## IGNOU | BCA

2023-2024





All In One

**BCS-011** Computer Basic and PC Software

Prepared by





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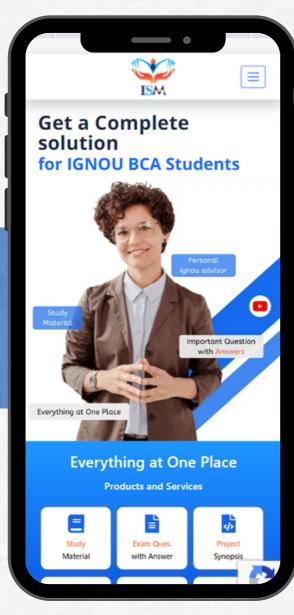
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# BCS-011 COMPUTER BASIC AND PC SOFTWARE [SEM-1]



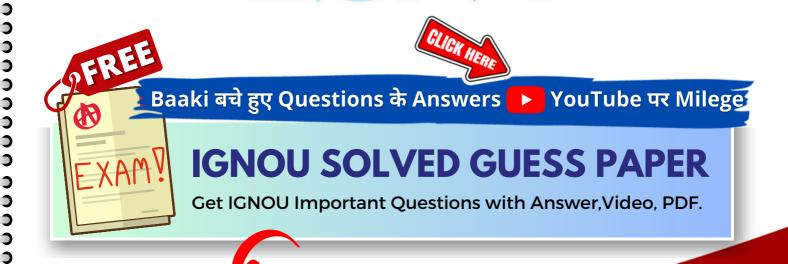
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### Ques.3(a) Explain the following terms in the context of computer networks:

Ans. (i) Packet Switching:- Packet switching is a data communication method where digital information is divided into small packets before transmission. These packets are then sent independently through a network to their destination, where they are reassembled to reconstruct the original data. This approach optimizes network resources by allowing multiple packets from different sources to share the same communication channels, enhancing efficiency, reliability, and scalability in data transmission.

Ans. (ii) Half Duplex Transmission:- Half-duplex transmission refers to a communication mode in which data can be sent and received, but not simultaneously. In this mode, devices take turns transmitting and receiving on the same communication channel. When one device is transmitting, the other device listens, and vice versa. It's like a two-way radio conversation where only one person can talk at a time. This mode is commonly used in walkie-talkies, some older network technologies, and certain communication scenarios where full-duplex transmission is not necessary or practical.

Ans. (iv) Channel of data Transmission:- A channel of data transmission is a pathway, either physical or logical, through which data travels between devices in a network. It can be a wired medium like cables or a wireless medium like radio waves. The channel facilitates the exchange of information and connectivity between devices.





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Ans. (iii) Need of Computer Networks: Computer networks are necessary to:

**Share Resources:** Efficiently share hardware (printers, scanners) and software resources (files, applications).

**Enable Communication:** Facilitate data exchange, communication via emails, messaging, and video conferencing.

Provide Remote Access: Allow remote work and access to centralized data and databases.

Reduce Costs: Save money by sharing resources, reducing redundancy in equipment and software.

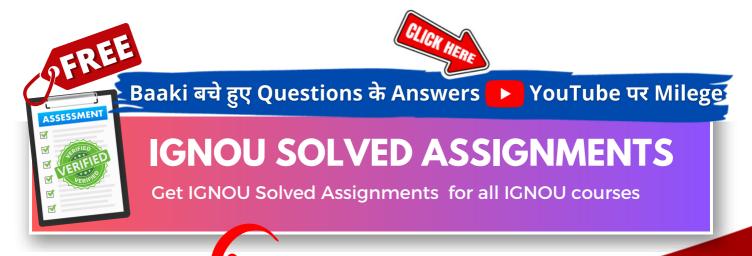
Ensure Reliability: Offer fault tolerance and redundancy for uninterrupted operation.

**Scale Easily:** Expand to accommodate more devices or users without major infrastructure changes.

**Centralize Data Management:** Store data centrally for easy management, backup, and security.

Foster Collaboration: Enable real-time collaborative work on documents and projects.

Access Internet: Connect to the Internet for information, services, and online transactions.













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(iv) Channel of data transmission:- A channel of data transmission is a pathway, either physical or logical, through which data travels between devices in a network. It can be a wired medium like cables or a wireless medium like radio waves. The channel facilitates the exchange of information and connectivity between devices.

Ques.3(b). A Multinational company has its sales offices in 100 different countries of the World. It uses a computer network to collect world- wise sale and order data at its head office. What kind of network the company should make for its sales offices and head office? Justify your answer.

Ans. For a multinational company with sales offices in 100 different countries collecting sales and order data at its head office, a Wide Area Network (WAN) would be the suitable choice to connect its sales offices and head office. Here's the justification for this choice: Geographical Distribution: With sales offices spread across 100 different countries, the company needs a network that spans long distances. WANs are designed for connecting geographically dispersed locations, making them ideal for this scenario.

