DigiVerse

Teacher's Resource Manual & Answer Key

(**8**)

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CONTENTS

1. Computer Networking

Subject: Computer

Duration (Periods): 2

Lesson Name: Computer Networking

Overview: Computer networking is the practice of interconnecting multiple computing devices and systems to enable them to communicate and share resources.

Prior Knowledge: The students have the basic knowledge about computer networks.

Learning Outcomes:

At the end of the lesson, the student will be able to:

- understand computer network.
- differentiate between various networks.
- understand network architecture.

Teaching Aids:

- https://i.pinimg.com/564x/c1/cc/30/c1cc300d9a691e3a17a75d4431445464.jpg
- https://i.pinimg.com/originals/8d/ac/c2/8dacc21a3fd608499839b20ea0880409.gif

Learning Segments:

LESSON LINK **Time:** 05 minutes **Purpose:** Brief introduction/discussion to pique students' interest.	Greet the class and introduce the topic: • A computer network refers to a cluster of linked computer systems and peripheral devices. • The peripheral devices are used for establishing connections either through physical wired connections or wireless mediums among the computers within the network.
LESSON EXECUTION **Time:** 25 minutes **Purpose:** Engagement of both teacher and students to achieve the learning outcomes.	Period 1 • Explain the meaning of a computer network and its uses. • Discuss the advantages of a computer network and the various networking components. • Elaborate on the types of networks, network topologies and network architectures. • Explain the types of wireless networking technologies. • Discuss the various types of protocols. Period 2 • Read out the rubrics in the Skill Drill section and encourage the students to indulge in the task individually. • Ensure that each student has completed the task.

LESSON CLOSURE	• Discuss the answers to the questions.
Time: 05 minutes	• Recapitulate the topics discussed in the lesson.
Purpose: Summarising the key points and reinforcing the learning outcomes of the lesson.	

Answer Key [Chapter 1]

A. Tick (✓) the correct option.
   1. a. architecture
   2. c. Ethernet
   3. a. LAN
   4. b. node
   5. c. Wireless

B. Fill in the blanks using the words in the box.
   1. network
   2. PAN
   3. LAN
   4. TCP
   5. bus

C. Write T for True and F for False statements.
   1. F
   2. T
   3. T
   4. F
   5. T

D. Answer the questions in a few words.
   1. Router is a networking device that establishes connections between two or more networks, facilitating the exchange of data in packet form. It typically resides at the gateway, where two networks intersect.
   2. A Network Interface Card (NIC) serves as the physical connection point that links a computer to a network, enabling it to engage in network communication.
   3. Three types of topologies are: Bus topology, Ring topology and Star topology.
   4. A LAN, or Local Area Network, is a digital communication system that links a multitude of computers and various devices within a radius of 1 kilometer.
   5. UDP stands for User Datagram Protocol.

E. Answer the following questions.
   1. In a bus topology, all devices are linked to one main path. They use a single cable to connect. It's easy to manage and more devices can join anywhere on the main cable. However, finding problems in this setup is difficult.
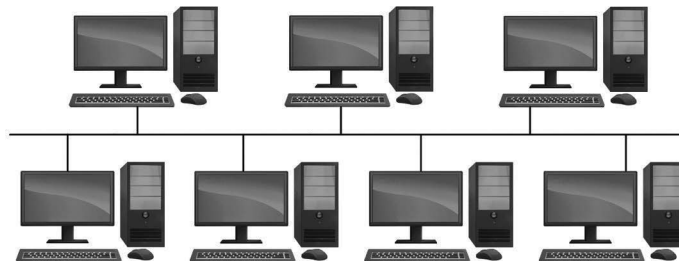
2. Network architecture defines the overall design of the computer network. There are two types of network architectures:
   - A client-server network is characterised by the connection of several computers, referred to as clients, to a central server. The server is responsible for overseeing access to hardware, software, and other resources. Clients have the ability to request services from the server within this network configuration.
   - In a peer-to-peer network, every connected computer shares equal responsibilities. Each computer has the capability to act as a server to share resources with others in the network. This network type lacks a central server; instead, each computer functions as both a server and a client.
3. A computer network refers to a cluster of linked computer systems and accompanying peripheral devices, with the potential for establishing connections either through physical wired connections or wireless mediums among the computers within the network.
   - Computer networks allow for the sharing of hardware resources like printers, scanners, and storage devices.
   - Users on a network can easily share files and documents, facilitating collaboration in both professional and personal settings
   - Networks enable real-time communication through email, instant messaging, video conferencing, and VoIP (Voice over Internet Protocol) services, connecting people globally.
   - Networks provide access to the Internet, allowing users to browse websites, access online services, and conduct research.
   - In businesses, computer networks centralise data storage and management, ensuring data consistency, security, and accessibility.
   - Networks enable remote access to resources and data, allowing users to work from different locations or access their home network while away.
4. A PAN, or Personal Area Network, is a network that is privately owned and operated by an individual. These networks can be either wired or wireless and serve as a means of communication among devices like laptops, smartphones, etc. The coverage range of a PAN typically spans less than 10 meters.

   CAN, or Campus Area Network, encompasses a confined geographical region and serves as the interconnection for multiple LANs within a specific institution.
5. Wireless networking technology eliminates the need for physical connections or wires to link computer devices. Data transmission relies on electromagnetic waves, including infrared, microwave, and radio waves. The selection of technology is based on factors like transmission distance and speed. Two prominent wireless technologies are:
   - Wi-Fi facilitates the utilization of LANs without the need for physical connections, leading to cost-effective network expansion.
   - Bluetooth technology facilitates wireless communication between low-power devices over a limited range.

2. Adobe Photoshop CC

Subject: Computer

Duration (Periods): 2

Lesson Name: Adobe Photoshop CC

Overview: Using various tools of Adobe Photoshop CC to edit images.

Prior Knowledge: The students understand the concept of editing or modifying images.

Learning Outcomes:

At the end of the lesson, the student will be able to:
- use various tools to edit images.
- change the image size and resolution.

Teaching Aids:
- https://i.pinimg.com/564x/a5/b5/b9/a5b5b9a97c30e6231890e381ae9ad512.jpg
- https://www.youtube.com/watch?v=KYO9hkji-JI

Learning Segments:

LESSON LINK **Time:** 05 minutes **Purpose:** Brief introduction/discussion to pique students' interest.	Greet the class and introduce the topic: • Adobe Photoshop CC (Creative Cloud) is the updated and advanced version of Photoshop for creating professional-level images, designs, graphics, paintings and 3D projects. • We can create and manipulate images using various elements, such as panels, bars, and windows.
LESSON EXECUTION **Time:** 25 minutes **Purpose:** Engagement of both teacher and students to achieve the learning outcomes.	Period 1 • Explain the features of Adobe Photoshop CC 2020. • Demonstrate the steps to open it. • Demonstrate the steps to create a new document and explain its components. • Explain the meaning of image size and resolution. • Demonstrate the method to select, crop or clone an image. • Demonstrate the steps to use the Text Tool, Brush Tool, Pencil Tool and Eraser Tool. Period 2s • Read out the rubrics in the Skill Drill section and encourage the students to indulge in the task individually. • Ensure that each student has completed the task.

LESSON CLOSURE	• Discuss the answers to the questions.
Time: 05 minutes	• Recapitulate the topics discussed in the lesson.
Purpose: Summarising the key points and reinforcing the learning outcomes of the lesson.	

