ANSWER KEY

Touchpad Computer Applications-165
Class-10

1. Networking

I. a) Network of networks b) Home page c) Lynx
d) Spam blogs e) Domain Name System f) Mail Transfer Agent
e) Secure Shell protocol

II. a) (i) b) (iv) c) (iii) d) (iv) e) (ii)

III. a) Advanced Research Project Agency
b) Defence Advanced Research Project Agency
c) Advanced Research Projects Agency Network
d) National Science Foundation Network
e) World Wide Web
f) Internet Information Server
g) Network News Transfer Protocol
h) Domain Name System

IV. a) **Internet:** It is an interconnected wide area network of millions of computers around the world that are linked together and can share information in the form of data, graphics, sound, text, etc. It is also referred to as network of networks.

b) **World Wide Web:** It is a framework for accessing links and documents spread over millions of computing devices over the internet. It was introduced in 1989 by English physicist Sir Tim Berner's Lee.

c) **Web server:** It is the principal computer or server that stores the contents of different websites that provide data and information to computers which are connected to it in a network on request.

IMPRINT 1

d) **Blog:** Blogs are logs or records of personal experiences or compendiums of information on any topic uploaded to the internet. Blogs are generally hosted on websites such as Word Press and Blogger. Social media websites are also, in essence, hosts for blogs. For example, Twitter is a micro blogging website.

e) **Newsgroup:** Newsgroups are forums on the internet where information about topics of mutual interest is shared. They work like notice boards dedicated to certain topics. Updates from various news sources are gathered regularly for the benefit of the users.

f) **E-mail:** E-mail stands for electronic mail. It is a way of sending messages to people residing anywhere in the world using the internet. Senders as well as receivers require valid e-mail addresses for the system to work. It has become the fastest, easiest, and cheapest means of communication for personal as well as professional purposes.

g) **SCP:** Secure Copy Protocol is a file transfer protocol which helps to transfer files from a local host to a remote host. It uses the secure shell protocol technique. The term 'secure copy' refers to either the SCP protocol or the SCP program.

h) **TELNET:** It stands for 'teletype network'. It is a networking protocol that provides a command line interface for communication with a remote device or server. It was conceptualized in 1969 and standardized as one of the first internet standards by IETF. It does not employ any kind of encryption as it was developed before the mainstream adaptation of the internet.

V. a) A web client is the browser on a client computer that makes a request to the remote server. A computer that uses a web browser is also at times referred as a web client. It is used for searching and downloading documents.

b) Mozilla Firefox, Google Chrome, Opera, Safari, and Microsoft Edge are a few web browsers.

c) It is a software tool that provides security from unauthorized access to remote computers that are on the network. It is installed in the host computer to block unauthorized access while permitting authenticated communications.

d) Lurking refers to quietly hanging around forums and news groups to keep an eye on new members joining or members leaving, the topics being discussed, the direction in which the general opinions flow, etc.

e) HTML stands for Hyper Text Markup Language. It is used to design web pages. It is used to display electronic pages on the internet. It is a markup language.

f) The SSH protocol enables the establishment of secure remote login and secure transfer of data providing strong authentication and protects the communication with strong encryption. It is also known as 'secure shell protocol'. It is a secure alternative to non-protected remote login protocols such as Telnet or rlogin.

g) The names of a few search engines are Google, Bing, Yahoo, etc.

h) E-learning is the application of internet-based communication and media in the field of education and learning. Giving tutorials, using multimedia, making demonstrations, imparting lectures, and clarifying doubts can help the users teach and learn a wide spectrum of topics. It helps to overcome the limitations of time and space for those who want to learn.

i) A social network is a network of people who communicate amongst themselves to share their opinions on different topics by expressing their views in text or through audio and

video clips. It is a way of creating a network linking hundreds of people around the world using the internet. Social networking has helped to retain and maintain old relationships as well as create new relationships. Examples, Facebook, Twitter, WhatsApp, LinkedIn, Instagram, etc.

VI. a)

Website	Web page
(i) A website is a cluster of different webpages addressed to certain URLs.	(i) A webpage is defined as a smaller part of a website that includes content like text, media, etc. It also comprises links to many other relevant webpages.
(ii) It requires more time for development as compared to webpages.	(ii) It requires less time for development as it is not complex like a website.
(iii) It is a collection of multiple pages hosted on the server.	(iii) It is an individual hypertext document linked under a website.
(iv) It can be accessed using a direct URL.	(iv) It can be accessed through a domain address.

b)

POP3	IMAP
(i) POP3 is a protocol that only allows the download of messages from the Inbox of the mail server to the local computer.	(i) IMAP is much more advanced and allows the user to see all the folders on the mail server.
(ii) In POP3 the mail can only be accessed from a single device at a time.	(ii) In IMAP, messages can be accessed across multiple devices.
(iii) The user can not organize mails in the mailbox of the mail server.	(iii) The user can organize the emails directly on the mail server.

c)

HTTP	HTTPS
(i) The full form of HTTP is Hypertext Transfer Protocol.	(i) The full form of HTTPS is Hypertext Transfer Protocol Secure.
(ii) It is not secure as it is sent as plain text which is accessible to hackers.	(ii) It is secure as it sends the encrypted data which hackers cannot understand.
(iii) Generally the page loading speed is fast.	(iii) The page loading speed is slow as compared to HTTP because of the additional feature that it supports, i.e., security.
(iv) It does not use SSL.	(iv) It uses SSL that provides the encryption of the data.

d)