Global Data Collection: The requirement to collect sales and order data from various locations around the world necessitates a network that can efficiently transmit data over large distances. WANs provide the necessary infrastructure for such data collection.

Centralized Management: The head office needs to centrally manage and analyze the collected data. A WAN allows for centralized control and data consolidation at the head office, enabling better oversight and decision-making.













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Scalability: WANs can accommodate a large number of remote locations, making them wellsuited for a company with sales offices in 100 countries. As the company grows, the network can easily expand to include more offices.

Resource Sharing: WANs allow for resource sharing and data exchange between different offices. The company can centralize applications, databases, and resources, promoting efficiency and consistency.

Cost-Efficiency: Despite potential higher costs compared to Local Area Networks (LANs), WANs offer cost savings by reducing the need for duplicate resources at each sales office and providing economies of scale.

Reliability and Redundancy: Many WAN implementations include redundancy and failover mechanisms to ensure continuous connectivity even in case of network failures.

Security and Data Privacy: With sensitive sales and order data being transmitted across borders, WANs can be designed with security measures like encryption and virtual private networks (VPNs) to protect data during transmission.

In conclusion, a Wide Area Network (WAN) is the most suitable network type for the multinational company's needs due to its ability to connect geographically dispersed locations, support global data collection, enable centralized management, and provide scalability and resource sharing capabilities.

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Ques.3(c) What is TCP/IP? What is an IP address? Explain various components of IP address with the help of an example.

Ans. TCP/IP: TCP/IP (Transmission Control Protocol/Internet Protocol) is a set of networking protocols that form the basis of communication on the Internet and many private networks. It provides a standardized way for devices to exchange data over a network. TCP is responsible for ensuring reliable data transmission, while IP is responsible for addressing and routing data packets across networks. IP Address: An IP address is a numerical label assigned to each device connected to a computer network that uses the IP protocol for communication. It serves as a unique identifier for the device within the network, allowing data packets to be properly routed to and from it.

Components of an IP Address: An IP address is typically written in the form of four numbers separated by periods, like "192.168.1.1". There are two main types of IP addresses: IPv4 (32 bit addresses) and IPv6 (128-bit addresses, designed to address the limitations of IPv4).

In more technical terms, each octet represents 8 bits of the IP address, and each number in the octet can range from 0 to 255. IPv6 addresses have a different format and include alphanumeric characters along with colons.

In the example, the IP address "192.168.1.42" is part of a local network and is used to uniquely identify a specific device within that network. This addressing scheme ensures that data is sent to the correct destination within the network or across the internet.







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Ques.3(d) What is a browser? How does a browser work? How does it communicate with the web server? Explain with the help of an example.

**Ans.** A browser is a software application that allows users to access and interact with content on the World Wide Web. It provides a user-friendly interface for navigating websites, viewing web pages, and interacting with various web elements such as links, images, videos, and forms.

How Does a Browser Work? A browser functions as a client application that interacts with web servers to retrieve and display web content. When a user enters a URL (Uniform Resource Locator) or clicks a link, the browser initiates a series of steps to fetch and render the requested web page:

**URL** Parsing

**DNS Lookup** 

Establishing a Connection

**HTTP Request** 

Web Server Processing

**HTTP Response** 

Rendering

Displaying

Communication with the Web Server - Example: Let's say a user wants to access the homepage of a website, "www.example.com.













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The user enters "www.example.com" in the browser's address bar and presses Enter.

The browser parses the URL, extracts the domain name "example.com," and initiates a DNS lookup to get the IP address.

Once the IP address is obtained, the browser establishes a connection with the web server hosting "example.com."

The browser sends an HTTP GET request to the web server, asking for the homepage ("/").

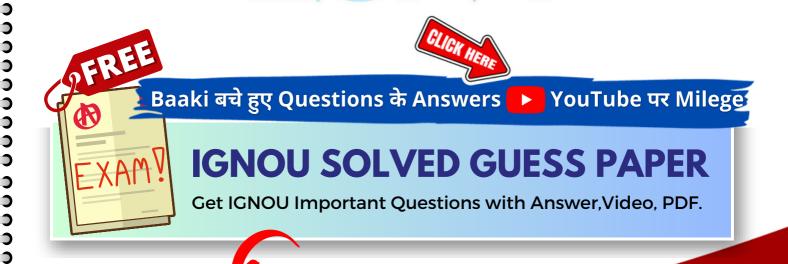
The web server processes the request, locates the homepage, and sends an HTTP response with the HTML content of the homepage.

The browser receives the response, renders the HTML, applies styles, and displays the homepage to the user.

In this way, a browser acts as an intermediary between users and web servers, enabling the seamless retrieval and rendering of web content.

Ques.3(e) How can you enhance your search results from Internet? Explain with the help of examples. List four applications of the Internet.