Answer Key [Chapter 2]

A. Tick (✓) the correct option.
   1. a. Selection
   2. a. Adobe Sensei
   3. a. Rectangular Marquee
   4. b. pixels per inch
   5. c. Refine selection

B. Fill in the blanks using the words in the box.
   1. pixels
   2. Zoom
   3. crop
   4. image
   5. pencil

C. Write T for True and F for False statements.
   1. T
   2. F
   3. F
   4. T
   5. T

D. Answer the questions in a few words.
   1. The Type tool allows us to add text. There are two type tools: Horizontal Type and Vertical Type.
   2. Cloning means painting with an image sample. It is used to duplicate objects, remove image imperfections or paint over objects in the photo.
   3. The Smudge tool stimulates the effect you see when you drag a finger through wet paint. It picks up colour where the stroke begins and pushes it in the direction you drag.
   4. The background colour of an image can be changed by using the Set background color tool.
   5. Menu bar and Options bar are the components of the Adobe Photoshop interface.

E. Answer the following questions.
   1. Adobe Photoshop CC 2020 provides the following features:
       • It has tooltips which display text or video cues for using any tool.
       • We can easily copy and paste layers within a document and among documents.
       • We can use the selection tools to create high-quality cut-outs with detailed edges more quickly and easily.
       • We can remove an object from the scene entirely, and fill that area using the Content-Aware Fill option.
       • We can share and edit Photoshop files with collaborators and easily manage their feedback across web, desktop, and iPad apps without the need for additional tools.

2. A selection is an area of a photo that we define. When we create a selection, the area becomes editable.

    We can automatically select the main subject in a photo with just one click. Photoshop uses Adobe Sensei AI technology to identify a variety of subjects, including people, pets, animals, vehicles, and toys. The steps to select a subject from the image are:

    - Open a photo in the document window.
    - Choose Select > Subject.
    - Allow Photoshop a few seconds to automatically select the most prominent subject(s) in the photo. The selection will be visible with a moving, dotted line.

3. The steps to use the Clone Stamp tool are:
    - Select the Clone Stamp tool from the tools panel or press S.
    - Set options in the Options bar: Brush, Sample All Layers, Size, Opacity, Mode, Aligned.
    - Click on Clone Source and select the options: Show Overlay, Opacity, Clipped, Auto Hide, Invert.
    - Position the pointer on the part of any image that you want to sample, and press Alt and click. The tool duplicates the pixels at this sample point in your image as you paint.
    - Drag or click to paint with the tool on the other targeted image.

4. The components of the Adobe Photoshop window are:
    - Menu bar shows the File, Edit, Image and other menus that give you access to a variety of commands, adjustments, and panels.
    - Options bar displays options for the tool you are currently working with.
    - Tools bar contains tools for editing images and creating artwork. Similar tools are grouped together. You can access related tools in a group by clicking and holding a tool in the panel.
    - Color, Layers, Properties and other panels contain various controls for images. You can find the full list of panels under the Window menu.
    - Document window displays the file that you are currently working on. Multiple open documents show up in tabs in the Document window.

5. The Brush tool options are:
    - Airbrush Mode: Enables airbrush capabilities. This option applies gradual tones to an image, simulating traditional airbrush techniques.
    - Brush: Sets the brush tip. Click the arrow next to the brush sample, and choose a brush category from the Brush drop-down, and then select a brush thumbnail.
    - Size: Sets the size of the brush in pixels. Drag the Size slider or enter a size in the text box.
    - Opacity: Sets the opacity of the paint you apply. A low opacity setting allows pixels under a paint stroke to show through. Drag the slider, or enter an opacity value.
    - Mode: Specifies how the paint that you apply blends with the existing pixels in the image.

3. Adobe Photoshop CC: More Tools

Subject: Computer

Duration (Periods): 2

Lesson Name: Adobe Photoshop CC: More Tools

Overview: There are many advanced tools and features of Adobe Photoshop CC that can be used to modify the images.

Prior Knowledge: The students have basic knowledge of using Adobe Photoshop CC.

Learning Outcomes:

At the end of the lesson, the student will be able to:

- work on layers in Photoshop.
- use painting and retouching tools.
- create shapes.
- use navigation tools.

Teaching Aids:

- https://photoshop.adobe.com/discover?promoid=DZTGZSB9&mv2=cch&lang=en
- https://www.youtube.com/watch?v=3gxcIn8L__w

Learning Segments:

LESSON LINK **Time:** 05 minutes **Purpose:** Brief introduction/discussion to pique students' interest.	Greet the class and introduce the topic: • We can work on different layers in Photoshop. • Working on layers helps us to keep the original image intact.
LESSON EXECUTION **Time:** 25 minutes **Purpose:** Engagement of both teacher and students to achieve the learning outcomes.	Period 1 • Explain the meaning of a layer and its types. • Define the meaning of smart objects. • Demonstrate the steps to use various painting tools, retouching tools and navigation tools. • Demonstrate the steps to create different shapes. • List the keyboard shortcuts of Photoshop to the students. Period 2 • Read out the rubrics in the Skill Drill section and encourage the students to indulge in the task individually. • Ensure that each student has completed the task.

LESSON CLOSURE	• Discuss the answers to the questions.
Time: 05 minutes **Purpose:** Summarising the key points and reinforcing the learning outcomes of the lesson.	• Recapitulate the topics discussed in the lesson.

Answer Key [Chapter 3]

A. Tick (✓) the correct option.
1. b. Patch   2. a. Smudge   3. c. Color Sampler 4. a. Eyedropper
5. b. Hand

B. Fill in the blanks using the words in the box.
1. Blur   2. Ruler   3. Eyedropper   4. Layers
5. Smudge

C. Write T for True and F for False statements.
1. F   2. T   3. F   4. T
5. F

D. Answer the questions in a few words.
1. The Sharpen tool increases contrast along edges to increase apparent sharpness.
2. The Red Eye Tool is used to fix the red eye in a picture, which happens when the subject's retina is illuminated by the camera's flash.
3. The Pattern Stamp tool paints with a pattern. We can select a pattern from the pattern libraries or create our own patterns.
4. The Patch tool lets you repair a selected area with pixels from another area or a pattern.
5. The Magic Eraser Tool is used to erase similar coloured pixels in an image to transparency.

E. Answer the following questions.
1. Layers are like stacked, transparent sheets of glass on which you can paint images. You can see through the transparent areas of a layer to the layers below. You can work on each layer independently, experimenting to create the effect you want.
2. Follow these steps to use the Background Eraser tool:
   • In the Layers panel, select the layer containing the area you want to erase.
   • Select the Background Eraser tool.
   • Click on the brush sample in the Options bar, and set brush options in the pop-up panel.

- Do the following in the Options bar:
  - o Choose a Limits mode for erasing: Discontiguous to erase the sampled colour wherever it occurs under the brush; Contiguous to erase areas that contain the sampled colour and are connected to one another; and Find Edges to erase connected areas containing the sampled colour while better preserving the sharpness of shape edges.
  - o For Tolerance, enter a value or drag the slider. A low tolerance limits erasure to areas that are very similar to the sampled colour. A high tolerance erases a broader range of colours.
  - o Select Protect Foreground Color to prevent the erasure of areas that match the foreground colour in the toolbox.
  - o Choose a Sampling option, Continuous to sample colours continuously as you drag; Once to erase only areas containing the colour you first click; and Background Swatch to erase only areas containing the current background colour.
- Drag through the area you want to erase. The Background Eraser tool pointer appears as a brush shape (circle) with a cross hair (=) indicating the tool's hotspot.