FTP	SFTP
(i) The full form of FTP is File Transfer Protocol.	(i) The full form of SFTP is SSH File Transfer Protocol, also known as secure FTP.
(ii) It does not provide a secure channel to transfer files between hosts.	(ii) It provides a secure channel for transferring the files between the hosts.
(iii) FTP is a TCP/IP protocol.	(iii) SFTP protocol is a part of SSH protocol.
(iv) Clear-text password sent over the network	(iv) SFTP encrypts the data before sending.

e)

SMS	MMS
(i) The full form of SMS is Short Messaging Service.	(i) The fullform of MMS is Multimedia Messaging Service.
(ii) It is a method to send text messages over a cellular network.	(ii) It is a method to send text messages along with multimedia over a cellular network.
(iii) Compatible with all the devices.	(iii) Not compatible with analog mobile phones.

f)

e-Shopping	Traditional shopping
(i) It is the activity of purchasing goods and services over the internet.	(i) It is the activity of visiting a shop and making purchases.
(ii) Tends to be more convenient as you can shop anywhere, anytime.	(ii) Time consuming and less convenient.
(iii) Customers don't have the chance to physically see or touch the items they order.	(ii) Customers are actually able to see what they are buying before they make the payments.

VI. a) The internet is called a network of networks because it connects various small networks across the world to form a global network in which the interconnected computers can exchange information via e-mail or chatting or video conferencing or social media. Various computers or devices are connected via some kind of guided or unguided media.

b) Following are some features of the world wide web:

- World Wide Web resources are user friendly and can be used easily with the help of web browsers.
- It is interactive and it provides you a graphical interface which is easy to use and to interact with. It is accessible by anyone irrespective of their location, caste, or community.
- Multimedia documents contain information in the form of audio or video graphics which are viewed on web pages which are interactive as well as easy to understand.

c) A web browser is a software that helps the user to navigate through different sites on the internet and display web pages. The user requests pages from the web server with the help

of a web browser. After receiving the request sent by the web browser, the web server makes it available for the web browser to display it. For example, Google Chrome, Opera, Safari.

d) SMTP stands for Simple Mail Transfer Protocol. This protocol is used in sending and receiving e-mails. SMTP is also known as RFC 821 and RFC 2821. It is a standard protocol for sending e-mails efficiently and reliably over the internet.

e) Https is the secure version of http .The benefit of https is that it is much more secure and encrypted. Here the data is in encoded form which is helpful for making any confidential transactions. Http does not require any certificate but https needs a SSL (Secure Socket Layer) certificate. In simple words we can say that https is much more secure as well as reliable specially when you are making some confidential transactions like online banking, e-shopping, etc.

f) Search engine is an information retrieval tool that fetches information from the World Wide Web. In a search engine the search takes place on the basis of directory-based or keyword-based search criteria. A search engine should have a very strong database which consists of different web pages and documents. It also requires an indexing tool for the database so that information can be retrieved quickly. When the user enters the keywords or a query the search engine reads through the millions of web pages and the search software searches its database with the help of the index and displays the matching documents. It displays the related information in hierarchical order.

g) Following is the software and hardware needed for video conferencing:

- Video input devices: video camera, web camera, mobile camera
- Video output devices: computer, monitor, TV, projector
- Audio input devices: microphone
- Audio output devices: speakers or earphones associated with the devices
- Proper internet connection

h) E-banking refers to online banking transactions as well as availing the banking services using the internet from anywhere irrespective of the location of the user. It enables an account holder of a particular bank to do transactions such as transfer of funds to and from other accounts, payment of bills etc. For using e-banking facility, the bank provides a PIN (Personal Identification Number) to the account holder.

Advantages of e-banking are:

- The account holder can check the account balance and other transactions immediately from anywhere without physically going to the bank.
- E-banking is eco-friendly as it reduce paperwork.
- It saves time, energy, and natural resources.

i) E-governance is the use of Information Technology and various ICT tools to facilitate government services and communication. It may include intra-departmental communication among government departments and communication between government agencies and citizens through government portals. Eg., Tax collection systems, land registration, etc. The

purpose of governance is to simplify the process of acquiring services and passing requests and information properly to the stakeholders at national, state, and local levels. It leads to fast, responsive, and transparent governance. Benefits of e-governance are:

- Fast execution of process to reduce corruption.
- High transparency, increased convenience.
- Reduction in overall cost, and timely information and instructions within government hierarchy.

2. Introduction to HTML

I. a) mark-up b) text editor, browser c) Container d) container
e) Ted Nelson f) FACE g) Comments h) TYPE
i)
 j) <OL>

II. a) (ii) b) (iii) c) (ii)
d) (i) e) (iii) f) (ii)

III. a) American National Standard Institute
b) Standard General Markup Language
c) Hyper Text Transfer Protocol
d) Wide Web Consortium
e) American Standard Code for Information Interchange

IV. a) HTML stands for Hypertext Markup Language. It is a markup language that is used for designing web pages.

b) Mark up refers to identifying or marking the text by applying formatting on web documents and producing different effects while displaying the document.

c) Tags are placed before the coded commands in HTML and perform some action. A tag is enclosed within angular brackets. Example, <and > ex- <BODY>, <HR>, <BR>, etc.

