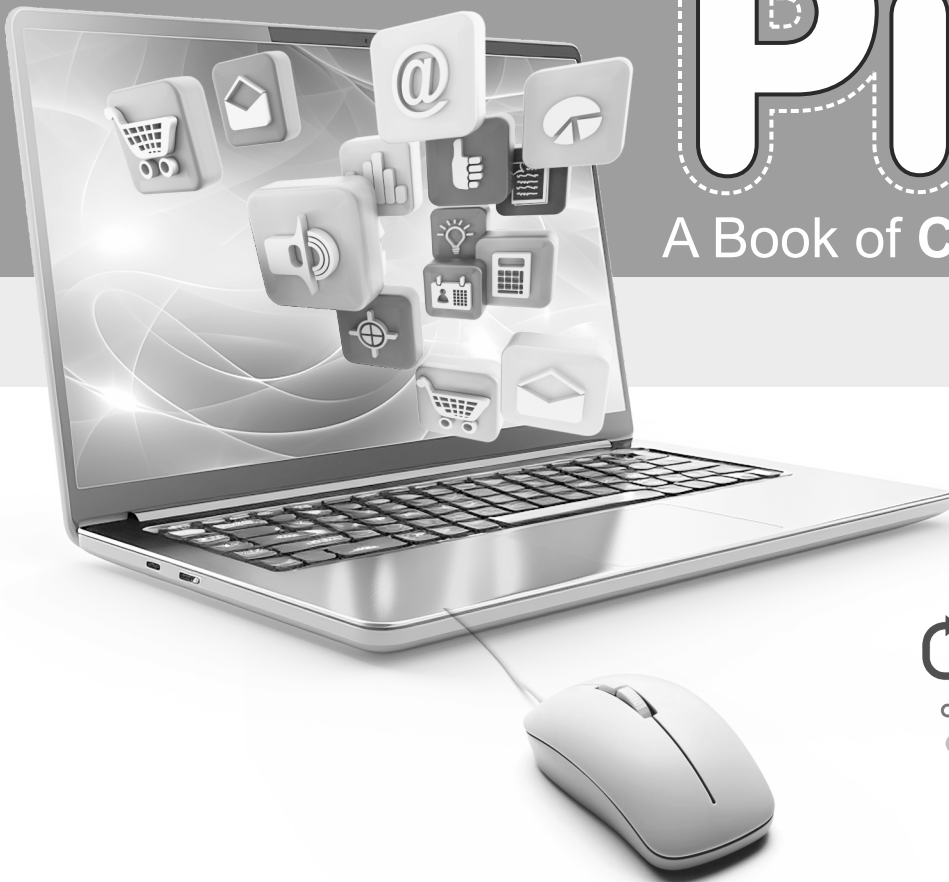




Pixel

A Book of Computer Science



1. Computer Network

Assessment Zone

- A.** 1. (b) 2. (b) 3. (c) 4. (b) 5. (a)
6. (a)
- B.** 1. T 2. T 3. F 4. F 5. T
- C.** 1. network 2. switch 3. Physical 4. fiber-optic
5. dedicated 6. client
- D.** 1. Hub offers a central location where all the cables on a network meet.
A switch is a device that provides a central point for cables in a network.
2. Twisted Pair Cable consists of one or more twisted pair wires bundled together.
Coaxial Cable consists of a single copper wire surrounded by atleast three layers.
3. In star topology, connector called a hub is placed at the center to which all other nodes are connected.
In Ring topology, nodes are connected in circular way where each node is connected to the next one and the last node is connect to the first me.
4. POP3 is an email protocol that stores email messages on a mail server and allows the user to view, access and manipulate the message after downloading or storing it on their computer.
IMAP is an email protocol that stores email messages on a mail server and allows the user to view, access and manipulate the messages on the mail server from their computer.
- E.** 1. A network is a collection of computers and devices connected by communication channels.
2. Communication channel is a medium on which the data, instructions or information can travel.
3. Infrared, Broadcast Radio, Wi-Fi, Cellular Radio, Microwave Communication Satellite.
4. The term topology refers to the layout structure of connected computers and devices on a network.
- F.** 1. For successful computer communication, we need the following components.
SENDER : It is a sending device that initiates to send data, instructions or information. It can be a computer or mobile device.