3. We use navigation tools to quickly modify the view of images in Photoshop. The navigation tools are:
- Hand tool helps us scroll through the image on the canvas. We can also hold the Spacebar key for the same function. This tool is helpful when we are working on a magnified image or working with Lasso tool for selection.
- We use the Rotate View tool to rotate the canvas non-destructively. It does not transform the image. Rotating the canvas can be useful for any number of reasons, including facilitating easier painting or drawing.
- We can use the Zoom tool to zoom in or zoom out of an image. When we use the Zoom tool, each click magnifies or reduces the image to the next preset percentage and centres the display around the point you click. When the image has reached its maximum magnification level of 3200% or minimum size of 1 pixel, the magnifying glass appears empty.

4. Retouching tools are those tools in Photoshop that help us to quickly rectify the images. Some of the retouching tools are:
- Spot Healing Brush tool: It paints with sampled pixels from an image or pattern and matches the texture, lighting, transparency, etc. of the sampled pixels to the pixels being healed.
- Healing Brush tool: It helps to remove objects from a uniform background.
- Patch tool: It lets us repair a selected area with pixels from another area or a pattern.
- Content Aware Move tool: It is used to select and move a part of a picture. The image is recomposed, and the hole left behind is filled suing matching elements from the picture.

- Pattern Stamp tool: It paints with a pattern.
- Blur tool: It softens the hard edges or reduces detail in an image.
- Sharpen tool: It increases contrast along edges to increase apparent sharpness.
5. Smart Objects are layers that contain image data from raster or vector images, such as Photoshop or Illustrator files. Smart Objects preserve an image's source content with all its original characteristics, enabling you to perform non-destructive editing to the layer.

4. User Safety and Computer Security

Subject: Computer

Duration (Periods): 2

Lesson Name: User Safety and Computer Security

Overview: Some measures are to be followed to keep ourselves and our computer systems safe.

Prior Knowledge: Spending too much time on the computer system can lead to various health issues. Also, computers need to be maintained for their proper functioning.

Learning Outcomes:
At the end of the lesson, the student will be able to:
- maintain a computer.
- understand the meaning of unauthorised access.
- understand the concept of malware, viruses, antivirus and firewall.

Teaching Aids:
- https://i.pinimg.com/564x/61/a7/9d/61a79d3ef2c53e59b85d058cf441f053.jpg
- https://i.pinimg.com/564x/2a/ae/a9/2aaea97644cce1da55d6ed93f229672f.jpg

Learning Segments:

LESSON LINK **Time:** 05 minutes **Purpose:** Brief introduction/discussion to pique students' interest.	Greet the class and introduce the topic: • With the advancement of technology, the use of computers has increased, bringing about heightened health risks for numerous users. • As our dependence on computers grows for both easy and complex tasks, it exposes the devices to various potential threats.

LESSON EXECUTION **Time:** 25 minutes **Purpose:** Engagement of both teacher and students to achieve the learning outcomes.	**Period 1** • Discuss the meaning of RSI and the tips to avoid it. • Elaborate on the measures to minimize the risk of computer-related accidents. • Explain the method of maintaining the different devices of a computer. • Discuss the meaning of unauthorized access, security patches, IDS/IP and multi-factor authentication. • Define malware, computer viruses and their types. • Explain the meaning of antivirus and firewall. **Period 2** • Read out the rubrics in the Skill Drill section and encourage the students to indulge in the task individually. • Ensure that each student has completed the task.
LESSON CLOSURE **Time:** 05 minutes **Purpose:** Summarising the key points and reinforcing the learning outcomes of the lesson.	• Discuss the answers to the questions. • Recapitulate the topics discussed in the lesson.

Answer Key [Chapter 4]

A.   Tick (✓) the correct option.
   1.   c. Intrusion   2.   a. Ransomware   3.   a. One-Time Password
   4.   b. worm   5.   b. repetitive

B.   Fill in the blanks using the words in the box.
   1.   Trojan   2.   Master   3.   firewall   4.   Malware
   5.   Macro

C.   Write T for True and F for False statements.
   1.   F   2.   F   3.   F   4.   T
   5.   F

D.   Answer the questions in a few words.
   1.   Malware is a software program with the capability to install harmful software onto a computer system.
   2.   We can clean a mouse using a damp cotton cloth with minimal amount of water or cleaning solution to clean its surface.
   3.   A Trojan Horse disguises itself as a harmless file. However, when a user interacts with it, it reveals its true malicious nature and launches an attack on the system.

4. A protocol is a set of rules that computers follow to communicate in a network.
5. IDS stands for Intrusion Detection System. It employs potential indicators of intrusion to evaluate network traffic, identifying any unusual or suspicious activities.

E. Answer the following questions.
1. Antivirus software is a program designed to scan the computer system, detecting potential viruses and taking action to prevent system damage by removing these viruses. It serves as a protective measure against various forms of malware.
2. The types of computer viruses are:
   - File Infecting Virus: This type of virus targets executable files like .exe, .com, .sys, and similar program files, aiming to cause permanent damage by embedding itself within these files.
   - Macro Virus: This virus uses the macro language employed by software such as Microsoft Excel or Word. Its primary purpose is to infect and disrupt important data sorted within these types of files.
3. Malware is a software with the capability to install harmful software onto a computer system. It achieves this by obstructing access to computer resources and causing harm to the system through unauthorized access.
4. RSI stands for Repetitive Strain Injury. It is a condition caused by repetitive movements and overuse of certain muscles and tendons. It can affect anyone who performs repetitive tasks regularly, such as typing or using a computer for extended periods.
5. We can avoid computer-related accidents in the following ways:
   - Keep beverages at a safe distance from both computers and any associated wiring.
   - Conduct regular inspections of all electrical equipment to check for any signs of damaged plugs or cables.
   - Prevent children from playing on or with computer swivel chairs.
   - Position your computer in a location that allows you sufficient space to exit the room quickly in case of an emergency.
   - Avoid overloading electrical sockets by utilising multi-socket units instead of plug adapters.
   - Adhere to the installation and service instructions provided in the computer manual at all times.

5. Google Workspace

Subject: Computer

Duration (Periods): 2

Lesson Name: Google Workspace

Overview: We can use Google Workspace to organise all the data in one place.

Prior Knowledge: The students have basic knowledge about different types of files.

Learning Outcomes:

At the end of the lesson, the student will be able to:
- upload files to the drive.
- use Google Meet, Docs, Sheets, Slides, etc.
- import and share documents.

