1. Computer Networking

LET'S PLUG-IN (Page no. 7)

1. Telephone   2. Social Media   3. Letter   4. Telegram

LET'S CATCH UP (Page no. 11)

1. Server   2. Internet   3. ISP   4. URL

LET'S CATCH UP (Page no. 15)

1. e   2. d   3. c   4. b   5. a

LET'S CATCH UP (Page no. 18)

1. HTTPS- Hypertext Transfer Protocol Secure

2. IMAP- Internet Message Access Protocol

3. FTP- File Transfer Protocol

4. TCP/IP- Transmission Control Protocol/Internet Protocol

TEST YOUR SKILLS

1. a. (i)   b. (ii)   c. (ii)   d. (i)

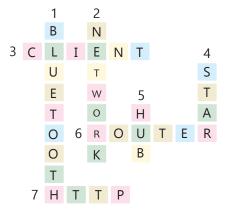2. a. Protocol   b. POP3   c. Mesh   d. NIC

3. a. T   b. T   c. T   d. T

4. a. Protocol is a set of rules that governs the communication between the computers over a network.

   b. A client is a computer which depends on the server for all the resources. A server is also called as the host computer. A server controls the access to the hardware and software on the network.

   c. Topology refers to the geometric arrangement of computers or nodes in a network.

   d. A gateway is a network device that allows data to flow between two different networks which may use different protocols.

5. a. The computer network means a system of interconnected computers and other computing devices. The advantages of computer network are:

    (i) The information can be easily shared by the people.

    (ii) It helps in reducing the cost of hardware.

    (iii) Store information on one centralised location.

    (iv) Reliability implies backing up of information. If a system crashes, then the information is accessible on another workstation for future use.

    (v) Reduction in installation cost.

    (vi) User authentication process to secure the data.

    (vii) People will have the accessibility to all the information they need to get and share through e-mails

  b. LAN is a digital communication system that interconnects a larger number of computers and other peripheral devices within a radius of less than 1 km.

    MAN consists of two or more local area networks or campus area networks together that usually spans several buildings in the same city or town.

  c. Web page is a single digital page on the World Wide Web (WWW) that contains information and links of another pages. Web pages are created by using the Hyper Text Markup Language (HTML), whereas website is collection of web pages which are interlinked to each other. A website may contain thousands of web pages.

6. a. Ring topology

  b. Network server

TECH ZONE

LET'S SOLVE

Crossword answers:
1. B (BLUETOOTH - down)
2. N (NITWO - down)
3. CLIENT (across)
4. STAR (down)
5. HUB (down)
6. ROUTER (across)
7. HTTP (across)

Do it yourself.

2. Introduction to Adobe Photoshop 2024

LET'S PLUG-IN ⟿ (Page no. 22)

Do it yourself

◎ LET'S CATCH UP (Page no. 32)

1. Rectangular Marquee Tool
2. Elliptical Marquee Tool
3. Lasso Tool
4. Polygonal Lasso Tool

TEST YOUR SKILLS 👆

1. a. (ii)   b. (iii)   c. (iv)   d. (ii)   e. (i)
2. a. Advanced   b. Tiny dots   c. .psd   d. Began   e. Menu
3. a. F   b. T   c. T   d. F   e. F
4. a. Pixels are the short for Picture Element. The computer screen comprises of tiny little dots. These tiny dots are known as pixels.

   b. The Paint Bucket Tool in Photoshop fills adjacent pixels that are similar in colour in the image. It fills with either the selected foreground colour or with a pattern.

   c. Rasterizing means the text will be converted into pixels, allowing you to make image adjustments that normally do not work with text layer. Rasterize is the process of converting a vector image to a raster image.

   d. Layers panel contains all the layers present in the Photoshop document. Whenever you add an image into a Photoshop document, a new layer is created.

   e. A layer can be defined as one image stacked on top of another to form a complete image.

5. a. Selection tools are used to select certain areas of the image to work without affecting the unselected areas. Some of the Selection tools are Rectangular Marquee Tool, Elliptical Marquee Tool and Lasso Tool.

   b. Some of the blending brush combinations of the Mixer brush are Dry, Moist, Wet, Very Wet, etc. Follow the below steps to use the Mixer Brush Tool:

   Step 1: Open an image in Photoshop.

   Step 2: Click and hold the left mouse button pressed on the Brush Tool in the Tools panel. A flyout menu opens.