Communication Channel or Transmission Media : It is a medium through which the data, instructions or information can travel. It can be cables, microwave stations or satellites.

Receiver : It is a receiving device that accepts the transmission of data, instructions or information. It can be a computer or a mobile device.

Protocol : It is a set of rules that outlines characteristics of how two devices communicate. Without protocol, two devices may be connected, but cannot transfer or exchange any data.

2. There are many types of network: Local Area Network (LAN), Metropolitan Area Network (MAN), Wide Area Network (WAN) and Personal Area Network (PAN).

LAN (Local Area Network) : A local area network (LAN) is a network that connects the computers and the devices in a limited geographical area, such as home, school computer laboratory, office building or closely positioned group of buildings. These computers are usually within 100 to 300 meters away from each other.

MAN (Metropolitan Area Network) : MAN is a network that connects the Local Area Networks in a metropolitan area such as a city or a town. A MAN typically includes one or more LANs but covers a smaller geographical area than a WAN. Telephone companies, cable television operators and other organizations use MAN network.

WAN (Wide Area Network) : A wide area network (WAN) spans over a large geographical area, such as an entire city, region or even an entire country or all over the world. Two or more LANs that are relatively far apart are typically connected by WAN so that users and computers in one location can communicate with users and computers in other distant locations. The Internet is the world's largest WAN.

PAN (Personal Area Network) : A personal area network (PAN) is a network that connects personal devices like laptop, smartphones, digital cameras, printers, etc. in an individual's workspace using wired or wireless technology.

3. Network architecture is mainly categorized into two major types.

Peer-to-Peer Network : A network of two or more computers that uses the same type of programs to communicate and share data is called a Peer-to-Peer network. Each computer or peer is considered equal in terms of responsibilities and each acts as a server to others in the network. Peer-to-Peer networks work best in a small environment.

Client/Server Network : A network in which one or more computers are designated as server(s) and the other computers on the network called clients, can request services from the server is known as Client/Server network.

- G. Yes, He can use Local Area Network for the same.

2. OpenShot Video Editor

Assessment Zone

- A.** 1. (b) 2. (b) 3. (a) 4. (a) 5. (c)
- B.** 1. F 2. T 3. F 4. T 5. T
- C.** 1. cameras, sound 2. OTT 3. Ruler 4. Filter Box
5. Transition
- D.** Real Movies are made using real people and location through camera.
Animated movies are made of a series of still images displayed in a sequence.
- E.** 1. Cinema Hall and Online Platform.
2. OpenShot is an open source video editing software.
3. Timeline is used to look at the sequence or ordering of the clips in the project.

F. 1. **Adding Video**

(i) Click on Import Files  button (or press Ctrl+F).

Import Files dialog box appears.

(ii) Navigate the folder from which you want to add video.

(iii) Select the video file that you require.

(iv) Click on Open.

The selected video clip gets added in the Project Files of OpenShot.

Adding Audio

(i) Click on Import Files  button (or press Ctrl+F).

Import Files dialog box appears.

(ii) Navigate the folder from which you want to add audio.

(iii) Select the audio file that you require.

(iv) Click on Open.

2. (i) Click on Transitions tab.

The available Transitions are displayed. You can scroll through all the available Transitions effects.

(ii) Click on the desired transition effect.

(iii) Drag the transition effect on the timeline and position it on the top of the clip.

(iv) Click and drag the side of blue Transition box to change the duration of the effect.

(v) Click on Play button to see the effect.

Transition effect appears in the Preview window.

