:

   "Sheet_name.First_cell:Last_cell"

   where **Sheet_name** is the name of the file, and

   First_cell:Last_cell is the range of cells that will be used for referencing.

   We can apply this syntax on the cell in which we want to have the data from another sheet.
5. Consolidation ranges list is the feature used for combining data from multiple ranges into a single range. These ranges can be in the same sheet as well as across multiple sheets.

TEST YOUR KNOWLEDGE (Page 177)

Fill in the blanks

1. What-if
2. Tools
3. Sheet1_Scenario_1
4. Tools

Short Answer Questions

1. Scenarios can be defined as a set of multiple values for the same cell in the existing dataset that can be used for doing calculations and data analysis. We also use scenarios when we have to create different target-based "what-if" analyses.
2. Navigator helps to choose scenarios by giving a drop-down list of scenarios.

3. Multiple Operations is the function that we use to apply the same formula to different cells but we can change the parameters by assigning them different values. This command can be found under the Data Menu.

4. **Formula cell**—In the Formula cell, the reference of the cell which contains the formula we want to resolve is entered. It contains the current cell reference.

   Target value—It refers to the target value that we want to achieve through the entered formula.

   Variable cell—This cell contains the unknown value that we want to find and adjust in order to achieve the desired value.

5.

Goal Seek	Solver
(a) Finds an input value to achieve a specific target result in a formula.	Optimizes a result based on multiple variables and constraints.
(b) Works with a single variable.	Handles multiple variables.
(c) Simple what-if analysis tool.	Used for complex optimization problems.

6. The Solver is an advanced form of Goal Seek tool because in Goal Seek, we get the desired result just by changing the value of one variable while using Solver, we obtain the desired result by changing multiple values which gives us more power to try out several combinations of values for different variables.

TEST YOUR KNOWLEDGE (Page 189)

Fill in the blanks

1. Macros
2. Tools
3. Run Macro
4. Arguments
5. getValue(), getString(), getFormula()

Short Answer Questions

1. Macros is a saved sequence of commands or keystrokes that one can store for later use and run as many times as he wants.

2. Recording a macro helps to automate repetitive tasks thereby saving time and reducing the chances of errors which helps in enhancing the productivity of users and helps them to focus on important non repetitive work.

3. To record a macros, one can follow the given following steps:
   (a) Go to tools → Macros → Record Macros to start recording a macro, a dialog box with a button stop recording button is displayed.
   (b) Enter the desired text that you want to enter.
   (c) Click the stop recording button.
   (d) Save the recorded macro by clicking on the save button.

4. Ms. Arshpreet can create a macros to generate a sample copy of the worksheet with marks for her Class X students. Firstly, she can record her actions on inputting sample marks for one student in each subject. Now, whenever she wants to generate a sample worksheet, she just needs to run that macros and LibreOffice Calc will automatically create a sample worksheet for her.

5. We can sort columns using Macros by following the given steps:
    (*a*) Choose the cells.
    (*b*) Select Tools → Macros → Record Macro option.
    (*c*) Click on the Sort Ascending button from the Standard Toolbar.
    (*d*) Click on the Stop Recording button.
    (*e*) Name your Macros and Save it using the Save button.

TEST YOUR KNOWLEDGE (Page 205)

Fill in the blanks

1. Cell Reference
2. Ctrl+N
3. Hyperlink
4. Absolute and Relative
5. Internet

Short Answer Questions

1. There are several ways to insert a new worksheet as follows:
   Click '+' symbol to insert a new sheet after the default sheet.
      OR
   Go to **Sheet** menu → click **Insert Sheet** option from the Menu bar.
      OR
   Select **Insert Sheet** option by right-clicking on the Sheet tab.
      OR
   Insert Sheet dialog box appears. Select the place where you want to insert the worksheet. You can either select Before current sheet or After current sheet.

2. The steps to create references from other documents using a computer mouse are as follows:
   (a) Click on the cell in which you wish to apply the cell referencing.
   (b) Type equals to (=) sign in the cell from where the reference is to be made to the other sheet.
   (c) Now, click on the name of the sheet and then on the desired cell and press Enter.

3. Hyperlink refers to some text or data that shall open another linked file, worksheet or document, when clicked.

4. We rename a worksheet so that the worksheet has some rational name.
   Having a rational name helps to clarify the purpose of each sheet and makes it easier to navigate among different sheets.