Step 3: Select the Mixer Brush Tool from the flyout menu.

Step 4: Select the desired brush from the Brush Presets Picker in the Options bar.

Step 5: To sample a colour either you can click on the Current brush load from the Options bar and select the desired colour or press Alt key and click from where you wish to sample colour in the current image.

Step 6: Set various options in the Options bar according to your preferences. Specifying the percentages of Wet, Load, Mix and Flow effects the outcome on the canvas.

Step 7: Click and drag the mouse on image to paint.

c. Slice Tool divides an image or layout into smaller sections called slices which can be exported and developed separately. This is mainly used for web publications. These small slices can be saved as a separate file and can be modified using the Save for Web command. The slices created manually are called user-slices. As we create user-slices, Photoshop automatically divides the rest of the area.

d. Quick Selection Tool makes a selection based on the colour and contrast of the same colour in the image that you wish to select. It remembers all the consecutive strokes. This way you can make different selections in a single image also. Quick selection tool is used to select a bigger area to work whereas the magic wand tool is used to work with a specific area. Hence Magic wand tool is better that the quick selection tool.

6. a. Paint Bucket Tool

   b. Horizontal Type tool

   c. Crop tool

7. a. Gradient tool

   b. Color Replacement tool

   c. Crop tool

TECH ZONE

LET'S SOLVE

a. Vertical Type Tool   b. Gradient Tool

c. Color Replacement Tool   d. Lasso Tool

e. Crop Tool

LET'S EXPLORE

Do it yourself.

3. More on Adobe Photoshop 2024

1.

Rectangular Marquee Tool

2.

Quick Selection Tool

3.

Crop Tool

4.

Slice Tool

LET'S CATCH UP
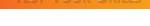
1. Hand Tool
2. Rotate View Tool
3. Zoom Tool
4. Rectangle Tool
5. Ellipse Tool
6. Line Tool

TEST YOUR SKILLS

1. a. (iii)   b. (ii)   c. (ii)   d. (i)

2. a. Background   b. Info   c. Red Eye   d. Sharpen

3. a. F   b. F   c. F   d. F

4. a. 1. Delete a layer by clicking on the Delete layer button.
      2. Add a style to a layer by clicking on the Add a layer style button.

   b. A Ruler Tool is a handy tool that you can use to measure and draw outlines in any direction.

   c. Blur Tool makes the image hazy or softens the pixels of an image. It helps to highlight the main object in the image.

5. a. The various options of the Image menu are as follows:

   (i) **Adjustments:** It allows you to access various tools for changing the brightness, contrast, levels, exposure, vibrance, hue/saturation, and color balance of an image.

   (ii) **Canvas Size:** It allows you to change the width and height of the whole working area according to your requirement.

   (iii) **Reveal All:** It expands the canvas as large as necessary to reveal full image when an image been moved beyond the canvas boundary.

   (iv) **Auto Color:** It adjusts the contrast and colour of an image.

b. Spot Healing Brush Tool is also known as texture replacement tool because it blends the wrong or bad texture of one area in an image with the good or fine texture area of the same image. The result of the spot removal may vary depending on the complexity of the image. It can be used to remove the acne or skin blemishes and scars completely from an image.

c. Perform the below steps to draw a straight path segment:

Step 1: Create a new document in Photoshop or open an existing image.

Step 2: Select the Pen Tool to from the Tools panel and set the mode of the Pen Tool to Path from the Options bar.

Step 3: Click on a point to start the path.

Step 4: Press the Shift key and click on the next point to draw a straight path.

Step 5: To close the shape, return to the first point and click once when the small circle appears.

Perform the below steps to draw a curved path segment:

Step 1: Click to create the second point and drag with the Pen Tool before you release the mouse button. You will see handles appear. These handles determine the acuteness of the curve and its direction.

Step 2: Click on the small square at the end of the handle line and drag the mouse around to adjust the handles.

Step 3: When you are satisfied with the shape of the curve, release the mouse button.

6. a. I suggest Divya should use duplicate layers or work on a copy of the original image before editing. She can also use Smart Objects to protect the original image from permanent changes.

b. Anmol should use the Text Tool, then click on Warp Text, and choose Arc or Spiral style to curve the text.