Tags are of two types:

- Container tags: The tags which are used in pairs are called container tags. They are also referred to as pair tags or ON/off tags. It has an opening as well as a closing tag . Ex- <HTML>, <HEAD>, <FONT>
- Empty tags: These tags are used alone. They do not have a closing tag. These are also known as standalone tags. Text tags only have an 'On' tag. They do not act on a block of text, and they perform their task at the insertion point only. eg., <HR>,

d) Following are the prerequisites for html file creation:

(i) Text Editor (ii) Web browser

e) <HTML>, <HEAD>, <TITLE>, <BODY> tag should necessarily be present in every html page.

f) <HTML>

<HEAD>

<TITLE>Address

</TITLE>

</HEAD>

<BODY>

Tarun Lal
 5A,Main Road

Ratan Lal Complex
 Kolkata(W.B)

</BODY>

</HTML>

g) It will not affect the execution of the code.

h) It will not affect the execution of the code.

i) LINK which sets the color of links you haven't visited. VLINK which sets the color of links you have visited. ALINK which sets the color of links as you click.

V. a) <html>

<head>

<title>poem </title>

</head>

<body>

Good Night,God bless you,
 Good night, Sweet Dream,

</body>

</html>

b) <html>

<head><title>Use of HR</title></head>

<body bgcolor="yellow"> "We are Proud to Present"

<hr size=12 width=100% align="left" color="red">

"Orbit"
</br>

"The Geometric juggler"

<hr size=12 width=100% align="left" color="red">

</body>

</html>

c) <HTML>

<HEAD> <TITLE>Use of different tags</TITLE></HEAD>

<BODY bgcolor="SKYBLUE" ALIGN="CENTER">

<FONT FACE="ALGERIAN" COLOR="GREEN" SIZE=15>

<h3>ORANGE EDUCATION</h3>

<FONT FACE="ALGERIAN" COLOR="BLUE">

Education is the ability to listen to almost anything without losing your temper or your self confidence

</FONT>

</BODY>

<HTML>

d) <HTML>

<HEAD>

<TITLE>

</TITLE>

</HEAD>

<BODY>

Arun Kumar Mehta

Vasundhara Estate Private Limited
 245,East Godavari Road,
 Mallad

Mumbai

</BODY>

</HTML>

e) Tags used in the web page are:

- <HTML>
- <BODY>
- <img>
- <link>
- <P>
-
- <H1>
- <href>

- <Title>
-

3. More about HTML

I. a) Graphical Interace File b) <A> c) left
d) HEIGHT e) SRC

II. a) (ii) b) (iii) c) (iv) d) (ii)
e) (i) f) (iii) g) (iii) h) (iii)

III. a) An HTML form is an interface of a web page that facilitates the user to enter data and send it to the server for further processing. Every form starts with <FORM> tag.

b) 'Mail to' is used to create a link that opens an email service to compose emails and send new email messages. While using <a> tag as an e-mail tag, a user can use mailto: e-mail address along with href attribute.

Send Email

c) Linking is a powerful feature of HTML that is used to link one document (html page) with another. It supports two types of linking:
- External linking: It is used to link two different documents stored in the main power or computer.
- Internal linking: It is used to link various sections of the same document.

d) The 'ALT' attribute is used to assign an alternative text to an image that will be displayed whenever the mouse pointer is placed over it. A user can see the text which is enclosed within the ALT attribute.

e) (i) H_2SO_4

```
<html>
<head> </head>
<title> subscript tags </title>
<body>
H<SUB> 2 </SUB> SO <SUB> 4 </SUB>
</body> </html>
```

(ii) $(a^2+b^2+2ab) + (a^2 - b^2 - 2ab)$

```
<html>
<head> </head>
<title> superscript tags </title)
<body>
```

(a ² + b ² + 2ab) + (a ² – b ² –2ab)

</body> </html>

f) <A HREF = "#Sample"> Sample paper</A> In the given code:

(i) This will create a section named 'Sample' in the html document.

(ii) The cursor will go to the section called 'Sample' on the html page.

IV. a)

Internal link	External link
(i) This feature enables a user to link different sections of the same document	(i) This feature enables a user to link different documents.
(ii) Here <A> anchor tag is used along with two basic attributes, i.e., HREF and NAME.	(ii) Here, <A> anchor tag is used along with <HREF> attribute.

b)

<SUB> tag	<SUP> tag
(i) This tag is used to write the tag text in subscripted form, i.e., the text will be displayed at the base of normal text.	(i) This tag is used to write the text in power or exponential form.
(ii) Its syntax is as follow: _{text} Ex. Co ₂ = CO_2	(ii) Its syntax is as follows: ^{text} Ex. a ² = a^2

c)

HSPACE	VSPACE
This attribute is used to set the horizontal space, i.e., space on the left and right of the image. Syntax <IMG HSPACE="value">	This attribute is used to set the vertical space, i.e., space at the top and bottom of the image. <IMG VSPACE ="value">

V. a) **Radio button:** Radio button gives the option to select something out of multiple choices or options. The CHECKED attribute selects a specific radio button by default.

b) **Checkbox:** A checkbox is like a toggle button where users can select a the desired option by clicking it. It is shaped like a box.

c) **Combo Box:** A combo box is like a dropdown list which displays different options. The users can select something from that list.

d) **<BLOCKQUOTE> tag:** This tag is used to display text after leaving a space of two indents from the side margin. The display of the initial line of the text under this tag is similar to the text displayed in the paragraph tag but with a <BLOCKQUOTE> tag in the next line of the paragraph. The text appears after leaving the same space as in the initial line. It is a CONTAINER tag.