Teaching Aids:
- https://i.pinimg.com/564x/f7/b0/8b/f7b08bca16ef9f69287c99f887fffd28.jpg
- https://i.pinimg.com/564x/f7/f0/9b/f7f09b0e020e67d59f484e6e26e3c7fa.jpg

Learning Segments:

LESSON LINK **Time:** 05 minutes **Purpose:** Brief introduction/discussion to pique students' interest.	Greet the class and introduce the topic: • Google Workspace is a collection of productivity tools developed by Google. It offers applications like Gmail, Docs, Drive, etc. • Such applications facilitate remote work from any location and on various devices.
LESSON EXECUTION **Time:** 25 minutes **Purpose:** Engagement of both teacher and students to achieve the learning outcomes.	Period 1 • Explain the usage of various applications such as Gmail, Google Drive, Google Meet, Google Docs, Google Sheets and Google Slides. • Demonstrate the method of sharing and collaborating on files. • Discuss the various features of Google Drive and Google Meet. Period 2 • Read out the rubrics in the Skill Drill section and encourage the students to indulge in the task individually. • Ensure that each student has completed the task.
LESSON CLOSURE **Time:** 05 minutes **Purpose:** Summarising the key points and reinforcing the learning outcomes of the lesson.	• Discuss the answers to the questions. • Recapitulate the topics discussed in the lesson.

A. Tick (✓) the correct option.
1. a. Gmail 2. b. search engine 3. b. Open file picker
4. c. Google Docs

B. Fill in the blanks using the words in the box.
1. Gmail 2. Bin 3. Workspace 4. Leave

C. Write T for True and F for False statements.
1. T 2. F 3. F 4. T

D. Answer the questions in a few words.
1. Sundar Pichai is the CEO of Google.
2. Google Drive provides a unified space to store all the work and view various file formats without the need for additional software purchases. It allows seamless access to your files from any device, accommodating various file types like images, drawings, videos, etc.
3. The different file formats available to download a file are: Microsoft Excel (.xlsx), Open Document (.ods), PDF (.pdf), Comma-separated values (.csv) and Tab-separated values (.tsv).
4. The features of Google Drive are:
   • File Storage: Google Drive provides cloud-based storage, allowing users to store documents, images, videos, and other types of files securely in the cloud.
   • Cross-Platform Compatibility: It is accessible from various devices and platforms, including web browsers, Android, iOS, and desktop applications.

E. Answer the following questions.
1. The steps to stop sharing a file or folder are:
   • Find the shared file or folder in Google Sheets.
   • Click on the Share button.
   • Find the email address to stop sharing the file or folder with.
   • To the right of their name, click the Down arrow and then select the Remove option from the pop-up menu.
   • To save the changes, click on the Save button.
2. Some features of Google Meet are:
   • HD Video and Audio: Google Meet provides high-definition video and audio quality for clear and crisp communication.
   • Screen Sharing: Users can share their screens with meeting participants, making it easy to showcase presentations, documents, and applications.
   • Integration with Google Calendar: Meetings can be scheduled and integrated with Google Calendar, allowing users to send invitations and set reminders.
   • Recording: Meetings can be recorded for later reference or for participants who couldn't attend the live session. Recorded meetings are saved to Google Drive.

- Live Captions: Google Meet offers live captioning for improved accessibility and better understanding during meetings.
- Chat: Participants can send text messages in the chat panel during a meeting for real-time communication without interrupting the speaker.
- Participant Controls: Hosts have control over the meeting, including the ability to mute participants, remove participants, and manage access permissions.

3. We can right-click on a file and select the Remove option to delete it. Removing a file moves it to the Bin:
   - If you own the file, moving it to the Bin removes it from My Drive. The file is permanently deleted after 30 days in the Bin. If you shared the file, those people can still see the file until it is deleted.
   - If you do not own the file (if it has been shared with you), moving it to the Bin removes it from My Drive, but the file will not be deleted because only the owner can delete the file.

4. The meeting controls in Google Meet are:
   - Grouped controls offer additional space for both participants and content.
   - The control names are displayed when you hover the mouse over them.
   - The Leave meeting button is positioned on the right side, away from the camera and microphone buttons, to avoid accidental hang-ups.
   - Captions and participant tiles are shown above the bottom bar.

6. Current Web Development Trends

Subject: Computer

Duration (Periods): 2

Lesson Name: Current Web Development Trends

Overview: Learning about emerging trends in web development.

Prior Knowledge: The students are familiar with the concept of websites.

Learning Outcomes:

At the end of the lesson, the student will be able to:
- understand the meaning of PWA and AMP.
- learn about voice search optimisation.
- recognise the benefits of push notifications and dark mode.

Teaching Aids:
- https://i.pinimg.com/564x/2f/c9/6a/2fc96ab74cdcaf2fc7cc6d93975d4d23.jpg
- https://i.pinimg.com/564x/d1/50/3b/d1503b617abf6a589f79177f7f1373a0.jpg

Learning Segments:

LESSON LINK **Time:** 05 minutes **Purpose:** Brief introduction/discussion to pique students' interest.	Greet the class and introduce the topic: • Web development is the process of building and sustaining websites. • It involves important components such as web design.
LESSON EXECUTION **Time:** 25 minutes **Purpose:** Engagement of both teacher and students to achieve the learning outcomes.	<u>Period 1</u> • Discuss the meaning of web development. • Explain the meaning of PWA, AMP, voice search optimisation, push notifications, motion UI, dark mode, automation testing and point out their benefits. • Use placards to show the difference between dark mode and light mode in the class. <u>Period 2</u> • Read out the rubrics in the Skill Drill section and encourage the students to indulge in the task individually. • Ensure that each student has completed the task.
LESSON CLOSURE **Time:** 05 minutes **Purpose:** Summarising the key points and reinforcing the learning outcomes of the lesson.	• Discuss the answers to the questions. • Recapitulate the topics discussed in the lesson.

Answer Key [Chapter 6]

A. Tick (✓) the correct option.
   1. b. Motion UI   2. c. native apps   3. b. optimization   4. c. Dark Mode
   5. a. Push

B. Fill in the blanks using the words in the box.
   1. AMP   2. web development 3. Automation   4. Motion
   5. dark

C. Write T for True and F for False statements.
   1. F   2. T   3. F   4. F
   5. T

D. Answer the questions in a few words.
   1. PWA stands for Progressive Web Apps.

2. The practice of conducting software testing with minimal or no human intervention, aiming for increased efficiency, is referred to as automation testing.
3. The benefits of voice search optimisation are:
   • Enhances the effectiveness of local SEO campaigns.
   • Facilitates instant responses to customer inquiries.
   • Strengthens customer trust and fosters loyalty.
4. Web development is the process of building and sustaining websites, involving vital components like web design, web publishing, web programming, and database management.
5. Dark mode refers to use of a dark background colour in website designing, while the text and other user interface (UI) elements are in light colour.

E. Answer the following questions.
1. The benefits of dark mode:
   • Reduced Eye Strain: Dark mode significantly reduces eye strain, making it more comfortable for users to view content, especially in low-light conditions.
   • Lower Battery Consumption: When compared to light mode with the same screen brightness, dark mode consumes less battery power, contributing to extended device battery life.
   • Accessibility: Dark mode is particularly beneficial for individuals with visual impairments or sensitivity to bright light, as it offers a more comfortable and accessible viewing experience.
   • Limited Blue Light Emission: Dark mode typically emits less blue light, which can help mitigate the potential adverse effects associated with prolonged blue light exposure, such as disruptions to sleep patterns and eye discomfort.
2. Motion UI refers to a front-end framework utilised in crafting highly responsive web designs. This technology empowers developers to incorporate motion elements within a native app environment. It offers a set of predefined motion effects that can be seamlessly integrated into various design projects.
3. PWA is a category of application software which is developed using standard web technologies like HTML and JavaScript. Some benefits of PWA are:
   • Development expenses are low.
   • Not reliant on app distribution platforms like App Store or Play Store.
   • Swift installation and automatic updates.
4. AMP-optimised mobile pages are aim to enhance the speed of mobile page loading. The benefits of AMP are:
   • Effortless optimisation for search engines.
   • Compatibility with all web browsers.
   • No need for sitemaps to gain recognition from search engines.
5. Push notifications are interactive pop-up messages that appear while a user is browsing the Internet. They serve as a convenient and engaging communication method for companies to deliver offers and messages. These notifications are compatible with various devices, including laptops, smartphones and tablets.