G. He can do the same using Title Text under Title menu.



3. E-Commerce and Blogging

Assessment Zone

- A.** 1. (c) 2. (a) 3. (a) 4. (b) 5. (b)
- B.** 1. T 2. F 3. T 4. T 5. T
- C.** 1. e-business 2. C-2-C 3. Shopping Cart
4. Verisign Secured 5. Blogosphere
- D.** Business-to-Consumer (B-to-C or B2C) e-commerce consists of the sale of products or services from business concern to the general public or end users.
In a Business-to-Business (B-to-B or B2B) e-commerce the sale or exchange of products and services takes place between firms or companies.
- E.** 1. Electronic commerce (e-commerce), also known as e-business, is a financial business transaction that occurs over an electronic network.
2. The term 'e-retailing' is used when retailers use the web to sell their products and services.
3. Blogging is a modern and dynamic medium by which we can publish your ideas, opinions and stories online.
- F.** 1. The main advantages of e-commerce are :
(i) E-commerce enables doorstep delivery of the desired goods and services.
(ii) The web offers low overhead expenses.
(iii) Free or low-cost marketing activities.
(iv) Potential buyers can be millions of people.
2. It is vital that our sensitive data does not fall into the wrong hands. Therefore, we need to ensure that we provide the payment information only to a secure site.
3. (i) A blog is a website that consists of a frequently updated collection of information and entries.
(ii) In general blogs reflect the interests, opinions and personality of the blogger and sometimes website visitors.
- G.** Cash on Delivery.

4.

MySQL

Assessment Zone

- A.** 1. (b) 2. (a) 3. (a) 4. (c) 5. (a)
- B.** 1. T 2. F 3. T 4. T 5. T

- C. 1. UPDATE, DELETE 2. Information
 3. table 4. TIME datatype
 5. Database Name
- D. 1. Data is a collection of unprocessed facts and figures, which can include text, numbers, images, audio and video.
 Information is processed data; that is, it is organized, meaningful and useful.
 2. DDL is used for creating a table, deleting a table, altering a table, etc.
 DML is used to modify the database tables.
- E. 1. Relational Database Management System.
 2. INSERT, UPDATE and DELETE are DML commands whereas GRANT and REVOKE are DCL commands.
 3. CREATE DATABASE database-name.
 4. Queries are powerful database feature to extract useful and meaningful information from the database.
- F. 1. RDBMS is an acronym for Relational Database Management System. It is similar to DBMS that stores information in the form of related tables.
 2. To create a new database, follow the given steps :
 (i) In mysql> prompt, type CREATE DATABASE Sports_Club;
 (ii) Press the Enter key.
 3. The major components of RDBMS are :
Table : Tables are the places where all the information in your database is stored.
Record : A record is a row in a table that contains information about a given person, product or an event.
Field : A field is a column in a table that contains a specific piece of information within a record.
- G. No, because each value of primary key field should be unique. □

5. HTML5 : Form and Multimedia

Assessment Zone

- A. 1. (b) 2. (a) 3. (c) 4. (c)
 B. 1. T 2. T 3. F 4. T
 C. 1. Reset 2. Checkbox control 3. AUTOPLAY
 4. Loop

- D. (i) A checkbox control allows a web page visitor to select more than one choice from a list of choices.
- (ii) A radio control limits the web page visitor to only one choice from a list of choices.
- E. 1. Forms provide an easy way to collect required information from web page visitors.
- 2. A data input control can be a Radio button (Radio), a Check box (Checkbox), a Submit button (Submit), a Reset button (Reset), and/or a Selection menu (Select).
- 3. We add multimedia elements into our HTML pages to illustrate a product or service or simply for aesthetic purpose.
- F. 1. The submit button is used to processed the data in the form and send it to the destination specified in the <FORM> tag. And Reset button is used to clear the already entered data in a form.
- 2. The following attributes used to control audio and video tags are : SRC, Autoplay, Control, Loop, Height and Width.
- G. Abhinav use Raio control because radio control limits the web pages visitor to only one choice from a list of choices.