4. Cascading Style Sheets

I. a) CSS b) Selector, Decelaration

c) curly braces, semi colon d) Background Color

II. a) Syntax:
```
<P STYLE="FONT-FAMILY:Font1, Font2,.....,SERIF;">
TEXT
</P>
```

b) Syntax:
```
<P STYLE OUTLINE: Value_of_Width Style Colour; OUTLINE-OFFSET: Value;">
TEXT
</P>
</STYLE>
```

c) Syntax:
```
<P STYLE="HEIGHT:Value; WIDTH:Value">
TEXT
</P>
```

III. a) **Internal style sheet**: An internal style sheet is used when one web page has a unique style.

b) **Outline-Offset**: This is a property under CSS outline which is used to add space between an outline and the edge/border of an element. The space between an element and its outline is transparent.

c) **External Style Sheet**: It changes the look of an entire website by just updating one CSS file. To do so the web page must include a reference to the external style sheet file within a <link> element inside the <HEAD> section.

IV. a) Three ways of inserting or linking a style sheet are:

- External style sheet
- Internal style sheet
- Inline style

b) The value of border width can either be a length in 'px', 'pt' or 'cm' or it can be set to thin, medium, or thick.

c) CSS margin property enables a user to create space around an HTML element, outside any border. It is possible to use negative values to overlap the content.

d) The CSS float property is used for positioning and formatting content. It wraps the text around the images. The float property can be set with values such as left, right, none, etc.

V. a) CSS stands for Cascading Style Sheet. It is a simple design language which enables a user to simplify the process of making web pages. It handles and describes how an HTML web page will be presented on a web browser. It helps to save a lot of time as one design layout can be used to make a number of web pages.

Syntax: Selector {Property: value}

b) The CSS border properties enables a user to specify the style, width, and colour of a border.

- Border style: It specifies the outline style of a border.
- Border colour: It enables a user to set the colour of the four sides of a border. All the four sides of a border can also be individually customized to have different colours on each side.
- Border width: It enables a user to set the width of a border. The value of the border width can either be a length in 'px', 'pt' or 'cm' or it can be set to thin, medium, or thick.

c) The 'text-align' property is used to place the text in the desired position. Left, Right, Center, and Justify are the available types of text alignments.

Syntax: <P STYLE ="TEXT-ALIGN: Value;">

TEXT

</P>

Example:

```
<HTML>
<HEAD> </HEAD>
<BODY>
<P STYLE= "TEXT-ALIGN:RIGHT;">
THIS TEXT IS ALIGNED RIGHT. </P>
<P STYLE= "TEXT-ALIGN:CENTER;"> </P>
THIS TEXT IS ALIGNED IN CENTER.</P>
</BODY>
</HTML>
```

VI. a)

```
<HTML>
<HEAD>
</HEAD>
<BODY>
<H1 STYLE= "background-color : Violet; "> Happy New Year </H1>
</BODY>
</HTML>
```

b)

```
<HTML>
<HEAD> </HEAD>
```

```
<BODY>
<P STYLE= "TEXT-ALIGN:RIGHT;">
THIS TEXT IS ALIGNED RIGHT. </P>
<P STYLE= "TEXT-ALIGN:CENTER;"> </P>
THIS TEXT IS ALIGNED IN CENTER.</P>
</BODY>
</HTML>
```

5. Cyber Ethics

I. a) Cyber Ethics b) Netiquette c) flaming
d) Software License e) Right to Information f) Digital Property Right

II. a) Open-source Software b) Free and open-source software
c) Open Source Initiative d) Open Source Definition

III. a) **Flaming:** It refers to the process of sending insensible messages in a social group or during a chat. It is often perceived in a negative sense as an insult or violation to netiquette.

b) **Netiquette:** It can be defined as behavior aligned with the informal guidelines that are followed by the users of the internet. It includes common sense, courtesy, and politeness while using tools of computer technology and thus signifies the culture established amongst internet users.

c) **Plagiarism:** It is the act of copying of someone else's work and publishing it as one's own work. It can include copying of text, media, and even ideas. Whenever other people's work is copied and republished without appropriate reference or citation it is considered as a plagiarism.

d) **Intellectual Property Rights:** These are the legal rights of ownership of an individual who has created or invented something with their own intellectual ability or creativity and is the owner of their own work. Intellectual property rights can be asserted by patents, copyrights trademarks, trade secrets, etc.

e) **Freedom of information:** It is the right to obtain information from any public authority by making a request in writing or through electronic means to the concerned information officer or department specifying the particulars of the information sought. Information that is voluntarily uploaded by others and available on the internet can be accessed by anyone without any request or permission.

f) **Digital Divide:** It refers to the gap between those who have access to the resources of modern information and communication technology and those who have restricted access. This technology can include data, resources of mobile technology, connection to the internet, IT, and ITES. It describes the division of society into two sections where one section has access to mobile phones, internet, and digital aids while another section is deprived of it.

IV. a) Cyber ethic is the ethical approach or responsible behavior that should be observed while using the applications or resources of the internet. It refers to the social rules that should be practiced while using IT tools and other features of digital media and its related disciplines without infringing upon the natural rights of an entity or an individual.

b) Software is of the following types:

- proprietary software
- shareware
- freeware
- open source software

c) Freeware are those is software that can be used without paying any price, i.e., it is available free of charge. It is promoted by a community of people who believe that basic software like OS and web browsers should be treated like a right to a computer user, and should therefore be made available for free for all users around the globe. It has one or more restricted usage rights. It can be copied and distributed free-of-cost. Open source software that is free to use and whose source code is also available so that some changes can be made to improve or customize the coding according to the need of the programmer.

d) The names of Open Source Software Licenses are:

- Apache License 2.0
- MIT license
- Mozilla public License 2.0
- GNU General Public License

e) Digital property rights are legal rights that covers the privileges of an individual for the security of their digital property. Digital property includes emails, word processing documents, spreadsheets, account credentials, and passwords & other rights. Digital Property Rights include contractual rights and intellectual property rights.