7. Advanced Tags in HTML5

Subject: Computer

Duration (Periods): 2

Lesson Name: Advanced Tags in HTML5

Overview: Learning about various advanced tags in HTML5 to create web pages.

Prior Knowledge: The students are familiar with basic tags in HTML5.

Learning Outcomes:

At the end of the lesson, the student will be able to:
- insert an image in a web page.
- link web pages.
- insert audio and video in a web page.
- create forms in a web page.

Teaching Aids:
- https://i.pinimg.com/564x/08/5d/db/085ddbaddc503f0a44ef56ed0f0268d3.jpg
- https://www.javatpoint.com/how-to-create-a-form-in-html

Learning Segments:

LESSON LINK **Time:** 05 minutes **Purpose:** Brief introduction/discussion to pique students' interest.	Greet the class and introduce the topic: • We can use various tags to enhance the look of the web page. • We can insert images, audios, videos, forms, etc. in a web page.
LESSON EXECUTION **Time:** 25 minutes **Purpose:** Engagement of both teacher and students to achieve the learning outcomes.	Period 1 • Demonstrate the way to insert images, audios and videos in a web page. • Explain and elaborate on the method of linking web pages. • Demonstrate the usage of various tags to create a form in HTML. Period 2 • Read out the rubrics in the Skill Drill section and encourage the students to indulge in the task individually. • Ensure that each student has completed the task.

LESSON CLOSURE	• Discuss the answers to the questions.
Time: 05 minutes	• Recapitulate the topics discussed in the lesson.
Purpose: Summarising the key points and reinforcing the learning outcomes of the lesson.	

Answer Key [Chapter 7]

A. Tick (✓) the correct option.

    1. b. website   2. a. <LABEL>   3. c. Anchor   4. b. hyperlink

B. Fill in the blanks using the words in the box.

    1. <IFRAME>   2. webpages   3. hyperlink   4. <AUDIO>

    5. <SELECT>

C. Write T for True and F for False statements.

    1. F   2. T   3. T   4. T

    5. F

D. Answer the questions in a few words.

    1. The NAME attribute in the <INPUT> tag is used to indicate the name of the field on the web page.

    2. The FOR attribute defines the name of the field when used with the <LABEL> tag.

    3. The TYPE attribute is used to specify the type of field to create in the form.

    4. The VALUE attribute specifies the default value of the field.

E. Answer the following questions.

    1. Internal linking in HTML is used to create hyperlinks that direct users to specific sections within the same document or web page. This is particularly useful when the document contains multiple headings. By clicking on a specific heading, users can instantly access the related information on the same web page.

    2. The attributes of the <IFRAME> tag are:

      • SRC: Specifies the source URL of the content to be inserted into the web page.

      • HEIGHT: Determines the height of the frame.

      • WIDTH: Sets the width of the frame.

      • NAME: Specifies the name of the frame.

    3. The anchor tag <A> is used to create hyperlinks in web pages. It is a container tag where the linked text can be either an image or regular text. <A> Hyperlink </A> is the format of the anchor tag.

4. There are several CSS properties which can be applied to hyperlinks to change the appearance, such as:
   - a:link defines the style for an unvisited link.
   - a:visited defines the style for a visited link.
   - a:hover changes the appearance of the link when the user hovers the mouse over it.
   - a:active changes the appearance of the link when the user clicks on it.
5. Forms in HTML are used to collect information from users through different fields. They serve various purposes like registration, login and feedback. In HTML, the <FORM> tag creates a boundary or border for a form on a web page. It serves as a container and requires both an opening tag <FORM> and a closing tag </FORM>. This tag includes the following attributes:
   - ACTION: Specifies the action to be performed after the form values are submitted. It often denotes the email or URL of another web page to receive information.
   - METHOD: Determines the technique that will be used to handle the values entered in the various fields of the form.

8. Python Loops

Subject: Computer

Duration (Periods): 2

Lesson Name: Python Loops

Overview: Looping statements are used to repeat a set of instructions.

Prior Knowledge: The students are familiar with the concept of loops.

Learning Outcomes:
At the end of the lesson, the student will be able to:
- understand for and while loops.
- create programs using different loops.

Teaching Aids:
- https://www.w3schools.com/python/python_for_loops.asp
- https://www.w3schools.com/python/python_while_loops.asp

Learning Segments:

LESSON LINK	Greet the class and introduce the topic:
Time: 05 minutes **Purpose:** Brief introduction/discussion to pique students' interest.	• Looping statements in Python are used to execute a set of instructions repeatedly to achieve a specific outcome. • Looping statements are also known as iterative statements.

LESSON EXECUTION **Time:** 25 minutes **Purpose:** Engagement of both teacher and students to achieve the learning outcomes.	**Period 1** • Explain the two types of loops in Python, i.e., for loop and while loop. • Write the syntax of for and while loops on the board. • Discuss the usage of jump statement. **Period 2** • Read out the rubrics in the Skill Drill section and encourage the students to indulge in the task individually. • Ensure that each student has completed the task.
LESSON CLOSURE **Time:** 05 minutes **Purpose:** Summarising the key points and reinforcing the learning outcomes of the lesson.	• Discuss the answers to the questions. • Recapitulate the topics discussed in the lesson.

Answer Key [Chapter 8]

A. Tick (✓) the correct option.
   1. a. range   2. b. break   3. a. while   4. b. for

B. Fill in the blanks using the words in the box.
   1. range   2. for   3. false   4. break
   5. Infinite

C. Write T for True and F for False statements.
   1. T   2. T   3. T   4. T
   5 . T

D. Answer the questions in a few words.
   1. The while statement is used to repetitively execute a group of statements as long as the logical expression evaluates to true. As soon as the expression becomes false, the loop terminates.
   2. An infinite loop is created when the loop condition never evaluates to false, the loop remains in operation indefinitely, resulting infinite loop that does not terminate.
   3. The break statement is used to exit the current loop prematurely and continue with the next part of the program outside the loop.
   4. The range () function is an integral part of Python's built-in functions. It serves the purpose of generating a sequential list of values. This sequence is created based on the specified instructions or parameters provided to the range () function.

5. The continue statement is used to skip the current iteration of a loop and proceed directly to the next iteration, bypassing the remaining code within the current iteration.

E. Answer the following questions.
1. The syntax for the continue statement is:
   #Loop Statements
   continue
   #Code to be skipped
2. The syntax for while loop is:
   while <test expression>:
   Statements
3. The syntax for range () function is:
   - range (n): It generates a list of whole numbers from 0 till (n-1).
   - range (start, stop): It generates a list of whole numbers according to the specified start and end points.
   - range (start, stop, step_size): By default, the step_size is set to 1, indicating that each subsequent number in the list will advance by the step_size of 1 number. However, we have the flexibility to specify the values according to our specific requirements.
4. Looping statements allow us to repeat a block of code until a certain condition is met, making them fundamental for controlling program flow and achieving various tasks efficiently. There are two types of looping statements in Python: for loop and while loop.