6. JavaScript : An Introduction

Assessment Zone

- A. 1. (b) 2. (a) 3. (c) 4. (b) 5. (a)
- B. 1. T 2. T 3. F 4. T 5. T
- C. 1. JavaScript code 2. one, two values 3. <BODY>
- 4. confirm
- D. 1. A confirm box is often used if you want the user to accept something.
A prompt box is often used if you want the user to input a value before entering a page.
- 2. It hold characters or a combination of letters, numbers or symbols like “Akash”.
It contain logical data that can be one of two values True or False.
- E. 1. The purpose of JavaScript block is to make the sequence of statements execute together.
- 2. Var, let and const are used to declare a variable in JavaScript.
- 3. We use ‘//’ symbol to add comment in JavaScript code.

- F.** 1. The important advantages of JavaScript are :
- (i) JavaScript is very fast because it can be run immediately within the browser.
 - (ii) It is relatively simple to learn and implement.
 - (iii) It is used everywhere on the web.
 - (iv) It plays easily with other languages and can be used in a huge variety of applications.
 - (v) It gives the ability to create rich interfaces.
2. The rules of naming a variable in JavaScript are :
- (i) Variable names must begin with a letter, underscore (`_`) or dollar (`$`) character.
 - (ii) Name should not use spaces, hyphens or punctuation.
3. A function contains code that will be executed by an event or by a call to that function. We may call a function from anywhere within the page (or even from other pages if the function is embedded in an external .js file).
- In JavaScript we use two types of functions :
Built-in functions and User defined function.
- G.** He can use prompt () method.



7. App Development : Thinkable

Assessment Zone

- A.** 1. (b) 2. (c) 3. (b) 4. (c) 5. (b)
- B.** 1. T 2. F 3. T 4. F 5. T
- C.** 1. Native app 2. Social Networking 3. Utility
4. Hybrid 5. Web
- D.** Native apps are developed for a particular platform or device.
Web apps are actually websites that provide a user with experience similar to native apps.
- E.** 1. An app consists of programs designed to make users more productive and/or assist them with personal tasks.
2. Apps are divided into three main types—Native app, Web app and Hybrid app.
3. Shopping apps enable us to purchase a product by placing the order and pay through credit/debit card on the Internet.

4. The Component Designer window has following components: Components List, Components Palette, Layout Screen and Components Properties.
- F.
1. A hybrid app is the combination of both native and web app elements. Native is developed for specific platform and installed on the computing device. Web app is generalized for multiple platforms and not installed on computing device but made available over the Internet through browser.
 2. Thinkable is an open-source web application that lets us develop apps or applications for Android and iOS phones using a web browser.
 3. Blocks Editor is used for instructing the components what to do and when to do it. The Main parts of Blocks Editor are :
 - UI Components Blocks :** These are the blocks you have chosen for your app.
 - Built-in Blocks :** These blocks are always available for you to use in your app.
 - Block Viewer :** This is the place where you assemble the blocks for your app.
 - Trash :** It is used for deleting unwanted blocks.
- G. By clicking the Live Test button.



8. Python : Looping and Tkinter GUI

Assessment Zone

- A. 1. (c) 2. (a) 3. (a) 4. (a) 5. (a)
- B. 1. T 2. F 3. T 4. F 5. T
- C. 1. for 2. start, stop and step 3. For-else
4. While 5. Button () 6. Grid
- D. 1. Using while-else loop, we can run an instruction code when the comparing value reaches to exceed limit of condition value.
In for-else loop the else clause of a loop gets executed only if the loop completes its execution normally without having encountered with break statement.
2. Radiobutton() widget is used to create one option out of many selections.
Checkbox() widget is used to create multi-section check boxes.