TEST YOUR KNOWLEDGE (Page 210)

Fill in the Blanks

1. Tools
2. Shared
3. red
4. disabled
5. Shared or collaboration

Short Answer Questions

1. Sharing worksheet data is useful because it allows multiple users to collaborate, edit and view information simultaneously which helps us to achieve teamwork, reduce errors and also helps to increase productivity.

2. To share a spreadsheet, follow the steps given below:
   (*a*) Click on the **Tools** menu and then select **Options**.
   (*b*) Enter all address details and click **OK**.
   (*c*) Open the previously created spreadsheet.
   (*d*) Click on the **Tools** menu and select **Share Spreadsheet** option.
   (*e*) From the Share Document dialog box, select **Share this spreadsheet with other users** checkbox and click **OK**.
   (*f*) Click **Yes** in the confirmation dialog box.

3. When one opens a spreadsheet document that is in shared mode, he/she will receive a message that the document is in shared mode and that some features cannot be accessed in this mode.

TEST YOUR KNOWLEDGE (Page 220)

Fill in the blanks

1. Track Changes
2. Edit, Track Changes → Record
3. comments
4. Insert → Comment
5. Show Comment

Short Answer Questions

1. When we click on the **Manage** option from the sub-menu of **Track Changes** option present in the **Edit** menu, the **Manage Changes** dialog box appears. This dialog box helps us review the changes recorded by selecting the **Track Changes → Record** option. The Manage Changes dialog box displays a list of all the changes made in a spreadsheet, including the Action, Position, Author, Date and Comment. It also provides options to Accept, Reject, Accept All or Reject All changes by selecting the respective buttons.

2. Adding Comments in a spreadsheet helps to clarify the data. It makes it easy to work with the information by allowing collaboration, highlighting important details and improving understanding of the data inside the spreadsheet.

3. The steps to insert/add a new comment are as follows—
   (*a*) First of all, select a cell then right-click on that selected cell.
   (*b*) Click on the **Insert Comment** option from the pop-up menu which appears by right-clicking the cell.
   (*c*) A yellow-colored box appears for writing the desired comment. Click outside the box.

4. The steps to edit the added comment are as follows:
   (*a*) Select the cell with the comment you want to edit.
   (*b*) Right-click on the selected cell with the comment marker and click on **Show Comment** in the pop-up menu.
   (*c*) Double-click on the cell where the comment is to be edited.
   (*d*) When the cursor changes to the usual blinking text-entry cursor, make the necessary changes to the already existing comment

(*e*) Once done, click outside the comment. Right-click on the cell and deselect **Show Comment** on the pop-up menu to hide the changes which are reflected with a colored outline border, can be easily identified and the owner can either accept or reject those changes as required.

5. To review and accept all the changes incorporated by a user in a spreadsheet, one can follow these steps:

(*a*) Open the edited worksheet.

(*b*) Click on the **Manage** option under the **Track Changes** option of the **Edit** menu.

(*c*) A **Manage Changes** dialog box will be displayed to review all the changes.

(*d*) Then the user can accept all the changes by clicking on the **Accept All** button.

Unsolved Questions

Ans 1. The steps to create references from other documents using mouse are as follows:

(*a*) Click on the cell in which you wish to apply the reference of a cell in another sheet.

(*b*) Type an equal to (=) sign in the cell from where the reference is to be made to the other sheet.

(*c*) Now, click on the name of the sheet and click on the desired cell. Press Enter and repeat the same steps for the remaining cells.

Ans 2. Data consolidation is a process in which the data of similar type, available in multiple worksheets (located in one or multiple workbooks), is gathered, and consolidated into a single worksheet and then saved for further data analysis.

Ans 3. The hyperlink types options available in the Hyperlink dialog box are:

(*a*) **Internet:** This option allows you to create a hyperlink to a website or a specific web page. You can enter the URL in the designated field.

(*b*) **Mail:** This allows you to create a hyperlink to an email address.

(*c*) **Document:** This type of hyperlink is used for linking to another document. You can select a document from your file system and click the hyperlink to open that document.

(*d*) **New Document:** Creates a hyperlink to a new, blank document.

Ans 4. The steps to create a hyperlink are:

(*a*) Select the cell where a hyperlink is to be created and inserted

(*b*) Go to **Insert > Hyperlink**

(*c*) This will open the Hyperlink dialog box

(*d*) Choose the hyperlink type

(*e*) Enter details (URL, text, email, path, etc.)