V. a)

Proprietary Software	Shareware Software
(i) The software that is developed by an individual or by a particular organization is termed proprietary software.	(i) Shareware is some copyrighted software that is distributed for use on an honorary basis for a particular period of time . Consumers uninstall it after the mentioned trial period.
(ii) The code of the program or the software is copyrighted by the developer. For eg., Microsoft Windows.	(ii) It is also called trialware or demo ware as it is provided to the users without payment on a trial basis and is often limited in either functionality, availability, or convenience.

b)

OSS	FOSS
(i) OSS stands for Open Source Software. (ii) Such software is free to use and its source code is available for modification or customization as per the needs of the programmer. (iii) It permits the users to study, change, and improve its code and update it to develop new versions.	(i) FOSS stands for Free and Open Source Software. (ii) It is termed free as well as open source as it can be accessed and copied free-of-cost and the source code is available to be shared. (iii) The users are encouraged to voluntarily improve the software by modifying its source code. For eg., LibreOffice, DVDStyler.

VI. a) E-mail etiquette is the basic courtesy that should be observed while sending any email. These rules should be properly followed especially when you are sending a formal e-mail. A few rules are:

- Be brief
- Avoid all CAPS
- Respect copyright
- Use appropriate salutations

b) A few rules of Chat and IM etiquette are:

- Be brief.
- Label personal messages.
- Do not indulge in unsolicited advertising.
- Use alerts.
- Respect the convenience of others.

c) A piece of software is said to be free if the users have these 4 essential freedoms:

Freedom 1: The freedom to run the program as per the wish of the user, for any purpose.

Freedom 2: The freedom to study how the program works and to change and customize it for oneself. Access to the source code is necessary for this.

Freedom 3: The freedom to redistribute copies or to help others to access and use the software.

Freedom 4: The freedom to distribute copies of the updated and modified versions .

d) The Open Source Movement is a movement that supports, encourages, and helps to create awareness among people regarding the usage of open source software. Programmers who support the open source movement's philosophy contribute to the open source community by voluntarily writing and exchanging program codes for software development.

e) Following are some ethical measures that should be adopted during E-commerce:

- **Confidentiality:** Information uploaded during an e-commerce transaction should not be accessed by unauthorized persons.

- **Integrity:** Information should not be altered during its transmission over the network.
- **Encryption:** Information should be encrypted and decrypted only by an authorized user.
- **Auditable:** Data should be recorded in such a way that it can be audited for integrity requirements.

6. Scratch

I. a) freeware b) sprite
c) 480, 360 d) Blocks palette
e) Computer Generated Imagery f) pixels

II. a) **Stage:** It is the layout screen area where we preview the display of a work or a project. It works with an object called sprite which acts and functions like a cursor. The stage is divided into x-y grid. The middle of the stage is known as origin and has (x, y) co-ordinate as (0, 0).

b) **Thumbnail:** It is the display of files in reduced-size pictures that helps in recognizing them. Thumbnails act as previews.

c) **Sprite list:** It displays the thumbnail list of all the sprites that have been used in the opened project. The name of each picture is under its thumbnail and various options are displayed when we right click any thumbnail.

d) **Script area:** It is that portion of the screen which contains the scripts. A script is a collection of graphics/commands that are assembled in a particular order which get executed from top to bottom.

e) **Blocks palette:** This area contains programming blocks or graphical blocks. The blocks are dragged from the blocks palette to the script area in order to run a project. A block is run by clicking it in the script area.

f) **Tempo:** It refers to the speed or pace at which a sound or music is being played. It is measured in bpm (beats per minute).The option to change or set a tempo is available under the sound button.

g) **Events:** It can be recognized as an occurrence of some action at a particular instance or time. For example: when green flag is clicked, when a specific key is pressed, etc .

III. a) Computer Generated Imagery b) beats per minute

IV. a) Animation is the rapid display of a sequence of images in order to create extraordinary illusions. It helps to create convincing and effective designs and illusions. It includes

computer-generated imagery and multimedia features.

b) It is a small graphic object that moves on the stage. By default, it is displayed as a single cat. The sprite moves, plays music, and executes other functions as per our instructions.

c) The Button screen is the area present at the top left side of the scratch screen. It contains eight colour-coded buttons—motion, control, looks sensing, sound, operator, pen, and variable. Each of these buttons contains various programming blocks. When we click on any of the buttons, the programming block related to it is displayed in the blocks palette.

d) The Sprite editor displays information about a sprite such as its name, coordinates, i.e., x-y position, direction in degrees, rotation style, etc.

e) Five tools of paint editor are as follows:

(i) rectangle tool

(ii) select tool

(iii) fill tool

(iv) text tool

(v) eraser tool

f) The point in the scratch stage whose x-y coordinates are (0, 0) is known as origin. The points on the plane represent distance from perpendicular lines that intersect at a position known as origin. Origin is treated as the centre of the stage.

g) Conditional blocks are 'if else' blocks. They check the correctness of the condition given by the user depending upon the values entered by them. If the value of the output of the condition is true, one set of actions is taken, and if the output is false then another set of actions that are written outside the conditional block are executed.

h) Iteration is a process in which a particular set of instructions or programming blocks are repeated in a sequence for a specified number of times or until a condition is met. Iteration is also known as repetition of instructions and when they are executed repeatedly they are written using some looping constructs.