- E.
 1. In programming, programmers do not particularly like repeating the same commands. Thus, most programming languages have loop option. Loop causes a section of our program to be repeated a certain number of times.
 2. Range is a pre-defined function of Python. This function is used when we need to perform an action for a specific number of times.
 3. Pack, Grid and Place.
- F.
 1. The for loop is used to repeat a block of statements until there is no item in any sequence. This statement iterates over the items of any sequence (a list or a string), in the order that they appear in the sequence. Loop continues until we reach the last item in the sequence.
 2. **Break** : Break statement can be used to unconditionally jump out of the loop. It terminates the execution of the loop. You can use it in while loop and for for loop.
Continue : Continue statement is used to tell the program to skip the rest of the statements of the current iteration of loop block and move to next iteration of the loop. Loop does not terminate but continues on with the text iteration.
 3. Widget is a small part of Graphical User Interface which provides better controls for user. A user interacts with GUI using various controls like Label, Entry, Button, Radio Button, etc.
- G. Break Statement.



9. Data Science : An Introduction

Assessment Zone

- A. 1. (c) 2. (a) 3. (c) 4. (b) 5. (c)
- B. 1. F 2. T 3. F 4. T 5. T
- C. 1. Statistics 2. Statistics, Mathematics, Computer Science
 3. Machine learning 4. Search Engine 5. Data Architect
- D. Structured data is mostly stored in a database or in tabular form. Unstructured data is generally available in the form of images, videos, PDFs, etc. which is unformatted, unorganized and cannot be processed and analyzed.
- E. 1. Data science is the study of data. It is used to extract meaningful information from the large data-set and create insight or interpretations.

2. Machine learning automates the process of data analysis and makes data-informed predictions in real-time without any human intervention.
 3. AutoComplete feature predicts what you are trying to type after few keystrokes, has been widely used in search engines, social media, e-commerce apps, etc.
 4. Database developer is an IT specialist who is responsible to design, program, construct and implement new databases as well as make modifications in the existing databases as per the user requirements.
- F.**
1. **Automates Tasks :** Data Science has helped various industries to automate redundant tasks which are boring for the human workforce.
 2. Statistics has a great role in the field of data science as it provides a great way for the analysis of huge amounts of structured, unstructured and numerical data to find meaningful insights from it.
 3. The different career options in the field of data science are :
 - (i) **Data Scientist :** A data scientist is someone who collects and analyzes large datasets to make better and smarter decisions.
 - (ii) **Business Intelligence Analyst :** A Business Intelligence Analyst is a person who is responsible for drafting and modifying a company's strategy by assessing the market, using data and determining the latest trends in the industry.
 - (iii) **Data Architect :** Data Architect is responsible to design and manage data systems within an organization.
- G.** Business Intelligence Analyst.



10. Future Possibilities of AI

Assessment Zone



- A.** 1. (b) 2. (c) 3. (a) 4. (a) 5. (b)
- B.** 1. F 2. F 3. T 4. F 5. T
- C.** 1. Freddy 2. 2018 3. autonomous 4. Q
5. Machine learning Engineer
- D.** Machine learning engineers are responsible to develop and manage machine learning AI systems.
Business intelligence developer are responsible to analyze data for the prediction of present and future market trends.
- E.** 1. AI technology is widely used in the entertainment industry for predicting the taste and preferences of viewers.

2. Data Scientist, Machine learning Engineer, Business Intelligence Developer.
 3. Good knowledge of programming language
Strong Mathematical Skills.
- F.**
1. With the help of AI, doctors can easily analyze X-rays or scans of patients, choose appropriate treatment and give better consultation to the patients.
 2. AI bots can pose a serious threat because they can be used by fraudsters to perform automated logins with the goal of compromising user accounts. These systems can also be misused by cyber criminals for hacking data and causing potential damage.
 3. The ethical concern related to the implication of AI systems are :
Future of Jobs : Nowadays, there has been notable concern regarding loss of jobs in future due to the adoption of AI-enabled systems in various sectors. Thus, job loss is the major concern across the world due to increasing adoption of automated systems in various sectors.
- G.** Machine learning Engineer.