(*f*) Click **Apply** or **OK** to insert

(*g*) Test the hyperlink by clicking the cell

The Hyperlink dialog box in LibreOffice Calc allows you to create hyperlinks. It includes fields to specify the hyperlink type (Internet, Mail, Document, etc.), enter the URL or path and set further settings. After entering the details, click **Apply** to insert the hyperlink.

Ans 5. Follow the given steps to create a reference using a keyboard in the same worksheet:

(*a*) Click on the cell where you want to enter the reference.

(*b*) Start the formula by typing the equal to (=) sign.

(*c*) Use the arrow keys on your keyboard to navigate to the cell you want to reference.

(*d*) Once you are in the target cell, press Enter key on your keyboard.

Ans 6. Scenarios are a what-if analysis tool that helps to create different target-based 'what-if' analyses. Scenarios can be defined by a set of multiple values for the same cell in the existing data set that can be used for doing calculations and data analysis. It is a model wherein changes in the original dataset are made by the user to analyze the changes in the possible outcome.

Ans 7. We can create a reference to cells located on other worksheets within the same workbook by using the sheet name followed by a dot operator/mark (.) and then specifying the cell or range of cells.

The syntax for creating the cell reference to another sheet in the same workbook is:

Reference to a range of cells—
Syntax: Sheet_name.First_cell:Last_cell

Or

Sheet_name.cell_range
For example, Sheet1.B1:B15
Reference to an individual cell—
Syntax: Sheet_name.cell_address
For example, Sheet1.B18
The two parts of a cell reference are - Column Letter and Row Number.
Column Letter identifies the column whereas Row Number identifies the row.
For example, in the cell reference B8, B is the column and 8 is the row.
Therefore, B8 refers to the cell where column B and row 8 intersect.

Ans 8. Goal Seek is an important what-if analysis tool offered by Calc. It helps us to do backward calculation and analysis of input to obtain the desired result or output. It allows the user to analyze the impact of a change made on any data value due to any change made in another associated data value. This is why Goal Seek is also called the Back-solving method.

Ans 9. We can use Navigator for creating a scenario by following these steps:
   (*a*) For creating scenarios, select the entire range of cells and then click on **Tools menu → Scenario option**.
   (*b*) **Create Scenario** dialog box will open. Give a relevant name to the scenario. Checkboxes Display border and Copy back are selected by default, which we will continue with.
   (*c*) Select a color for creating a border to the created scenario and click **OK**.
   (*d*) In order to switch over to other created scenarios, click on **Navigator** present on the right side of the scenario title area. The names of all the scenarios which the user creates shall be displayed in the Navigator.
   Thus, we can create different scenarios from the Navigator.

Ans 10. LibreOffice Calc allows multiple users to access and modify a file at the same time. It can be the same spreadsheet/workbook that can be placed on the network so that it can be shared by several users. An important advantage of sharing files in collaboration is that you can keep track of the changes made by other users and can accept or reject these without keeping track of multiple versions.

Ans 11. Some advantages of sharing worksheet data are:
   (*a*) It allows multiple users to access and modify a file at the same time.
   (*b*) Data can also be modified simultaneously.
   (*c*) Keeps track of the changes made by other users.
   (*d*) Accepts or rejects these changes without keeping track of multiple versions.

Ans 12. The steps required to share a spreadsheet are:
  (*a*) Click on the **Tools** menu and then select **Share Spreadsheet** Option.
  (*b*) **Share Document** dialog box gets displayed.
  (*c*) Select the **Share this spreadsheet with other users** checkbox to enable sharing this spreadsheet.
  (*d*) Click **OK** and **save** the spreadsheet.
  (*e*) On the title bar next to the document title, the word **shared** shall be displayed.

Ans 13. The options available in Share Workbook dialog box are:
  (*a*) **Share this spreadsheet with other users** checkbox to enable/disable sharing the spreadsheet.
  (*b*) **List of Users Currently Accessing this Spreadsheet**.
  (*c*) **Help**, **Ok** and **Cancel** buttons to modify changes.

Ans 14. Track Changes in a shared spreadsheet shows who made changes and when they made changes which helps the team to work transparently. The advantage of using track changes is that it helps in version control, communication, conflict resolution, etc.

Ans 15. Comments display what is changed by other users (for example, the value in Cell C5 changed from '1000' to '400'). Collaborators, reviewers and authors can add their comments for the changes made, along with relevant and necessary reasoning wherever required. Comments are often used to exchange ideas, ask for suggestions or brainstorm a document.