V. a) Five types of Programming blocks are as follows:

(i) Hat block: It enables a user to begin every script.

(ii) Reporter block: It is the value block that can hold numbers or strings.

(iii) Stack block: It enables a user to place other blocks above and below something.

(iv) Boolean block: It is the condition block which can hold either true or false value.

(v) Cap block: It stops the functioning script.

b) The command 'go to x:0 y:0' will send the sprite to the origin.

c) Coordinates are numbers that represent an exact location in the form of (x, y) coordinates. The X-coordinate (also called X position) is a number that represents how far left or right a sprite is on the stage. In another words, X is the sprite's horizontal position. The Y-coordinate (also called Y position) is a number that represents how far up or down a sprite is on the stage. The Y-coordinate is a sprite's vertical position.

d) In scratch, a variable is a placeholder that stores and reads values, similar to variable names in algebra. Its stored value can vary or change during the execution of the program. In scratch the variables are represented with blocks shaped like elongated circles, uniquely labeled by the user. Variables can be local or global. A local variable can be used by just one sprite whereas a global variable can be accessed by all the sprites.

e) 'Ask and wait' programming block is used to ask a question on the screen and it will wait till the answer is typed followed by an enter key, or a check mark is clicked.

7. Programming in Python

I. a) Python shell b) token c) Python shell
d) Input e) Dictionary

II. a) (ii) b) (ii) c) (i) d) (ii)
e) (iv) f) (iv) g) (i)

III. a) General Public License
b) Integrated Development and Learning Environment

IV. a) **Keyword:** These are reserved words that have specific functions in a program which are already explained inside the language (interpreter). Keywords are not used in variable naming and are written in lower case within a program. Examples of keywords are: return, false, and, true, etc.

b) **Tokens:** Tokens refer to the smallest individual units in a program. These are also known as Lexical Elements or Lexical Units. Tokens are categorized as—Identifiers, Keywords, Literals, Punctuators, and Operators.

c) **Punctuators:** These are used as marks or separators in a program. The characters used as punctuators are '#, ", \, ( ), {}, [], @, :, =, ;'

d) **Variable:** It is a name given to the location in memory where the value is stored during the execution of a program. These are the data or values which can change during the execution of a program.

e) **Expression:** An expression represents a statement which python evaluates and then produces the result in the form of a value. It is formed when operators and operands are combined. Constants and variables are used along with operators to form an expression. Example, sum= A+15, p=B**2 etc.

f) **Operator:** Operators are the symbols that are used to perform some kind of computation (which can be arithmetical, logical etc.). Operators are classified as- Unary, Arithmetic, Bitwise, Relational, Assignment, Logical, etc.

g) **Python Shell:** It refers to the layout screen where we type a Python command. Ctrl + F6 key combination is used to restart the Python Shell. On the python shell we get different menus, using which we can create programs, save them for further use, as well as execute them.

V. a) The features of Python are:

- The keywords of Python are in simple English.
- It is known as a platform-independent programming language, i.e., it is portable and compatible with all types of operating systems.
- It is an interpreted language.
- It can be easily integrated with C, C++, Java, etc.

b) A data type is the kind of data to be stored in variables which are used while writing a program. In Python there are five data types:

(i) **Numbers:** This data type stores numeric value in the program. It is used for mathematical calculations.

(ii) **String:** They are contiguous sets of characters in between pairs of single or double quotes.

(iii) **List:** In this data type, items are present in the list and are separated by commas and enclosed within square brackets.

(iv) **Tuple:** It is similar to a list and consists of different values separated by commas and placed within parenthesis. It contains elements that cannot be updated once declared, unlike a list.

(v) **Dictionary:** These are a kind of key-value pairs and can be numbers or strings and the values can be any arbitrary python object. It is enclosed within curly braces and value can be assigned and accessed using square brackets.

c) To insert a single-line comment: The comment line should always start with a # symbol.

Ex- # This program is used to display the sum of two numbers.

To insert a multi-line comment: The comment line should be enclosed between a pair of triple apostrophes.

Ex- "'This program is used to display the sum of two numbers."'

d) The character set in Python consists of valid characters such as alphabets, digits, or special characters that are recognized by the library of Python language.

Alphabets	A, B, ..., Y, Z or a, b, ..., y, z
Digits	0,1,2,3,4,5,6,7,8,9
Special Characters	!@#$%^&*()_+[] {} () < > , ; : "
White Spaces	Blank space, Horizontal tab, New line, etc.

e) Guidelines for creating identifiers in Python are:

- An identifier consists of an arbitrary sequence of letters in lower case (a-z) and upper case (A-Z), digits (0-9), and underscore (_).
- The first character of the identifier must be a letter or underscore. It must not begin with digits (0-9).
- An identifier must not be a keyword.
- An identifier must not contain any special character except underscore. Examples of valid identifiers are-_mica, _Mica, H123, H_123, etc.

f) Interactive mode allows us to type a set of commands only in a single line at the command prompt '>>>'. Python interprets the given command and gives the output when the 'Enter' key is pressed for that line.