Half-Yearly Model Test Paper

- A.**
- | | | | | |
|--------|--------|--------|--------|---------|
| 1. (c) | 2. (b) | 3. (a) | 4. (a) | 5. (c) |
| 6. (b) | 7. (b) | 8. (c) | 9. (b) | 10. (c) |
- B.**
- | | | | | |
|------|------|------|------|-------|
| 1. T | 2. T | 3. T | 4. T | 5. T |
| 6. T | 7. T | 8. F | 9. T | 10. T |
- C.**
- | | | |
|------------|------------------|----------------|
| 1. Coaxial | 2. HTTP | 3. Transition |
| 4. OTT | 5. Shopping cart | 6. Blogosphere |
| 7. Clock | 8. Information | 9. Reset |
10. AUTOPLAY
- D.**
1. **LAN :** A local area network (LAN) is a network that connects the computers and the devices in a limited geographical area.
WAN : A wide area network (WAN) spans over a large geographical area.
 2. **Peer-to-Peer :** A network of two or more computers that uses the same type of programs to communicate and share data is called a Peer-to-Peer network.
Client Server Network : A network in which one or more computers are designated as server(s) and the other computers on the network called clients, can request services from the server is known as Client/Server network.

3. **Real movie** : These movies are made using real people and location. Camera is used to shoot these movies.
Animated movie : These movies are made of a series of still images displayed in a quick sequence. The images used in these movies are either drawn by hand or generated on the computer.
 4. **B2B** : In a Business-to-Business (B-to-B or B2B) e-commerce the sale or exchange of products and services takes place between firms or companies.
B2C : Business-to-Consumer (B-to-C or B2C) e-commerce consists of the sale of products or services from business concern to the general public or end users.
 5. **DDL** : DDL is used for creating a table, deleting a table, altering a table, etc.
DML : DML is used to modify the database tables.
 6. **Password Control** : A password control also creates a text box used for a single line of input, except that the characters entered into the field can appear as asterisks or bullets. A password text box holds the password entered by a visitor.
Radio Control : A radio control limits the web page visitor to only one choice from a list of choices.
- E.
1. Some servers perform a specific task and called dedicated servers.
 - ◆ A file server stores and manages files.
 - ◆ A print server manages printers and documents being printed.
 - ◆ A database server stores and provides access to a database.
 - ◆ A network server manages network traffic.
 - ◆ A web server is a computer that delivers requested web pages to your computer.
 2. Wireless transmission media send communication signals through the air. Many people use this media because it is more convenient than installing cables.
 3. Cinema Hall and Online Platform.
 4. **Adding Video**
 - (i) Click on Import Files  button (or press Ctrl+F).
Import Files dialog box appears.
 - (ii) Navigate the folder from which you want to add video.
 - (iii) Select the video file that you require.
 - (iv) Click on Open.
The selected video clip gets added in the Project Files of OpenShot.
 - Adding Audio**
 - (i) Click on Import Files  button (or press Ctrl+F).
Import Files dialog box appears.

- (ii) Navigate the folder from which you want to add audio.
 - (iii) Select the audio file that you require.
 - (iv) Click on Open.
- The selected audio file is added in the Project Files of OpenShot.
5. Blogging is a modern and dynamic medium by which we can publish your ideas, opinions and stories online.
 6. The main advantages of e-commerce are :
 - (i) E-commerce enables doorstep delivery of the desired goods and services.
 - (ii) The web offers low overhead expenses.
 - (iii) Free or low-cost marketing activities.
 - (iv) Potential buyers can be millions of people.
 7. CREATE DATABASE databse-name.
 8. To create a new table, follow the given steps :
 - (i) In mysql> prompt, type
 CREATE TABLE Members
 (
 Member_ID INT,
 Member_Name VARCHAR(100),
 Activities VARCHAR(100),
 Charges INT,
 PRIMARY KEY (Member_ID)
);
 - (ii) Press the Enter key.
 - ◆ Query OK message appears.
 9. A data input control can be a Radio button (Radio), a Check box (Checkbox), a Submit button (Submit), a Reset button (Reset), and/or a Selection menu (Select).
 10. The submit button is used to processed the data in the form and send it to the destination specified in the <FORM> tag. And Reset button is used to clear the already entered data in a form. □