TECH ZONE

LET'S SOLVE

a. Layers Panel   b. Eraser Tool   c. Hand Tool

d. Blur Tool   e. Magic Eraser Tool

LET'S EXPLORE

Do it yourself.

TECH PRACTICE

Do it yourself.

Periodic Assessment–1

(Based on chapters 1 to 3)
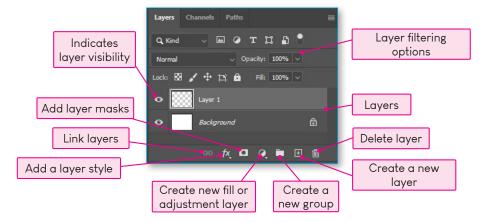
A.   1. Ring   2. Tree   3. Bus   4. Star

B.   1. v.   2. iv.   3. i.   4. iii.   5. ii.

C.

Indicates layer visibility · Layer filtering options · Add layer masks · Layers · Link layers · Delete layer · Add a layer style · Create new fill or adjustment layer · Create a new group · Create a new layer

4. Computer Safety and Security

LET'S PLUG-IN (Page no. 66)

Do it yourself.

LET'S CATCH UP (Page no. 68)

1. Cleaning the Keyboard   2. Cleaning the Mouse

3. Cleaning the Monitor

LET'S CATCH UP (Page no. 73)

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

TEST YOUR SKILLS

1.   a. (iii)   b. (ii)   c. (ii)

2.   a. malware   b. biometric   c. decryption   d. encryption   e. zombie

3.   a. Authentication is the process of verifying a user's identity before granting access to a computer system.

     b. Trojan horse is a type of malware. It conceals itself inside the software that seems legitimate.

c. An antivirus program is software designed to detect the presence of a virus on a computer and remove it.

4. a. 1. Cleaning the Keyboard
    2. Cleaning the Mouse
    3. Cleaning the Monitor

    b. Malware stands for **malicious software**. It refers to software programs designed to damage or carry out other unwanted actions on a computer system. In Spanish, 'mal' is a prefix that means 'bad,' making the term 'badware,' which is a good way to remember it.

    The different types of malware include virus, worms, trojan horse, spyware, zombies, ransomware, rootkits and backdoors.

    c. A computer virus is a 'piece of code' or program developed to corrupt the data or program files stored on the computer system. It enters the computer without permission of the user. The user of the computer may not even realise that the computer is affected by a virus.

    Whereas, A computer worm is a type of malware that has the capability to replicate itself without any human interaction. It consumes lots of memory space in replication. Once a computer has been infected by a worm, its processing speed gets slow-down, works unexpectedly and halts other tasks.

5. a. Manisha can use authentication methods such as a strong password, PIN, or biometric login (like fingerprint or facial recognition) to prevent unauthorised access to her computer.

    b. Nitin should create a backup of the original data by saving it to an external hard drive or cloud storage before making any changes, so he can retrieve the original version later.

    c. Anuj's computer may be infected with malware or a virus, which is causing it to slow down and show unwanted files. He should run a full antivirus scan using reliable software and remove the detected threats to fix the issue.

TECH ZONE

LET'S SOLVE

1. a. Worm   b. Trojan Horse   c. Zombie

LET'S EXPLORE

Do it yourself.

TECH PRACTICE

Do it yourself.

5. Google Apps

A.

Facebook

B.

WhatsApp

C.

X

D.

Instagram

Origin country for all these apps is USA.

LET'S CATCH UP (Page no. 88)

Yes Google Slides are different from the PowerPoint. Google Slides is an online presentation tool that saves work automatically and allows real-time collaboration, while PowerPoint is mostly used as offline software installed on a computer.

TEST YOUR SKILLS

1.   a. (iii)   b. (i)   c. (ii)   d. (i) e. (iii)

2.   a. Sundar Pichai   b. encryption   c. Copy link   d. Map, Satellite, Terrain

     e. saved

3.   a. Google Drive is a cloud-based storage service. With Google Drive, multiple users can access a single file at the same time, at different locations and from different devices.

     b. Google Slides is an online version of Microsoft PowerPoint developed by Google in 2006.

     c. Google Maps is a digital navigation tool that provides detailed information about the geographical regions of any particular area. Google Map was launched on February 8, 2005.

     d. Gmail, also known as Google Mail, is one of the most widely used and highly regarded email services available on the internet.

     e. Google Docs is a free online word processing program. It is similar to Microsoft Word.