Ans 16. The process of inserting a new comment includes the following steps:

(CBSE 2024)

  (*a*) Click and select the desired cell where the comment is to be inserted
  (*b*) Right-click in the active cell and select the Insert Comment option from the pop-up menu or can select the Insert Comment option from Insert menu
  (*c*) The Comment Box will get displayed
  (*d*) Type the desired comment and click outside the box
  (*e*) The cell inserted with the comment has a colored dot in the upper right-hand corner
  (*f*) Hover over or point to the cell in which the comment is added. The comment will be displayed

Ans 17. By following the given steps, we can accept all the changes done by a user in a spreadsheet:
  (*a*) Open the edited worksheet.
  (*b*) Click on the **Edit** menu and then select the **Track Changes** option.
  (*c*) Click on **Manage** option from the displayed sub-menu.
  (*d*) **Manage Changes** dialog box shall be displayed on the screen.
  (*e*) Click on **Accept All** button and hence all the changes will be accepted.
  (*f*) To close the dialog box, click on the **Close** button present at the bottom right.

Ans 18. By following the given steps, we can reject changes one at a time:
  (*a*) Open the edited worksheet
  (*b*) Click on the **Edit** menu and then select the **Track Changes** option
  (*c*) Click on **Manage** option from the displayed sub-menu
  (*d*) **Manage Changes** dialog box shall be displayed on the screen
  (*e*) Depending on the requirement and the suggested review, click on **Reject** for the selected change
  (*f*) To close the dialog box, click on the **Close** button present at the bottom right

Ans 19. We can link a worksheet with another spreadsheet in the same or different workbook through hyperlinks by following the given steps:

    (*a*) Click the cell to be selected in the worksheet where a hyperlink is to be created and inserted

    (*b*) After clicking on the **Insert** menu, select the option **Hyperlink**

    (*c*) This will display the **Hyperlink** dialog box

    (*d*) Click and select **Document** on the left-hand panel of the **Hyperlink** dialog box

    (*e*) Click on the **Open File** button. **Open** dialog box gets displayed on the screen

    (*f*) Browse the target document location and then select the file

    (*g*) Click **Open**. The selected path shall be displayed in the **Hyperlink** dialog box

    (*h*) Click on the **Target** in document button in **Target in document** field

    (*i*) Select the **Target** sheet and Click Apply button on the **Target in Document** dialog box

    (*j*) In the **Text** box under **Further settings** area, type the text to be displayed in the cell

    (*k*) Click on **Apply** and then click on **Close** button to complete the process of linking

Ans 20. The steps to compare the spreadsheets are:

    (*a*) Open the original document and the edited document that you want to compare

    (*b*) Click on the **Edit** menu and select the Track Changes option. Then select the **Compare Document** option from the sub-menu

    (*c*) The **Compare to Original Document** dialog box shall be displayed

    (*d*) Choose the original worksheet and click on the **Open** button

    (*e*) The **Manage Changes** dialog box opens, containing the list of changes

    (*f*) Calc will mark the changes as inserted, deleted and changed

    (*g*) You can then accept or reject changes from the **Accept** or **Reject Changes** dialog box

For merging spreadsheets, follow the given steps:

    (*a*) Open the original document

    (*b*) Go to **Edit → Track Changes → Merge Documen**t

    (*c*) Choose the worksheet you want to merge from the **Merge with** dialog box

    (*d*) The **Manage Changes** dialog box gets displayed, showing the change done by more than one reviewer

    (*e*) Click on **Accept** or **Reject** or **Accept All** or **Reject All** option as per requirement

    (*f*) Click on the **Close** button to close the **Accept** or **Reject Changes** dialog box

    (*g*) Finally, all the changes made are merged into one document

Ans 21. The purpose of consolidating data in spreadsheets as it allows us to combine the contents of several spreadsheets or workbooks into one sheet. By consolidating data, we can easily use specific functions such as Sum, Count, Min, etc. on a given dataset. This method is better and easier than creating and typing out individual formulas. It also helps save time, reduces the chance of errors and makes it easier to analyze and compare information from different sources.

For example, if Unit Tests scores for mid-terms, end-terms are recorded on separate sheets, we can use data consolidation to display the combined total in one place, such as a summary sheet.

Ans 22. The two parts of a cell reference while referencing data on other sheets are -
Sheet Name and Cell Address.

For example, the cell reference Sheet2.A3 refers to cell A3 on Sheet2.

Ans 23. The four types of hyperlinks that can be applied in spreadsheets are:

(*a*) **Internet:** this option creates a hyperlink to a web page (URL).