Annual Model Test Paper

- | | | | | | |
|-----------|--------|--------|--------|--------|---------|
| A. | 1. (c) | 2. (a) | 3. (a) | 4. (c) | 5. (a) |
| | 6. (c) | 7. (c) | 8. (c) | 9. (b) | 10. (a) |
| B. | 1. T | 2. F | 3. F | 4. T | 5. F |
| | 6. T | 7. F | 8. F | | |

- C. 1. Var, let 2. one or two values 3. Social Networking
 4. Text Box 5. while loop 6. while
 7. Statistics 8. Data scientist
- D. 1. **String data type** : It hold characters or a combination of letters, numbers or symbols like “Akash”.
Boolean data type : It contain logical data that can be one of two values True or False.
2. **Native App** : Native apps are developed for a particular platform or device.
Web App : Web apps are actually websites that provide a user with experience similar to native apps.
3. **Pack()** : This layout method organizes the widget as block in the window based on back such as left, right, top and bottom. This method is used to control the position of application using various options such as expand, fill and size. By default, pack() method sets the widget at the top side.
Grid() : The Grid() geometry manager puts the widgets in a 2-dimensional table. The master widget is split into a number of rows and columns, and each “cell” in the resulting table can hold a widget. The grid manager is the most flexible of the geometry managers in Tkinter.
4. **Break** : The break statement is used to jump out of a loop. It can be used to “jump out” of a switch() statement. It breaks the loop and continues executing the code after the loop.
Continue Statement : The continue statement “jumps over” one iteration in the loop. It breaks iteration in the loop and continues executing the next iteration in the loop.
5. **Machine Learning Engineer** : Machine learning engineers are responsible to develop and manage machine learning AI systems.
Business intelligence Developer : Business intelligence developer are responsible to analyze data for the prediction of present and future market trends.
- E. 1. Script is short programs that we can write to add interactivity to web pages.
 2. The important advantages of JavaScript are :
 (i) JavaScript is very fast because it can be run immediately within the browser.
 (ii) It is relatively simple to learn and implement.
 (iii) It is used everywhere on the web.
 (iv) It plays easily with other languages and can be used in a huge variety of applications.
 (v) It gives the ability to create rich interfaces.

3. The Component Designer window has following components: Components List, Components Palette, Layout Screen and Components Properties.
4. Native apps are developed for a particular platform or device.
5. In programming, programmers do not particularly like repeating the same commands. Thus, most programming languages have loop option. Loop causes a section of our program to be repeated a certain number of times.
6. The for loop is used to repeat a block of statements until there is no item in any sequence. This statement iterates over the items of any sequence (a list or a string), in the order that they appear in the sequence. Loop continues until we reach the last item in the sequence.
7. Data science is the study of data. It is used to extract meaningful information from the large data-set and create insight or interpretations.
8. **Automates Tasks :** Data Science has helped various industries to automate redundant tasks which are boring for the human workforce.
9. AI technology is widely used in the entertainment industry for predicting the taste and preferences of viewers.
10. The ethical concern related to the implication of AI systems are :
Future of Jobs : Nowadays, there has been notable concern regarding loss of jobs in future due to the adoption of AI-enabled systems in various sectors. Thus, job loss is the major concern across the world due to increasing adoption of automated systems in various sectors.