4.   a. Follow the below steps to open Google Docs:

     Step 1: Click on the Google apps button. A drop-down menu appears.

     Step 2: Click on the Docs icon from the drop-down menu. The Start a new document page appears.

     Step 3: Click on the Blank document template.

     b. Some of the features of YouTube are:

     (i)   Users can search for any particular keyword and watch videos

     (ii) Users can create a personal YouTube channel.

     (iii) Users can upload videos to their channel.

(iv) Users can like, comment on, and share other YouTube videos.

(v) Users can subscribe/follow other YouTube channels.

c. YouTube is the most widely used Google app. It is a video-sharing application where users can upload their videos, share, comment, watch, and like other videos.

Views on YouTube are: Do it yourself.

d. Google introduced Google Sheets, a spreadsheet application on March 9, 2006. It works like any other spreadsheet tool, but since it is an online app, it offers much more than just the spreadsheet tools.

Perform the following steps to share a spreadsheet:

Step 1: Click on the Share button from the top-right corner of the spreadsheet.

Step 2: Enter the email address(es) of the people with whom you want to share the spreadsheet in the box.

Step 3: Click on the down-arrow to give permission. A drop-down list appears with the Editor, Viewer or Commenter options.

Step 4: Select the desired option from the drop-down list.

Step 5: Type a message for the receiver in the Message box.

Step 6: Click on the Send button to share the file.

Perform the following steps to protect a spreadsheet:

Step 1: Click on the Data menu.

Step 2: Select the Protected sheets and ranges option. The Protected sheets & ranges pane appears.

Step 3: Type the description of the spreadsheet.

Step 4: Specify the sheet address or cell address with the sheet address.

Step 5: Click on the Set permissions button.

Step 6: Select the desired radio button to specify the edit permission.

Step 7: Click on the Done button after setting permission.

5. a. I would suggest Anjali to use the "Grid layout" option in Google Drive. The Grid layout shows files as thumbnails (larger view).

b. Lakshya can use the Google Maps app. It will help him find the fastest route to the museum, check traffic conditions, and get real-time directions.

Tech Zone

Let's Solve

a. Google Slides   b. YouTube   c. Google Sheets

d. Broadcast Yourself   e. Google Docs   f. Google Drive

g. Gmail   h. Map view   i. Google

Do it yourself.

Periodic Assessment–2

(Based on chapters 4 & 5)

A. 1. **Rootkit** is a type of malware that gains administrator access to the host system. Once the attacker has access to the system, the rootkit remains hidden but while retaining special privileges.

2. **Backdoor** is a type of malicious software that enters into the computer bundled with other software or files. It is used to gain remote access to the host computer.

3. **Firewall** is a software or hardware-based network security system that controls incoming and outgoing network traffic based on applied rule set.

B. 1. Used to watch, upload, and share videos online.

2. Used to create and manage spreadsheets online.

3. Used to find locations and get directions.

4. Used to create and share presentations online.

C. She can use Google Drive.

Test Sheet–1

(Based on chapters 1 to 5)

A. 1. (i)   2. (ii)   3. (iii)   4. (iii)   5. (ii)
6. (iii)   7. (i)

B. 1. internal link   2. Eyedropper   3. began   4. Router
5. malware   6. Map, Satellite, Terrain

C. 1. F   2. F   3. F   4. T   5. T

D. 1. A Ruler Tool is a handy tool that you can use to measure and draw outlines in any direction.

2. The components needed for a network are Network Interface Card, hub or a switch, router, modem, networking cable and gateway.

3. An Internet Protocol (IP) address is an unique identification number assigned to a computer connected to a network. It has two main functions: host or network interface identification and location addressing. IP addresses are written and displayed in human-readable notations, such as 172.16.254.1.

4. Authentication is the process of verifying a user's identity before granting him or her access to a computer system.

5. Google Docs is a free online word processing program. It is similar to Microsoft Word.

E. 1. **Adjustments:** It allows you to access various tools for changing the brightness, con-trast, levels, exposure, vibrance, hue/saturation, and color balance of an image.
   Auto Tone: It automatically adjusts the black point and white point in an image.
   Auto Contrast: It adjusts image contrast automatically.
   Auto Color: It adjusts the contrast and color of an image.

