







Use for rough work

Q. No. 2 Part (i)

Binary System:

The system in which two bits are used to represent text or data is called binary system. The two bits used are 0 and 1.

Use in computers:

It is used by computers for several reasons like:

- Communication - It provides efficient communication between computers.
- Standardization - It provides a standard system for performing tasks and running programs.

Q. No. 2 Part (ii)

Hardware components communication:

System software provides or manages communication between hardware components by:

1. Using System Drivers:

System Drivers manages the ~~ti~~relation between hardware and software components by executing processes in a managed shedule.

2. Using Registers and Buses:

Registers and Buses allow the transfer of data of execution from CPU to memory and other components like GPU and Display. It causes information exchange and ~~it~~ these buses are sheduled by the system software or drivers.

Q. No. 2 Part (iii)

Searching Algorithm:

A step-by-step procedure to find a specific value in a list is called searching algorithm. There are two types of searching algorithms:

1. Linear search.
2. Binary search.

Example:

For finding a student named 'John' in a list of 400 students, we may use **Linear**, checks target element sequentially, or **Binary** search, consistantly halves the list until target element is found. Both methods give the same result.

Q. No. 2 Part (iv)

Technologies in front-end development:

Two technologies used in front-end development are:

1. CSS:

Cascading Style Sheets (CSS) ~~are~~ is used for the presentation, colour and design of a website. It gives website a visually appealing look.

2. Javascript:

Javascript is used for website when functions like buttons and animations are added. ~~when~~ It plays its role with CSS for the attractiveness of webpage.

Q. No. 2 Part (v)

System Software:

System Software is installed in CPU that shows the interface for user interaction. It performs tasks associated with the hardware and manages communication between hardware components. It allows us to use application softwares like MS office, games, text editors, etc.

Its examples is Operating System (OS) Like Windows, Linux.

Q. No. 2 Part (vi)

Scope of Data Science:

The scope of data science can be seen in many sectors like:

- **Healthcare:**
  It provides efficient databases for the management of data of hospitals.
- **Sports:**
  It helps us to make predictions of a sport that who will win and also helps to manages the broadcasting of a match.
- **Finance:**
  We can predict the stock market using data science.

Q. No. 2 Part (vii)

Conditions for binary search:

Two necessary conditions for binary search are:

1. **Arrangement of values:**
   The values or elements must be arranged sequentially for proper working of binary search.
2. **Sorted list or array:**
   The elements must be sorted in a list or array for proper functioning of binary search.

Q. No. 2 Part (viii)

1st Abstraction:

Abstraction is important in program due to the following reasons:

1. Removes unnecessary things:

It removes unwanted or unnecessary, and duplicate things from the data.

2. Focus on core problem:

It helps us focus on the core problem of the program for successful execution of the program.

Q. No. 2 Part (ix)

Types of Data Visualization:

Two types of data visualization are given below:

1. Categorical Visualization:

It is used to represent categorical data in a chart, Pie chart is its example.

2. Temporal Visualization:

It is used to visualize location related data in a sketch or graph. Heatmaps ~~and~~ are used for this.

Q. No. 2 Part (x)

Churn Prediction:

Churn means losing customers. Churn prediction helps business identify if they are going to lose any customer based on behavior segmentation. The business can find out the cause and try to provide customers with better deals and product or service. It also helps bussinesses to increase profit and reduce customer acquisition costs.

Q. No. 2 Part (xi)

Information security:

Information security is important on the internet due to the following reasons:

1. **Privacy protection:**
Information security ensures that the personal information or data of an individual is not violatioed or hacked.

2. **Protection of copyright and patents:**
The protection of copyright of a content is protected due to information security.

Q. No. 3 (Page 1)

Data Visualization

Data visualization can help analysts understand patterns, trends, and relationships in the data due to the following reasons:

1. A non-technical stake holder can **understand complex data** using data visualization.
2. It helps analysts to find out any **mistake** or **anomaly** in the data. If a mistake arises in a contextual document or business plan, it can be ignored but if the same mistake is made in the chart, then it may catch the attention of analyst and help to correct it.

3. **Better understanding:**
Visualized data helps analysts to understand the pattern, trend deeply and analyze it. That is why, non-verbal representation of data is better for visual understanding.

4. **Convey full message:**
Presentators can convey full message or information to the analysts using ~~line~~ data visualization. For example, using Line chart to display weather trend over past years.

Q. No. 3 (Page 2)

5. Visually attract to core idea:

Data visualization help to attract the analysts to the core idea for a high-level overview of data.

6. Preview range or categories:

Data visualization helps analysts to review the range of data or categorical data in a fast but appealing way.

Q. No. 4 (Page 1)

Software methods to protect devices

Five software methods to protect devices are given below:

1. Using strong passwords:

Nowadays, different applications require a mix of letters as a password that tends to be strong and protect user data ~~to be~~ from anyone's access.

2. Use VPN:

Using Virtual Private Network (VPN) changes the ip address and location of the user that causes difficulties for hackers in accessing the data.

3. Update anti-virus softwares:

Install or update anti-virus softwares on regular purposes to avoid the possession of any kind of malware on the device.

4: Two Factor authentication:

Use two factor authentication and also keep a backup to avoid lose of any kind of personal data.

Q. No. 4 (Page 2)

5. Change password periodically:

Changing passwords periodically can help to stay away from online hacks or cyber attacks.

6. Avoid suspicious e-mails:

Avoid clicking on spam mails and messages as it can trap us into installing a virus or spyware software.