For example: https://www.libreoffice.org

(*b*) **Mail:** this option creates a hyperlink that opens the default email program
with a pre-filled recipient address.

For example: mailto:inform@mighle.com

(*c*) **Document:** this option links to another file or to a specific location (cell or
sheet) within the same spreadsheet or a different document.

For example: Link to Sheet2.A1

(*d*) **New Document:** this option creates a hyperlink that, when clicked, opens
a new document, which can be created immediately or later.

For example: Link to create a new Calc or Writer document.

CHAPTER 3: Database Management System

TEST YOUR KNOWLEDGE (Page 238)

Fill in the blanks

1. Database
2. Database Management System
3. Flat File
4. Database Servers
5. Back-end

Short Answer Questions

1. DBMS stands for Database Management System.

   A Database Management System is a software system or a set of computer programs that allows the users to create, retrieve and update information in a database. It is an integrated and systematic arrangement of data, files, records and other objects which uses a database in a fast and efficient way.

2. Flat file is a data model that consists of only one table. All the relevant and required fields are included in this single table.

   On the other hand, the relational data model overcomes the limitations of the single or flat file model. Unlike flat files, the relational model stores data in multiple tables which are linked to each other through a common field (known as key).

3. The advantages of database are as follows:
   (a) It gives a structured and efficient way to store large volume of data.
   (b) It makes data accessible to users and applications, enabling the retrieval of information as needed.
   (c) It helps to maintain data integrity and reduce data redundancy through normalization.
   (d) It allows multiple users and applications to share data, facilitating collaboration and data exchange.

4. Data Redundancy refers to the duplication of data within a database. It happens when the same information is stored multiple times across different locations or tables.

5. Data Integrity refers to the enforcement of rules so that the accuracy, consistency and reliability of data can be maintained through the life cycle of data. Maintaining data integrity is crucial for ensuring truthfulness in data.

TEST YOUR KNOWLEDGE (Page 244)

Fill in the Blanks

1. Tuples, Attributes
2. Primary Key
3. Domain of Relation
4. primary
5. Alternate

Short Answer Questions

1. The various database objects include:
   (a) **Table:** It is a combination of rows and columns. It helps to organize data and acts as a container that holds data related to a specific entity.
   (b) **Query:** It is a request made to a database for retrieving the required information.
   (c) **Form:** It helps a user to enter data into the database.
   (d) **Report:** It is a formal and formatted representation of data and contains useful data for analysis and decision-making and is obtained as a result of database queries.

2. Some examples of database systems are: MySQL, PostgreSQL, MS Access, IBM Db2, MongoDB, Cassandra, LibreOffice Base, etc.

3. Primary key is an attribute or a group of attributes that can uniquely identify tuples within a relation while foreign key is a non-key attribute whose values are derived from the primary key of some other base table.

   The primary key of one table is often referenced as a foreign key in another table to establish relationships between the tables.

4. Relational Database Management System or RDBMS is a special database software required to store, maintain and retrieve data from multiple tables into a single database.

   RDBMS helps to organize data into tables, rows and columns and thus provides a structured and efficient way to store and retrieve information.

5. Form in DBMS is a way through which a user can enter data whereas query is a request made to a database for retrieving the required information.

TEST YOUR KNOWLEDGE (Page 257)

Fill in the Blanks

1. Columns, rows
2. Attribute or Field or column
3. Row or Tuple
4. Data types
5. two or more

Short Answer Questions

1. There are two ways to create a table in LibreOffice Base:
   (a) **Create Table in Design View** — We can follow the given steps to create a table:
     (i) Click on **Create Table** in **Design View** from **Tasks** pane.
     (ii) In the Table Design window, under field name, specify the field names for the table and their type.
     (iii) Set the field properties and its parameters.
     (iv) Enter the field name one by one and its type from the drop-down menu.
     (v) Save the table from **File** → **Save** as option and click the **OK** button.
   (b) **Creating a Table using Table Wizard** — We can follow the below-given steps to create a table:
     (i) Under the Database side panel, click on the **Tables** component and in the tasks pane, select **Use Wizard to Create Table**.

(*ii*) In the **Table Wizard** dialog box, select the required Category, table from Sample tables and add the desired fields from the Available fields sections, respectively, and click **Next**.

(*iii*) Set the preferred properties for the respective fields.

(*iv*) Create a primary key (optional).

(*v*) Name your table and click **Finish**.