9. Python: Function and Strings

Subject: Computer

Duration (Periods): 2

Lesson Name: Python: Function and Strings

Overview: Python is a versatile, high-level programming language with a broad range of applications.

Prior Knowledge: The students have the basic knowledge of creating Python programs.

Learning Outcomes:

At the end of the lesson, the student will be able to:
- understand various functions in Python.
- use strings in Python.

Teaching Aids:
- https://www.w3schools.com/python/python_functions.asp
- https://www.w3schools.com/python/python_strings.asp

Learning Segments:

LESSON LINK **Time:** 05 minutes **Purpose:** Brief introduction/discussion to pique students' interest.	Greet the class and introduce the topic: • A function is a distinct section of code that is executed only when it is invoked or called. • A string is a sequential collection of characters enclosed within either a single (' ') or double (" ") quotation marks.
LESSON EXECUTION **Time:** 25 minutes **Purpose:** Engagement of both teacher and students to achieve the learning outcomes.	Period 1 • Discuss the characteristics and components of Python functions. • Explain the different categories of functions. • Elaborate on the types of strings and string operators. Period 2 • Read out the rubrics in the Skill Drill section and encourage the students to indulge in the task individually. • Ensure that each student has completed the task.
LESSON CLOSURE **Time:** 05 minutes **Purpose:** Summarising the key points and reinforcing the learning outcomes of the lesson.	• Discuss the answers to the questions. • Recapitulate the topics discussed in the lesson.

Answer Key [Chapter 9]

A. Tick (✓) the correct option.
   1. a. Built-in   2. c. traversing   3. a. built-in

B. Fill in the blanks using the words in the box.
   1. User-defined   2. Concatenation   3. traversing   4. replication

C. Write T for True and F for False statements.
   1. T   2. F   3. F   4. T
   5. T

D. Answer the questions in a few words.
1. The upper () function converts the letters in the string to uppercase.
2. The capitalize () function capitalizes the first letter of the string.
3. The len () function returns the length of a string.
4. The lower () function converts the letters in the string to lowercase.
5. The escape sequence \\ adds a blackslash.

E. Answer the following questions.
1. Traversing refers to visiting each element and performing the necessary operations within a program. In Python, accessing a string character by character is achieved through indexing. There are two methods to traverse a list:
   - Indexing with positive integers: The index starts from the left, beginning with 0.
   - Index with negative integers: The index starts from the right, beginning with -1.
   Syntax: <name of string> [index]
2. An escape sequence is a sequence of characters that is interpreted as a different character or a series of characters when it is used within a string. Escape sequences are used when it is challenging to represent certain characters directly. In Python, these escape sequences are defined by placing a backslash.
3. The components of Python functions are:
   - Name: The function should have a unique and easily understandable name.
   - Arguments: These are inputs provided to the function. A function may have zero or more arguments.
   - Statements: These are the executable instructions within the function.
   - Return Value: A function may not yield a result as its output.
4. Python functions can be categorised into two types:
   - Built-in functions: The built-in category encompasses functions like print(), input(), range(), type(), and many others. Built-in functions are pre-existing functions that come predefined in Python, and developers do not need to create them from scratch when writing a program. These functions provide essential functionality and simplify various programming tasks.
   - User-defined Functions: User-defined functions are created by the programmer to meet the specific needs of a program. These functions are categorized into three types based on their parameters and return type:
   - Type 1 Functions: Type 1 functions do not accept any parameters as input and do not return any value.
   - Type 2 Functions: Type 2 functions accept parameters as input but do not return any value.
   - Type 3 Functions: Type 3 functions accept parameters as input and return a value as their output.
5. A string is a sequential collection of characters enclosed within either a single (' ') or double (" ") quotation marks. This sequence can consist of letters, numbers, special characters, or backslashes, allowing for a wide range of textual data representations in programming.

10. AI Domains

Subject: Computer

Duration (Periods): 2

Lesson Name: AI Domains

Overview: Artificial Intelligence represents the intelligence demonstrated by machines.

Prior Knowledge: The students are familiar with the concept of AI and devices that use AI.

Learning Outcomes:

At the end of the lesson, the student will be able to:

- understand the domains of AI.
- recognise the usage of AI in various fields.
- learn ethical usage of AI.

Teaching Aids:

- https://www.almabetter.com/bytes/articles/domains-of-ai
- https://i.pinimg.com/564x/fc/c7/f0/fcc7f0238cbcacc69407f13553a1dc5c.jpg

Learning Segments:

LESSON LINK **Time:** 05 minutes **Purpose:** Brief introduction/discussion to pique students' interest.	Greet the class and introduce the topic: • The tasks that required human intervention can now be effortlessly executed by computer systems. • There are various domains of AI.
LESSON EXECUTION **Time:** 25 minutes **Purpose:** Engagement of both teacher and students to achieve the learning outcomes.	Period 1 • Discuss the various domains of AI such as machine learning, deep learning, natural language processing, computer vision, data science, AI and health, etc. • Explain the implementations of AI. • Elaborate on the ethical principles for the use of AI. Period 2 • Read out the rubrics in the Skill Drill section and encourage the students to indulge in the task individually. • Ensure that each student has completed the task.

LESSON CLOSURE **Time:** 05 minutes **Purpose:** Summarising the key points and reinforcing the learning outcomes of the lesson.	• Discuss the answers to the questions. • Recapitulate the topics discussed in the lesson.

Answer Key [Chapter 10]

A. Tick (✓) the correct option.
  1. a. NLP
  3. c. Machine learning
  2. c. Data science
  4. a. Computer vision

B. Fill in the blanks using the words in the box.
  1. NLP
  2. vision
  3. Deep
  4. Machine

C. Write T for True and F for False statements.
  1. F
  2. T
  3. F
  4. F
  5. T

D. Answer the questions in a few words.
  1. Machine learning empowers software applications to enhance their predictive accuracy without the need for explicit programming.
  2. Data science is used for deriving valuable insights from the data.
  3. Computer vision is used for data collection, model learning, model training, deployment, feature extraction, etc.
  4. NLP stands for Natural Language Processing.
  5. Deep learning is a subset of machine learning, characterized by neural networks comprising three or more layers.

E. Answer the following questions.
  1. Natural Language Processing (NLP) refers to the computational handling of the language that humans use for communication. It involves the study of computer-human language interactions. Within the realm of Natural Language Processing, human language is dissected to analyse sentence grammatical structures and word meanings, breaking them down into components that allow for contextual comprehension. NLP empowers computers to read and comprehend spoken or written text in a manner akin to human understanding. Prominent examples of NLP in action include virtual assistants like Alexa, Siri, and Cortana.
  2. Two domains of AI are:
     • Computer vision empowers computers and machines to extract valuable insights from digital images, videos and other visual inputs, enabling them to take actions and make decisions based on this information.

- Data science is the discipline centered on studying data, applying mathematical and statistical principles to different data types, including audio, visual, or textual data. It encompasses tasks like data collection, data management, and deriving valuable insights from data.

3. Artificial Intelligence, often referred to as AI, represents the intelligence demonstrated by machines. Tasks that previously required human intervention can now be effortlessly executed by computer systems.