In script mode, we type the set of codes in more than one line in a file and then the interpreter executes the complete program file.

g) The drawback of interactive mode is that the program line cannot be saved for future use and only single line programs can be written and executed.

h) Instructions that a Python interpreter can execute are called statements. Example – a=1 is an assignment statement.

print 'Welcome to the world of computers'

print ' This program is used to display the product of two numbers'

Here in both lines the work of 'print' statement is to display the text enclosed within quotes as output.

i) A few applications of Python are:

- Web development
- Game development
- Software development
- Artificial intelligence and machine learning
- Business applications
- Education programs and training courses
- Language development

VI. a) #Program to print of three numbers whose values are 10, 12 and 15.

```
num1 = 10;
num2 = 12;
num3 = 15;
sum = num1+num2+num3;
print(sum);
```

b) "'Program to display Your School Name"'

print('ABC Model School');

8. Decision making in Python

I. if..elif..else

2. a) Syntax : if(test condition1):statement(s)

elif(test condition 2):statement(s)

.....

else:

statement(s)

b) if((condition 1)(and/or)(condition 2)):statement1;

else:

statement2;

III. a) In general when we execute a program and the commands are executed in sequence, it is known as sequential programming technique. But sometimes there may be a condition when a repetition of certain calculations is needed for a particular number of times, or some kind of situation where the sequence of flow of the statements may have to be diverted in a direction that satisfies the condition. At times we have to choose between alternative sets of actions. Such situations can be referred to as branching or decision making.

Some branching statements are:

- if.... Statement
- if....else statement
- if....elif....else statement

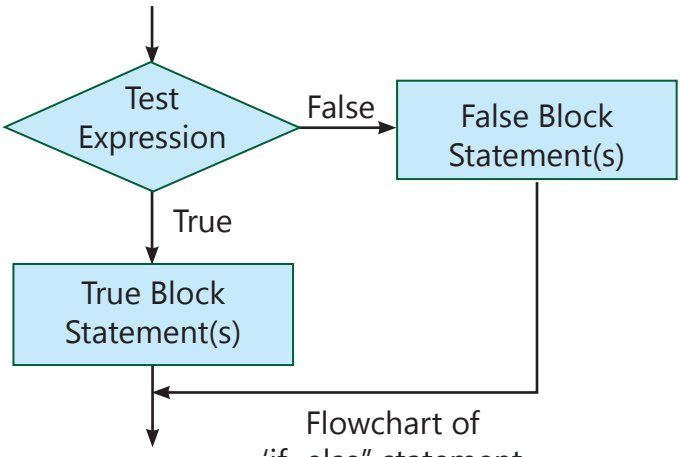
b) The 'if' statement is applied in a situation when the output of any expression is true. Then a particular course of action or the statement has to be followed, otherwise the course of action or the statement is ignored.

Syntax: if(test expression): statement;

Ex: age=21;

if(age>18) : print("Eligible to drive vehicle");

(c) The flow diagram of 'if...else' statement is



Flowchart of 'if...else" statement

IV. a) Program Code:

```
#To print odd or even
a = int (input("Enter a number:")); if(a%2==0):
print("%d is the even number"%(a)); else:
print("%a is the odd number"%(a));
```

(b) Program Code:

```
#Smallest among three numbers
num1=int(input("Enter the first number="));
num2=int(input("Enter the second number="));
num3=int(input("Enter the third number="));
if((num1<num2) and (num1<num3)) :
    print("Smallest number is %d"%(num1))
elif((num2<num1) and (num2<num3)) :
    print("Smallest number is %d"%(num2));
else:
    print("Smallest number is %d"%(num3));
```

(c) Program Code:

```
P=float(input("enter principal amount"));
T=int(input("enter time"));
if(T<5):
    SI=(P*6*t)/100;
else:
```

Explanation

```
#To enter the principal amount
# To enter the time period in years.
```

```
SI=(P*6.5*T)/100;                    #To calculate the Simple Interest.
print("Simple interest is %f"%(SI));  # Displays the Simple interest.
```

d) Program Code:

```
#To display the colours of a rainbow
choice = int (input( "Enter your choice(1-7):" ));
if (choice == 1):          print("The colour is Violet");
elif(choice==2):           print("The colour is Indigo");
elif(choice==3):           print("The colour is Blue");
elif(choice==4):           print("The colour is Green");
elif(choice==5):           print("The colour is Yellow");
elif(choice==6):           print("The colour is Orange");
elif(choice==7):           print("The colour is Red");
else:                      print("Wrong choice");
```

9. Looping in Python

I. a)

```
i=1
while i <=10:
print i
i=i+1
```

b)

```
for i in range(1,11,1):
print i,
```

II. a)

'while' loop	'for' loop
(i) Syntax: while condition : Statement block 1 Statement block 2	(i) Syntax: for iterarting_var/target_list in sequence/expression_list: Statement(s)
(ii) It iterates till a condition is met.	(ii) It iterates for a preset number of times.
(iii) In the absence of a condition, while loop shows an error.	(iii) In the absence of a condition, for loop iterates for an infinite number of times till it reaches break command.

b)

Break statement	Continue statement
(i) It causes early termination of loop.	(i) It causes early execution of the next iteration.
(ii) It terminates the execution of the remaining iterations of the loop.	(ii) It terminates only the current iteration of the loop.
(iii) 'break' can be used with 'switch' and 'label'.	(iii) 'continue' can not be executed with 'switch' and labels'.

c)

Entry controlled loop	Exit controlled loop
(i) Entry controlled loop is a loop in which the test condition is checked first, and then the loop body is executed.	(i) Exit controlled loop is a loop in which the loop body is executed first and then the given condition is checked afterwards.
(ii) If the test condition is false, loop body will not be executed.	(ii) If the test condition is false, loop body will be executed at least once.
(iii) Examples of exit controlled loop include For Loop and While Loop.	(iii) An example of exit controlled loop is Do While Loop.