2. A LAN is a digital communication system that interconnects a larger number of computers and other peripheral devices within a radius of less than 1 km.
   MAN consists of two or more local area networks or campus area networks together that usually span several buildings in the same city or town.

3. Some of the features of YouTube are:
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Step 3: Type the description of the spreadsheet.

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Step 5: Click on the Set permissions button.

Step 6: Select the desired radio button to specify the edit permission.

Step 7: Click on the Done button after setting permission.

6. Latest Technological Developments

LET'S PLUG-IN (Page no. 98)

Do it yourself.

LET'S CATCH UP (Page no. 102)

1. d.   2. a.   3. e.   4. b.   5. c.

1. a.   2. a.   3. b.

TEST YOUR SKILLS

1.   a. (i)   b. (i)   c. (iii)   d. (iii)   e. (ii)

2.   a. Google Glass   b. Augment   c. Dog   d. Machine learning

      e. Cloud computing

3.   a. T   b. T   c. F   d. F   e. T

4.   a. Artificial Intelligence (AI) is a branch of computer science that aims to create computers and machines that are as intelligent as human beings.

      b. Robotics is a branch of engineering that uses technologies such as Artificial Intelligence and Machine Learning. It deals with the design, construction, operation and application of robots.

      c. Healthcare, Finance

      d. Blockchain is a decentralised system of recording information that makes it nearly impossible to alter, hack, or cheat the system.

5.   a. The virtual world is a computer-created environment that lets users interact digitally, while the real world is the physical world we experience daily. In the virtual world, experiences are simulated, whereas in the real world, they are natural and tangible.

      Example: In the real world, people visit museums physically to see exhibits. In the virtual world, users can take a virtual tour of a museum using a VR headset or a computer, experiencing the exhibits from home without being there physically.

      b. Robotic Process Automation (RPA) is a software robot running on a physical or virtual machine that mimics human actions. With RPA, software users create software robots that can learn, mimic, and then execute rule-based business processes. The goal of RPA is to transfer the process execution from humans to robots.

      c. Edge computing is a complimentary approach to cloud computing. Edge computing keeps computer data close to the user. Edge computing is used in technologies such as autonomous vehicles, video conferencing, and augmented reality. Edge computing, for example, reduces the delay of waiting for a server in the cloud to respond when an autonomous car makes a split-second choice to brake and avoid a collision.

      d. 1. Email spam filtering – automatically detects and filters spam messages.

         2. Voice assistants – like Google Assistant or Siri that understand and respond to voice commands.

         3. Online recommendations – such as movie or product suggestions on platforms like Netflix or Amazon.

6. a. Radika can keep an AI-powered robotic pet like Aibo, a robotic dog. It behaves like a real pet, can respond to commands, and doesn't cause allergies or require physical care, solving both her problems.

   b. The "View 3D Try On" feature by Lenskart falls under Augmented Reality (AR), as it superimposes virtual glasses onto the user's real face using a camera.

TECH ZONE

LET'S SOLVE

K	J	I	A	R	T	I	G	V	D	A	V	X	Z
F	G	K	R	D	F	U	P	B	C	D	S	K	Z
R	O	B	O	T	I	C	S	J	H	F	G	S	F
D	F	S	S	T	A	R	W	A	L	K	W	R	E
G	D	C	P	G	F	F	R	R	T	R	W	H	F
C	Z	C	E	F	D	H	D	E	Y	D	S	G	D
H	J	K	C	K	L	H	G	S	H	J	L	T	E
V	I	R	T	U	A	L	R	E	A	L	I	T	Y
G	G	O	O	G	L	E	G	L	A	S	S	E	W
F	D	S	G	A	S	D	F	H	W	E	R	F	S

LET'S EXPLORE

Do it yourself.

TECH PRACTICE

Do it yourself.

7. Images, Links and Frames in HTML5

LET'S PLUG-IN (Page no. 110)

Do it yourself.

LET'S CATCH UP (Page no. 128)

A hyperlink is generally an underlined text which takes you to another web page when clicked. Generally, hyperlinks are seen in blue colour.

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

2. a. <IMG>   b. <A>   c. <SELECT>   d. <IFRAME>   e. <INPUT>

3. a. F   b. F   c. F   d. T   e. T

4. a. HREF stands for Hypertext Reference.

    b. The <SELECT> tag with the <OPTION> tag allows us to create a drop-down list.

    c. Frames are the different sections or parts of a web page.

    d. The SRC attribute in the <IMG> tag is used to specify the path or URL of the image that will be displayed on the web page.