4. The ethical principles of AI are:
   - **Transparency** is key, as it fosters trust. AI systems should be designed to provide clear explanations for their decisions, making their inner workings understandable to users and stakeholders. This transparency helps identify and rectify biases and discriminatory practices, aligning with the principle of fairness. Developers must strive to create AI algorithms that are unbiased and equitable, avoiding the perpetuation of harmful stereotypes.
   - **Privacy** is paramount. Safeguarding individuals' data and ensuring that AI respects privacy rights are essential ethical principles. This includes obtaining informed consent when collecting and using personal data for AI applications. Accountability is another pillar, holding developers and users responsible for AI system behavior and outcomes.
   - **Safety** must never be compromised. AI systems should undergo rigorous testing to prevent harm to users and society. Beneficence and non-maleficence principles guide developers to use AI for the greater good while avoiding harm.
   - **Accessibility** ensures that AI technology benefits everyone, regardless of disabilities or socioeconomic status. Finally, governance is crucial, as clear guidelines and regulations are needed to oversee AI's responsible development and use, safeguarding society's interests.

5. The implementations of computer vision are:
   - Data Collection: Gather visual data (images, videos).
   - Data Preprocessing: Clean, normalize, and handle noise.
   - Feature Extraction: Identify relevant patterns.
   - Image Understanding: Use computer vision algorithms.
   - Machine Learning: Train models (e.g., CNNs, RNNs).
   - Model Training: Use labeled data for training.
   - Model Evaluation: Assess performance (accuracy, etc.).
   - Deployment: Integrate into the target application or system.
   - Real-time Processing: Optimize for real-time use.
   - Feedback Loop: Monitor, collect feedback, and improve.
   - Maintenance/Updates: Regularly update models.
   - Security/Privacy: Address data security and privacy.
   - Scalability: Design for increasing data volumes.
   - Documentation/Testing: Document, and test thoroughly.
   - User Interface: Create a user-friendly interface.

Worksheet 1

A. Define the following.

1. In the tree topology, all connected nodes look like branches of a tree, with a main central node acting as the root. It's simple to add new nodes or get rid of ones that aren't working properly. However, if the main root node has a problem, the whole network can stop working.

2. Resolution is the amount of image data in a given space. It is measured in pixels per inch (ppi). The more the pixels per inch, the greater the resolution. Generally, the higher the resolution of your image, the better is the printed image quality. Resolution determines the fineness of detail you can see in an image.

3. Smart objects are layers that contain image data from raster or vector images, such as Photoshop or Illustrator files. Smart objects preserve an image's source content with all its original characteristics, enabling you to perform non-destructive editing to the layer.

4. In a peer-to-peer network, every connected computer shares equal responsibilities. Each computer has the capability to act as a server to share resources with others in the network. This network type lacks a central server; instead, each computer functions as both a server and a client.

5. A MAN, or Metropolitan Area Network, surpasses the scale of a LAN. It comprises two or more LANs distributed throughout a city, hence the term "metropolitan network" as it covers urban or town areas. A prime illustration of a MAN is the network operated by a telephone company.

B. Write the steps in brief.

1. Layers panel > Background Eraser Tool > Options bar > Drag on the area to erase
2. Toolbar > Horizontal/Vertical Type Tool > Click on the image > Options bar > Type > Commit
3. Toolbar > Pattern Stamp > Brush Presets > Options bar > Aligned > Pattern > Impressionist > Drag on the area to paint
4. Toolbar > Crop Tool > Ratio > W x H x Resolution > Drag over the image to crop
5. Toolbar > Select a Shape tool > Drag the cursor on canvas > Edit > Free Transform Path

C. Application-based questions.

1. Blur Tool
2. Spot Healing Brush Tool

Worksheet 2

A. Define the following.

1. A boot-sector virus is designed to infect the Master Boot Record (MBR) of hard disks. When an infected disk is connected to a computer system, it can transmit the virus to that disk as well.

2. Google sheet allows us to generate and modify spreadsheets directly within a web browser, eliminating the need to install any software. It supports real-time collaboration, enabling multiple individuals to work concurrently on the same file.
3. RSI stands for Repetitive Strain Injury. It is a condition caused by repetitive movements and overuse of certain muscles and tendons. It can affect anyone who performs repetitive tasks such as typing or using a computer for extended periods.
4. Ransomware is a form of malware that encrypts critical data belonging to individuals or organisations and offers access to it in exchange for a ransom payment.
5. Security patches serve the purpose of addressing vulnerabilities within software, operating systems, and similar components that attackers could exploit to breach a device and access its data.

B. Write the steps in brief.
1. Select the file > Share > Enter mail address > Viewer/Commenter/Editor > Notify people > Send
2. Click on Untitled presentation > Type the new name
3. Docs > Open file picker > Open a file > Upload > Browse
4. Log in to Gmail > Google Apps > Meet
5. Browse the shared file > Open file/folder > Share > Click on email address > Remove > Save

C. Application-based questions.
1. In Google Meet, real-time collaboration is provided through various features such as HD Video and Audio, Screen Sharing, Recording, Live Captions, Chat, Waiting Rooms, etc.
2. The 'Share' feature in Google Docs allows us to see the edits or changes by another author in real-time.

Test Paper 1

A. Tick (✓) the correct option.
1. a. Eye Dropper   2. b. node   3. a. Adobe Sensei
4. b. search engine   5. a. Ransomware

B. Fill in the blanks.
1. Crop   2. TCP/IP   3. Blur   4. Master
5. Gmail

C. Write T for True and F for False statements.
1. F   2. T   3. T   4. T
5. T

D. Answer the questions in a few words.
1. Trojan Horse is a malware that disguises itself as a harmless file. However, when a user interacts with it, it reveals its true malicious nature and launches an attack on the system.
2. Cloning is done through the Clone Stamp Tool which paints with an image sample that we can use to duplicate objects, remove image imperfections or paint over objects in your photo.
3. NIC stands for Network Interface Card. It is serves as the physical connection point that links a computer to a network, enabling it to engage in network communication.
4. Red eye is a common issue that occurs when the subject's retina is illuminated by the camera's flash in the photo. Red Eye Tool is used to rectify this issue.
5. Google Drive provides a unified space to store all your work and view various file formats without the need for additional software purchases. It allows seamless access to your files from any device, accommodating various file types like images, drawings, videos, and more. When you store a file in Google Drive on one device, it automatically becomes accessible on all your other devices.

E. Answer the following questions.
1. In the ring topology setup, all the connected nodes form a circle for the data to move around. Each node connects to precisely two other nodes. Messages move either clockwise or anti-clockwise. If any cable or device gets damaged, the whole network can stop working.
2. You can specify any of the following Pencil tool options:
   - Brush Tip: Sets the tip. Click the arrow next to the brush sample, and choose a brush category from the Brush drop-down, and then select a brush thumbnail.
   - Size: Sets the size of the brush in pixels. Drag the Size slider or enter a size in the text box.
   - Opacity: Sets the opacity of the paint you apply. A low opacity setting allows pixels under a paint stroke to show through. Drag the slider, or enter an opacity value.
   - Mode: Specifies how the paint that you apply blends with the existing pixels in the image.
   - Auto Erase: If you begin drawing and drag over an area that does not contain the foreground colour, the tool paints with the foreground colour. That is, if we start with a colour other than the foreground colour, it only paints the foreground colour. Click and paint on the areas containing the foreground colour, pencil paints with the background colour.
3. Retouching tools are those tools in Photoshop that help us to quickly rectify the images. Some of the retouching tools are:
   - Spot Healing Brush tool: It paints with sampled pixels from an image or pattern and matches the texture, lighting, transparency, etc. of the sampled pixels to the pixels being healed.
   - Healing Brush tool: It helps to remove objects from a uniform background.