III. a) Iteration refers to the repetition of a process in a computer program till the given condition is satisfied. It is usually done with the help of loops. In fixed iteration the statement gets repeated for a fixed number of times. The control terminates after repeating the statement for a given number of times.

b) A program loop consists of two segments:

- Body of the loop: It contains the set of statements which will be executed within the loop simultaneously.
- Control statement: It tests certain conditions and if the condition is true, then it executes the statements present in the body of the loop.

c) A loop is a sequence of instructions that is continually repeated until a certain condition is reached. In python there are two types of loops: while loop and for loop.

d) Components of a loop:

- **Initialization:** It means setting the initial value of a loop.
- **Test condition:** It determines the repetition of the loop's body. The statement in the body of the loop executes only if the test condition is true, otherwise it terminates.
- **Increment/Decrement (Step value):** It determines the increasing or decreasing nature of the control variable unless the test condition is false.
- **Body of the loop:** A set of statement/s which is/are executed within the loop simultaneously.

e) A nested loop refers to a loop within a loop, an inner loop within the body of an outer one. Further, the first pass of the outer loop will initiate the inner loop, which will execute to completion. After that, the second pass of the outer loop will initiate the inner loop again. Example: nested while loop

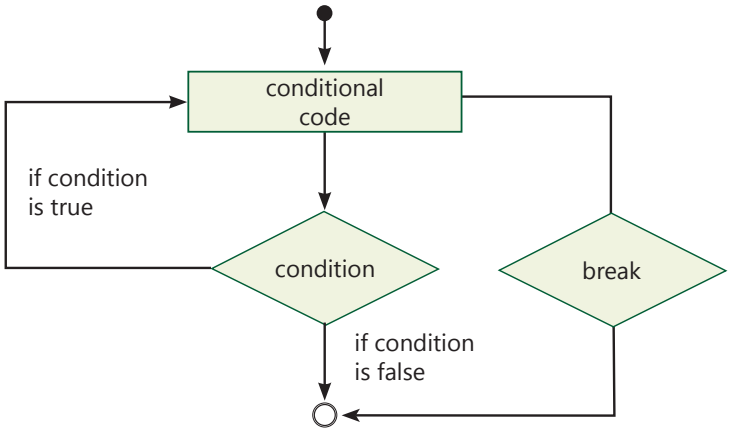
Syntax:

while expression: #outer loop

while expression: #inner loop

statement(s) statement (s)

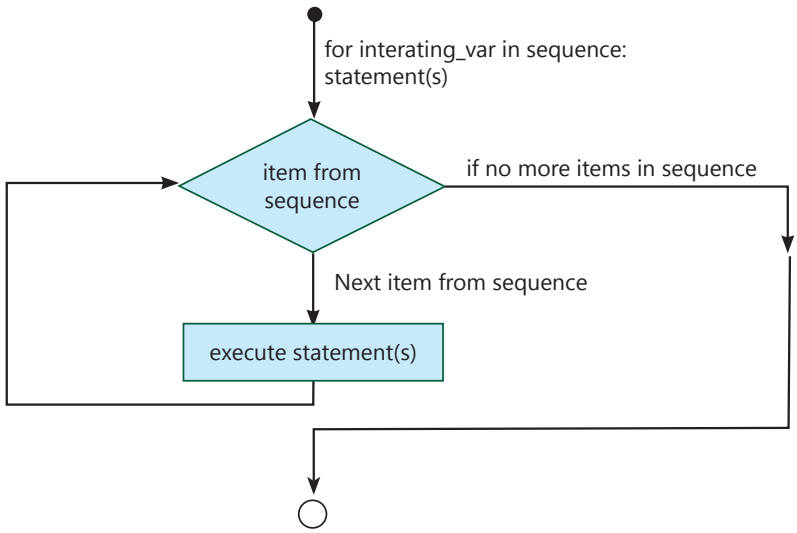
f)



Break statement is used to jump out of the conditional code unconditionally. It terminates the execution of the loop without even checking the condition.

g) 'for' loop has the ability to iterate over the items of any sequence, such as a list or a string.

Syntax: for iterating_var / target_list in sequence/expression_list: statement(s)



If a sequence contains an expression list, it is evaluated first. Then, the first item in the sequence is assigned to the iterating variable iterating_var. Next, the statement block is executed. Each item in the list is assigned to iterating_var, and the statement block is

executed until the entire sequence is exhausted.

h) In a nested loop, the break statement stops the execution of the innermost loop and starts executing the next line of code after blocking the innermost loop.

IV. a) To find the sum of all even numbers from 1 to 20.

```
i=2;
sum=0; while (i<20):
    if(i%2==0):
    sum=sum+i;
i=i+2;
print("Sum of even numbers from 1 to 20 is",sum);
```

b) To find the first ten multiples of any number.

```
n=int(input("enter a number"));
for i in range(1,11,1):
    prod=n*i;
    i=i+1;
    print(prod);
```

c) To find the sum of all odd numbers between 1 and 10.

```
i=1;
sum=0;
while (i<10):
    if(i%2!=0):
            sum=sum+i;
i=i+2;
print("Sum is",sum);
```

d) To find the factorial of a number entered by the user.

```
n=int(input("enter a number"));
fact=1;
for i in range(n,1,-1):
    fact=fact*i;
print("factorial is",fact);
```

e) To display integers from 1 to 50.

```
i=1;
print("All integers from 1 to 50 are as follows:"); while (i<=50):
    print(i);
    i=i+1;
```