5. a. (i) This attribute is used to specify the action that will take place when we submit the form values. It takes the URL of another web page or an e-mail address to receive the information.

       (ii) It specifies the type of method form will use to accept the values entered into form fields. The most commonly used values for this attribute are POST and GET.

       (iii) This attribute is used to specify the type of field we want to create. It takes one of the predefined values.

    b. 1. **SRC:** It specifies the source or URL of the image that has to be inserted in the web page. For example, <IMG SRC="C:/Mydocuments/lily.jpg">

       2. **WIDTH:** It specifies the width of the image in the web page. For example,

          <IMG SRC="lily.jpg" WIDTH="50%">

    c. The <INPUT> tag has the following attributes:

       TYPE: This attribute is used to specify the type of field we want to create. It takes one of the predefined values.

       NAME: This attribute is used to specify the identity of the field on the web page.

       VALUE: This attribute is used to specify the default value of the field.

    d. <!DOCTYPE HTML>

            <HTML>

            <HEAD>

            <TITLE> Audio </TITLE>

            </HEAD>

            <BODY>

            <H1 STYLE="TEXT-ALIGN: center; COLOR: red;">Welcome to the Musical World</H1>

<P STYLE="TEXT-ALIGN: center;">

<IMG SRC="MusicalNote.jpg">

</P>

<AUDIO SRC="Flute.mp3" CONTROLS AUTOPLAY>

</AUDIO>

</BODY>

</HTML>

6. a. Sunil can use the <IFRAME> tag.

b. Divya should use the <IMG> tag to insert images on the web page.

Periodic Assessment–3

(Based on chapters 6 & 7)

A. 1. Augmented Reality

2. Virtual Reality

3. Robotic Process Automation

4. Internet of Things

B. 1. It specifies the height of the image in the web page.

2. This value is used to create a check box control. A check box control allows us to select multiple options from a set of options.

3. It is used to create a multiline text box that can accept long text values.

C.
```
<!DOCTYPE HTML>
<HTML>
<HEAD> <TITLE> Inserting Image </TITLE>
</HEAD>
<BODY>
<B> Inserting image on the web page </B>
<IMG SRC="lily.jpg" WIDTH="200px" HEIGHT="200px" ALIGN="right"
  BORDER="2">
</BODY>
</HTML>
```

8. Algorithmic Intelligence

LET'S PLUG-IN (Page no. 133)

Do it yourself.

LET'S CATCH UP (Page no. 135)

a. It's a holiday

b. Entry not allowed

LET'S CATCH UP (Page no. 137)

1. b.   2. a.   3. b.   4. b.

TEST YOUR SKILLS

1. a. (ii)   b. (iii)   c. (iii)   d. (i)
2. a. condition   b. If   c. else   d. conditional
3. a. Conditional statements are used in a program to instruct the computer to make a decision. The result of the condition will always be either true or false.

   b. **AND:** Results in true only if both the conditions are true. If any one condition is false, the result will be false.

   OR: Results in true if at least one of the conditions is true. If both are false, the result will be false.

   c. A loop allows a set of instructions or a block of code to be executed repeatedly.

4. a. Loops help in automating repetitive tasks and makes the code more efficient by avoiding the need to write the same instructions multiple times.

b. today = "Sunday"

match = "yes"

IF today = "Sunday" AND match = "yes"

THEN

  PRINT "We have a match on Sunday"

ELSE

  PRINT "No match on Sunday"

c. day = "Saturday"

exam = "yes"

IF day != "Saturday" AND day != "Sunday" OR exam = "yes"

THEN

  PRINT "Exam today"

ELSE

  PRINT "No exam on weekend"

5. a.

Marks	45	40	55	49	85
Result	Fail	Fail	Pass	Fail	Pass

b. start

✗	✓				
	✗	✓			
		✗	✓		
			✗	✓	
				✗	✓

6. a. Lokesh can use a loop in his program.

b. READ year

IF year % 400 = 0

THEN

  PRINT "Yes"

ELSE

  PRINT "No"

TECH ZONE 🧩

LET'S SOLVE

READ percentage

IF percentage > = 40

THEN

   PRINT "Pass"

ELSE

   PRINT "Fail"

TECH PRACTICE

Do it yourself.