- Patch tool: It lets us repair a selected area with pixels from another area or a pattern.
- Content Aware Move tool: It is used to select and move a part of a picture. The image is recomposed, and the hole left behind is filled using matching elements from the picture.
- Pattern Stamp tool: It paints with a pattern.
- Blur tool: It softens the hard edges or reduces detail in an image.
- Sharpen tool: It increases contrast along edges to increase apparent sharpness.

4. Malware is a software program with the capability to install harmful software onto a computer system. It achieves this by obstructing access to computer resources and causing harm to the system through unauthorised access. There are different types of malware such as worms, Trojan Horse, Ransomware, Spyware, Rootkit, etc.

5. The meeting controls in Google Meet are:
- Grouped controls offer additional space for both participants and content.
- The control names are displayed when you hover the mouse over them.
- The Leave meeting button is positioned on the right side, away from the camera and microphone buttons, to avoid accidental hang-ups.
- Captions and participant tiles are shown above the bottom bar.

Worksheet 3

A. Define the following.

1. Push notifications are interactive pop-up messages that appear while a user is browsing the Internet. They serve as a convenient and engaging communication method for companies to deliver offers and messages. These notifications are compatible with various devices, including laptops, smartphones and tablets.

2. The anchor tag <A> is used to create hyperlinks in web pages. It is a container tag where the linked text can be either an image or regular text. <A> Hyperlink </A> is the format of the anchor tag.

3. Motion UI refers to a front-end framework utilised in crafting highly responsive web designs. This technology empowers developers to incorporate motion elements within a native app environment. It offers a set of predefined motion effects that can be seamlessly integrated into various design projects.

4. Jump statements in Python are commands that allow us to exit a loop, commence the next iteration of a loop, or transfer program control to a specified location.

5. AMP stands for Accelerated Mobile Pages. AMP-optimised mobile pages load at a faster speed compared to non-AMP pages.

B. Write the syntax for the following.

1. `<A> Hyperlink </A>`
2. `<INPUT ATTRIBUTE="VALUE" ID="VALUE" NAME="VALUE">`
3. ```
while <test expression>:
        Statements
```

```
4.  <TEXTAREA ROWS="3" COLS="10">
5.  <SELECT>
    <OPTION> Option 1 </OPTION>
    <OPTION> Option 2 </OPTION>
    <OPTION> Option 3 </OPTION>
    </SELECT>
```

C. Application-based questions.
    1. `<IFRAME>` tag is used to display multiple web pages within a single browser window.
    2. The attributes of the anchor tag are HREF and TARGET.

Worksheet 4

A. Define the following.
    1. A string is a sequential collection of characters enclosed within either a single (' ') or double (" ") quotation marks. This sequence can consist of letters, numbers, special characters, or backslashes, allowing for a wide range of textual data representations in programming.
    2. Natural Language Processing (NLP) refers to the computational handling of the language that humans use for communication.
    3. An escape sequence is a sequence of characters that is interpreted as a different character or a series of characters when it is used within a string.
    4. Computer vision is used for data collection, model learning, model training, deployment, feature extraction, etc.
    5. Machine learning empowers software applications to enhance their predictive accuracy without the need for explicit programming.

B. Write the answers in brief.
    1. The components of Python are name, arguments, statements and return value.
    2. The implementations of computer vision are: data collection, data preprocessing, feature extraction, image understanding, machine learning, deployment, etc.
    3. Types of User-defined Functions are:
        • Type 1 Functions: Type 1 functions do not accept any parameters as input and do not return any value.
        • Type 2 Functions: Type 2 functions accept parameters as input but do not return any value.
        • Type 3 Functions: Type 3 functions accept parameters as input and return a value as their output.
    4. The ethical principles of AI are privacy, safety, transparency, accessibility, etc.

5. The built-in category encompasses functions like print(), input(), range(), type(), and many others. Built-in functions are pre-existing functions that come predefined in Python, and developers do not need to create them from scratch when writing a program. These functions provide essential functionality and simplify various programming tasks.

C. Application-based questions.
1. In Python, a multiline string is enclosed within either three single quotes (''') or three double quotes (""").
2. The escape sequence for 'Unicode character database named lookup' is \N(Name).

Test Paper 2

A. Tick (✓) the correct option.
1. a. while   2. b. optimisation 3. a. <LABEL>   4. c. traversing
5. a. NLP

B. Fill in the blanks.
1. Programs   2. Motion   3. hyperlink   4. range ()
5. Deep

C. Write T for True and F for False statements.
1. T   2. T   3. F   4. T
5. T

D. Answer the questions in a few words.
1. The benefits of voice search optimisation are:
   • Enhances the effectiveness of local SEO campaigns.
   • Facilitates instant responses to customer inquiries.
   • Strengthens customer trust and fosters loyalty.
2. The VALUE attribute specifies the default value of the field.
3. The range () function is an integral part of Python's built-in functions. It serves the purpose of generating a sequential list of values. This sequence is created based on the specified instructions or parameters provided to the range () function.
4. The lower () function converts the letters in the string to lowercase.
5. Deep learning is a subset of machine learning, characterized by neural networks comprising three or more layers.

E. Answer the following questions.
1. Looping statements allow us to repeat a block of code until a certain condition is met, making them fundamental for controlling program flow and achieving various tasks efficiently. There are two types of looping statements in Python: for loop and while loop.

2. Push notifications are interactive pop-up messages that appear while a user is browsing the Internet. They serve as a convenient and engaging communication method for companies to deliver offers and messages. These notifications are compatible with various devices, including laptops, smartphones and tablets.

3. There are several CSS properties which can be applied to hyperlinks to change the appearance, such as:
   - a:link defines the style for an unvisited link.
   - a:visited defines the style for a visited link.
   - a:hover changes the appearance of the link when the user hovers the mouse over it.
   - a:active changes the appearance of the link when the user clicks on it.

4. The implementations of computer vision are:
   - Data Collection: Gather visual data (images, videos).
   - Data Preprocessing: Clean, normalize, and handle noise.
   - Feature Extraction: Identify relevant patterns.
   - Image Understanding: Use computer vision algorithms.
   - Machine Learning: Train models (e.g., CNNs, RNNs).
   - Model Training: Use labeled data for training.
   - Model Evaluation: Assess performance (accuracy, etc.).
   - Deployment: Integrate into the target application or system.
   - Real-time Processing: Optimize for real-time use.
   - Feedback Loop: Monitor, collect feedback, and improve.
   - Maintenance/Updates: Regularly update models.
   - Security/Privacy: Address data security and privacy.
   - Scalability: Design for increasing data volumes.
   - Documentation/Testing: Document, and test thoroughly.
   - User Interface: Create a user-friendly interface.

5. The components of Python functions are:
   - Name: The function should have a unique and easily understandable name.
   - Arguments: These are inputs provided to the function. A function may have zero or more arguments.
   - Statements: These are the executable instructions within the function.
   - Return Value: A function may not yield a result as its output

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1. c.	2. b.	3. d.	4. a.	5. d.
6. d.	7. c.	8. a.	9. a.	10. a.