2. The various datatypes used in DBMS/RDBMS are as follows:
   (*a*) Numeric types like Integer, Decimal, Floating Point, etc.
   (*b*) Alphanumeric types like Char, Varchar, Text, etc.
   (*c*) Binary types like LongVarBinary, VarBinary, etc.
   (*d*) Data & Time

3. Numeric data types include Boolean, TinyInt, SmallInt, Integer, bitInt, etc.

4. Alphanumeric data types include LongVarChar, Char, Varchar, etc.

5. A table in a database is a combination of rows and columns. Each row represents a single record and each column defines the type of information stored in it. Table helps organize the data logically, making, updating, retrieving and manipulating it easily.

TEST YOUR KNOWLEDGE (Page 269)

Fill in the Blanks

1. Tables
2. Three
3. Integrity constraints
4. Primary Key and Foreign Key
5. Referential Integrity

Short Answer Questions

1. The file extension used by LibreOffice Base to create a database is .odb (open database).

2. The file formats supported by LibreOffice Base are:
   (*a*) .odb (open database)
   (*b*) .odf (open document format)
   (*c*) .odt (open document text)

3. The types of relationships that can be created in LibreOffice Base are:
   (*a*) **One-to-One:** One tuple at most is associated with one tuple of another table.
   (*b*) **One-to-Many:** One tuple can reference one or more tuples of another table but the other table can reference one tuple of the first table.
   (*c*) **Many-to-Many:** Multiple tuples of one table can have multiple matching with tuples of another related table.

4. Sorting is defined as arranging the data in **ascending** or **descending** order.

   To sort the data stored in a table, we can click on the column and then click the Sort Ascending or Sort Descending button to sort the data accordingly.

5. Referential Integrity helps to make the table remain consistent, *i.e.*, if one table has a foreign key referring to another table's primary key, the value in the foreign key must exist in the table that is being referenced to.

   For example, in a case where the 'Orders' table references the 'Customers' table using a foreign key 'CustomerID', if a customer record is deleted from the 'Customers' table, the corresponding records in the 'Orders' table with the same 'CustomerID' are either deleted or set to default values to maintain data integrity.

TEST YOUR KNOWLEDGE (Page 280)

Fill in the Blanks

1. Query
2. SQL
3. Criterion
4. Selecting Queries
5. Query Design View
6. Query Wizard

Short Answer Questions

1. A query is defined as a request made to a database for retrieving the required information. Running a query is like asking a detailed question from a database.

2. The different ways provided by LibreOffice Base to perform a query are:
   (*a*) Query Design View
   (*b*) Query Wizard
   (*c*) SQL View

3. The steps to create a query using Query wizard are as follows:
   (*a*) Select Queries from the Database pane and then click **Use Wizard to Create Query** in the **Tasks** pane.
   (*b*) In the **Query Wizard** dialog box, select the desired table and add the required fields in the query and click **Next**.
   (*c*) Select the fields on which you want to sort the data.
   (*d*) Specify the search condition to be applied for filtering the records from the table matching the given condition.
   (*e*) Select an option, either "Detailed query" or "Summary query", as per the requirements. Click Next.
   (*f*) Perform Aliasing if required.
   (*g*) Enter the relevant name of the query and click **Finish**.

4. Query Design View in LibreOffice Base offers a GUI for visually designing query by providing users the feature of drag-and-drop tables and fields, specify criteria, relationships, etc., thereby giving more control over query creation. On the other hand, Query Wizard is a step-by-step process of query creation thereby giving less control as compared to Query Design View over query creation.

5. In Query Design, we can understand Criteria as a way to give constraints or conditions or rules that will be applied on the queries.

Unsolved Questions

Ans 1. DBMS stands for Database Management System.

Ans 2. RDBMS stands for Relational Database Management System. It is a special database software required to store, maintain and retrieve data from multiple tables present in a single database. It is used to define and build a strong relationship between database tables.

Ans 3. RDBMS works with a relational database, which comprises multiple data sets organized in the form of two or more tables and their respective records and columns.

Ans 4. In LibreOffice Base, we can create tables in the following two ways:

(*a*) Create Table in Design View

(*b*) Use Wizard to Create Table

Ans 5. Data types in DBMS/RDBMS are used to identify which type of data we are going to store in the database. Fields in a table can be of various types depending on the data values they contain. Once a data type has been defined, it will not accept a different type of data. If data of some other type is entered into a field other than its defined data type, then it will result in an error. They contribute to the consistency, reliability and efficiency of database management by providing structured rules for data representation and manipulation.