Q. No. 5 (Page 1)

IoT (Internet of Things)

IoT is an infrastructure of things that provide connectivity with components on cloud. It works using different components and help user perform his task and keep a record of it.

• Role of sensors:

Sensors sense our ~~sor~~ surroundings and make information that is transferred to the required device through cloud infrastructure. It is a foundational component of IoT.

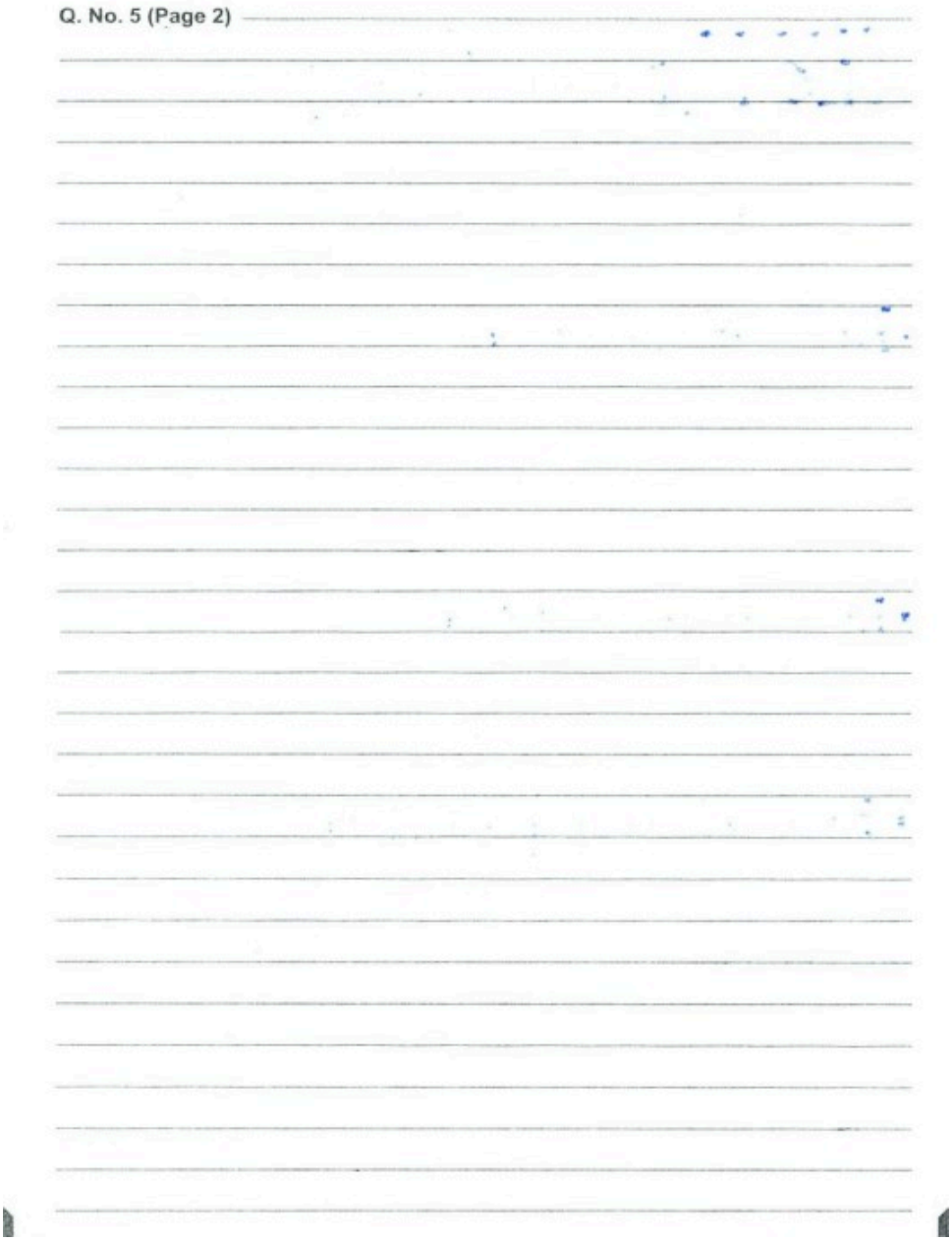
• Role of connectivity:

Connectivity mantains a connection between devices of IoT and provide a user interface for user to interact with the IoT devices.

• Role of data processing:

Data processing is a fundamental part of IoT that transfers, collects and processes data collected by other IoT devices. The processed data can be accessed by the user on cloud.

Q. No. 5 (Page 2)



Q. No. 6 (Page 1)

Digital Communication:

Digital communication is a form of communication that is based on digital form working in the presence of a internet connection.

Tools to communicate ideas to audience:

Four digital tools that can be used to communicate ideas to different audiences are given below:

1. Youtube:

Youtube ~~is~~ is an applicdtion software that is used by every person on the ~~in~~ planet Earth. It is a place where content creators upload their content and communicate different thoughts or ideas to the targeted audience.

2. X(twitter):

X, previously known as twitter, is a place where people upload posts to keep everyone updated with the activities of the world and also communicate funny or official notifications to their followers or audience.

Q. No. 6 (Page 2)

3. Instagram:

It is a social media platform where people make reels and upload it, giving their targeted audience the content they want. It is a popular form of entertainment and also a source of income for influencers.

4. Facebook:

It is a social media platform where people join groups, communities and also marketplace to deliver the thing or information, they want to with their friends. The information ~~ta~~ reaches target audience ~~t~~.