Ans. You can enhance your search results from the internet by utilizing advanced search techniques, refining your queries, and leveraging specialized search engines and tools. Here's how, along with examples:





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#### **Use Advanced Search Operators:**

Quotation Marks (""): Use double quotes to search for an exact phrase. For example, searching for "climate change" will yield results with that exact phrase.

Site: Use the "site:" operator to restrict results to a specific website. For example, "technology site:wired.com" will show results only from Wired's website.

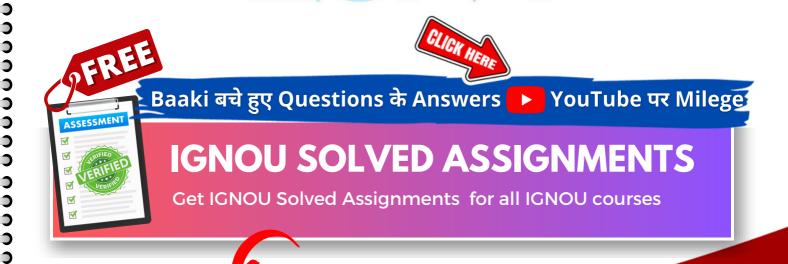
File Type: Specify a file type using "filetype:" to find specific document formats. For instance, "annual report filetype:pdf" will search for PDF annual reports.

#### **Include Relevant Keywords:**

Adding specific keywords related to your topic can improve the accuracy of your results. For example, searching for "best smartphone camera 2023" will yield recent reviews and comparisons of smartphone cameras.

### **Use Synonyms and Alternatives:**

Including synonyms or alternative terms related to your query can expand your search results. For instance, searching for "automobile" along with "car" and "vehicle" can provide a broader range of information.





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#### **Utilize Specialized Search Engines:**

Different search engines may yield different results. Use specialized search engines like Google Scholar for academic research or YouTube for video content.

#### **Applications of the Internet:**

Communication and Social Networking: The internet is widely used for email, messaging, and social networking platforms like Facebook, Twitter, and Instagram, enabling global communication and connections.

#### Information Retrieval and Research:

People use the internet to access vast amounts of information for research, education, news, and general knowledge through search engines, online libraries, and academic databases.

These are just a few examples of the many applications of the internet that have transformed how we communicate, access information, conduct business, and enjoy entertainment.





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Ques.3(f) Explain the following in the context of Internet and its applications, giving their features and uses:

Ans. (i) Search Engine:- A search engine is a software application or online service that helps users discover and retrieve information from the internet by searching for keywords or phrases. Search engines provide a user-friendly interface that allows users to input their queries, and in return, they display a list of relevant web pages, documents, images, videos, and other online content that match the search criteria.

#### **How Search Engines Work:**

Crawling: Search engines use automated bots called "crawlers" or "spiders" to systematically browse the internet and index web pages. These bots follow links from one page to another, collecting information about the content and structure of each page.

**Indexing:** The collected information is then stored in an organized database called an index. This index contains details about keywords, phrases, and their locations on each web page.

**Ranking:** When a user enters a search query, the search engine retrieves relevant results from its index. These results are ranked based on various factors such as keyword relevance, content quality, popularity, and more. The goal is to present the most relevant and reliable results at the top.

Displaying Results: The search engine displays the search results to the user in a list format, often with a brief description or snippet of the content. Users can then click on the results that seem most relevant to their query.

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(ii) Microsoft Edge:- Microsoft Edge is a web browser developed by Microsoft, designed to provide a fast, secure, and modern internet browsing experience. It's the default browser for Windows 10 and later versions, replacing Internet Explorer. Some key features of Microsoft Edge include:

**Performance:** Edge is built for speed and efficiency, with improved page loading t imes and better overall performance compared to its predecessor.

**Chromium Engine:** Microsoft Edge is based on the open-source Chromium engine, which also powers Google Chrome. This enables better compatibility with modern web standards and a wide range of extensions from the Chrome Web Store.

**Privacy:** Edge offers enhanced privacy features like tracking prevention, which helps block third-party trackers and protect users' online privacy.

**Collections:** A feature that lets users gather and organize web content for research or personal use, making it easy to save and manage information from different websites.

**Cortana Integration:** Microsoft Edge integrates with Cortana, Microsoft's digital assistant, to provide contextual information and assistance while browsing.



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**Reading Mode:** Reading Mode simplifies web pages by removing clutter and distractions, making content easier to read and focus on.

**Web Notes:** Users can annotate web pages with highlights, notes, and drawings, helping with research or information sharing.

Syncing: Edge allows users to sync browsing history, favorites, passwords, and settings across devices, making it seamless to switch between different platforms.

PDF Reader: Edge includes a built-in PDF reader, allowing users to view and interact with PDF documents directly in the browser.

Dark Mode: Edge supports a dark mode theme, providing a more comfortable browsing experience in low-light conditions.

In short, Microsoft Edge is a modern web browser that combines speed, security, and a range of features designed to enhance the web browsing experience for Windows users.





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