Ans 6. We can change a field's width and position in a form by right-clicking on the desired control of a form and selecting the Control Properties option. The Properties: Multiselection window will be displayed, showing a sequence of properties such as Width, PositionX, PositionY, etc.

Ans 7. The components of Query Design area while creating a Query in Design View are as follows:

(*a*) **Table Pane**—This area displays the tables or queries added to the query design. Each table appears as a box listing its fields.

We can do the following:

(*i*) Add tables or queries using the Add Tables or Query dialog box.

(*ii*) View and select fields to include in your query.

(*iii*) Establish relationships between tables by dragging fields from one table to another.

(*b*) **Toolbar**—it is located at the top, the toolbar provides quick access to various functions, such as:

(*i*) Running the query to view results.

(*ii*) Saving the query.

(*iii*) Switching between design and SQL views.

(*iv*) Adding or removing tables from the design

(*c*) **Grid Area**—it is also known as the Query Design Grid, allows us to specify details for each field in your query.

The various components of Grid Area are:

(*i*) **Field:** Shows fields used in the query

(*ii*) **Alias:** Displays an alternate name of the field which can be modified if required

(*iii*) **Table:** Lists the table each field is from

(*iv*) **Sort:** Allows you to choose a sort order for the query

(*v*) **Visible:** Unchecks field boxes for the fields you do not want to display in the query result

(*vi*) **Function:** Allows you to select a function for the query

(*vii*) **Criterion:** Specifies record filter criteria in the row

(*viii*) **Or:** Specifies 'or' criteria in the row

Ans 8. Yes, queries can be created on multiple fields. For example, if you want to extract records based on specific criteria involving multiple columns, you can specify conditions in the "Criterion" section below each required field. Use the "Or" section for conditions where any one of them should be true. For instance, a query could be created to display records where 'Fee' is greater than or equal to 4000 and 'NoOfCredit' achieved by students is less than 3. After specifying the conditions, click 'Run Query' or press F5 to see the matching records in the output.

Ans 9. There are two ways to create forms in a database:

(*a*) Create Form in Design View

(*b*) Create Form using Wizard

On the other hand, reports can be created using the Use Wizard to Create Report option.

Ans 10. The advantages of establishing relationships between tables in a database are as follows:

(*a*) It saves time as common data is not required to be repeated in different tables.

(*b*) It reduces the chances of storing erroneous data.

(*c*) It creates or summarizes data from two or more related tables at a particular time.

Ans 11. The two benefits of creating relationships between tables in a database are as follows: (CBSE 2024)

(*a*) It saves time as common data is not required to be repeated in different tables.

(*b*) It reduces the chances of storing erroneous data.

Ans 12. (*i*) **Database:** It is an organized collection of interrelated data that serves multiple applications. For example, a School database may include tables related to students, teachers, results, etc. (CBSE 2024)

(*ii*) **Table:** It is a combination of rows and columns. In the relational model, a table is referred to as a relation, which is a combination of tuples and attributes.

We can also say that it is a named collection of data items which represents a complete unit of information. For example, tables like Student, Employee, etc.

(*iii*) **Field:** It is a set of characters used to represent values of a certain type. It can also be referred to as a column or attribute. For example, in the Student table, fields include Rollno, Stu_Name, DOB, etc.

(*iv*) **Composite Primary Key:** A primary key can be a combination of more than one field, called a composite primary key. For example, in the Sales table, the combination of Cust_Id and Product_Id is defined as a composite primary key.

CHAPTER 4: Maintain Healthy, Safe and Secure Working Environment

Ans 1. The various workplace safety hazards are as follows:
- (a) Physical hazards
- (b) Electrical hazards
- (c) Fire and explosive hazards
- (d) Ergonomic hazards
- (e) Chemical hazards
- (f) Biological hazards

Ans 2. The potential sources of hazards in an organization are as follows:
- (a) Poor ergonomics
- (b) Inadequate electrical systems
- (c) Fire and explosion risks
- (d) Improper handling of office equipment
- (e) Lifting or moving objects
- (f) Stress at work
- (g) Working environment

Ans 3. Some workplace hazards that can occur in the IT industry are as follows:
- (a) Ergonomic hazards
- (b) Electrical hazards
- (c) Sleeping problems due to artificial lightning
- (d) Injuries from laptop use
- (e) Stress disorders
- (f) Vision health
- (g) Musculoskeletal disorders
- (h) Slips, trips and falls

Ans 4. Workplace safety rules are guidelines designed to keep everyone safe while working. They help prevent accidents and ensure a healthy environment for all employees.

Safety guidelines must be followed to ensure a safe working environment such as:
- (a) Regular inspection and audit must be carried out at the workplace.
- (b) Ensure all machinery is properly guarded and maintained, also trained employees for safe operation.
- (c) Maintain a clean and organized workplace, with proper lightning, ventilation and noise control to prevent accidents.
- (d) Security policies and procedures must be updated regularly to avoid workplace hazards.
- (e) Design the workplace ergonomically, providing adjustable furniture and ensuring tools and equipment are within easy reach.

Ans 5. The various types of emergencies are as follows:
- (a) Medical Emergencies - injuries, sudden heart attacks, severe bleeding, broken bones, etc.
- (b) Fire and explosion - fire outbreaks, gas leakage, chemical exposure.
- (c) Natural Disasters - earthquakes, floods, hurricanes, etc.
- (d) Radiation Emergencies - workplace is exposed to harmful radiation, such as emergencies requiring containment and specialized, medical treatment.

Ans 6. Emergency: An emergency at the workplace is an event that occurs and creates risks for employees and clients. It may result in a sudden risk to life, property, health, etc.

Accident: The occurrence of unplanned and uncontrolled events resulting in personal injury is defined as an accident.

Ans 7. Emergency: An emergency at the workplace is an event that occurs and creates risks for employees and clients. It may result in a sudden risk to life, property, health, etc.

Slips	Trips	Falls
Occur when there is too little friction or traction between the foot and the walking surface, leading to a loss of balance	It happens when the foot strikes or collides with an object, causing a loss of balance.	Result from a loss of balance, causing the person to descend rapidly and freely from a higher to a lower level.
Common causes include wet or oily surfaces, loose rugs or mats, and weather hazards like ice or rain.	Often caused by poor lighting, uneven surfaces, uncovered cables, clutter, or obstructed views.	Can be due to slips or trips or from elevated positions like ladders, stairs or platforms.
Typically result in a backward fall.	Usually leads to a forward fall.	May result in injuries depending on the nature and height of the fall.

Ans 8. The importance of cleanliness at workplace:
 (*a*) Neat and tidy environment reduces the risk of accidents such as slips, trips and falls.
 (*b*) Proper disposal of waste and flammable material can prevent fire hazards and pollution.
 (*c*) It improves efficiency and productivity of employees.
 (*d*) It can prevent equipment breakdowns and interruptions.
 (*e*) It reduces the spread of germs and illness, leading to healthy workers and less instances of falling sick.
 (*f*) It ensures a safe workplace.

Ans 9. The steps to be followed by an organization while developing an evacuation policy are:
 (*a*) It clearly defines the roles of employees, managers and employees in implementing health and safety measures.
 (*b*) It ensures the workplace complies with all relevant health and safety laws, regulations, and industry standards.
 (*c*) It requires employees to assess risks, identify hazards, and implement control measures to minimize health and safety risks.
 (*d*) It specifies the need for training and providing employees with information about health and safety practices, procedures and potential hazards.
 (*e*) It outlines clear procedures to follow in case of emergencies such as fires, accidents, or natural disasters.
 (*f*) It mandates regular monitoring and review of health and safety practices to ensure they remain effective and compliant with standards.
 (*g*) It establishes procedures for reporting accidents, near miss incidents, and hazards to maintain a safe work environment.

Ans 10. Evacuation routes and exits are established in these following ways:

- (*a*) **Identify Hazards:** Recognize potential emergencies such as fires, earthquakes, or chemical spills.
- (*b*) **Designate Exits:** Ensure at least two exits are available, located far apart to prevent both from being blocked simultaneously.
- (*c*) **Create Clear Pathways:** Maintain unobstructed, well-lit routes leading to exits.
- (*d*) **Use Proper Signage:** Place visible and illuminated "EXIT" signs above doors leading out.
- (*e*) **Conduct Drills:** Regularly practice evacuation procedures to familiarize everyone with the routes.
- (*f*) **Assist Special Needs:** Plan assistance for individuals with disabilities during evacuations.
- (*g*) **Review and Update:** Periodically check and update evacuation plans to accommodate changes in the environment or personnel.

Ans 11. Two basic fire safety rules to be followed in any organization are:

- (*a*) Ensure a clear passageway to all escape routes.
- (*b*) Outline escape pathways that are short and lead directly to exit doors.