9. Loops in Python

LET'S PLUG-IN 〰️⚡ (Page no. 141)

1. False   2. True   3. True

◎ LET'S CATCH UP (Page no. 149)

Hello Touchpad

An infinite loop is created with the above message

TEST YOUR SKILLS 👆

1.   a. (ii)   b. (i)   c. (i)   d. (iii)

2.   a. while   b. non-zero   c. infinite   d. break, continue

3.   a. F   b. F   c. T   d. T   e. T

4.   a. Looping refers to the process of repeating a set of statements repeatedly on the basis of a condition until the condition is falsified.

    b. The syntax of while statement is given below:

    while (test expression):

          Statements

          Increment/Decrement

c. There is a situation when the control of the program needs to be transferred out of the loop body, even if all the values of the iterations of the loop have not been completed. For this purpose, jumping statements are used in Python.

5 a. The range() function is an in-built function of Python. This function generates a list which is a sequence type.

b. The for loop is commonly used when the number of iterations is known in advance or when iterating over a sequence, such as a list, string, tuple, or a range.

Example:

for i in range(1, 6):

    print(i)

This code will print numbers from 1 to 5.

c. The break is a keyword in Python which is used for bringing the program control out of the loop. When a continue statement is encountered inside a loop, control of the program jumps to the beginning of the loop for next iteration, skipping the execution of rest of the statements of the loop for the current iteration.

6. a. Riya should use a while loop, which allows a set of instructions to be repeated until a condition becomes false.

The syntax of while statement is given below:

while (test expression):

        Statements

        Increment/Decrement

b. Vikram should use the continue statement.

TECH ZONE

LET'S SOLVE

a. 55

b. The square of 1 is 1
The square of 2 is 4
The square of 3 is 9
The square of 4 is 16
The square of 5 is 25
The square of 6 is 36
The square of 7 is 49
The square of 8 is 64

The square of 9 is 81

The square of 10 is 100

c. 2

4

d. 0

1

2

e. 1 is odd

2 is even

3 is odd

4 is even

5 is odd

6 is even

7 is odd

8 is even

9 is odd

10 is even

LET'S EXPLORE

Do it yourself.

TECH PRACTICE

Do it yourself.

10. Functions and String in Python

```
sum = 0
for i in range(1, 6):
    sum = sum + i
print("The sum of first five natural numbers is:", sum)
```
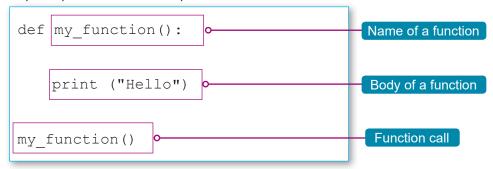
1. A sequence of characters which is enclosed or surrounded by single (' '), double (" "), or Triple (''' ''') quotes is known as a string.

2. An escape sequence is a sequence of characters that does not represent itself when used inside a character or string. It is typically used to specify actions such as carriage returns and tab movements.

TEST YOUR SKILLS

1. a. (ii)   b. (iii)   c. (i)   d. (i)   e. (ii)

2. a. capitalize   b. Function   c. lower   d. string

3. a A function is a block of organised and reusable code designed to perform a single or related set of actions.

   b. String concatenation operator joins two or more strings into one string.

   c. Two features of functions are:

      1. A program is divided into small modules and each module performs some specific task. Each module can be called as per the requirement.

      2. We can call a function as many times as required. This saves the programmer the time and effort to rewrite the same code again. Therefore, it also reduces the length of the program.

4. a. A Python function consists of the following components:

   • **Name of the function:** A function name should be unique and easy to correlate with the task it will perform. We can have functions of the same name with different parameters.

   • **Arguments:** Arguments are the actual values that are passed to the function when it is called. These are the values supplied to the function during the function call.

   • **Statements:** The statements are the executable instructions that the function can perform.

   • **Return Value:** A function may or may not return a value.

   b. A function can be called anytime from other functions or from the command prompt after the definition. For calling a function, we type the function followed by parentheses containing any required parameter. For example: To call a function.

```
def my_function():          ●───────── Name of a function

       print ("Hello")      ●───────── Body of a function

my_function()               ●───────── Function call
```

c. **Built-In Functions:** The print() and input() belong to the category of built-in functions. Python has many built-in functions that are already defined and ready to use like range(), type(), etc.

   User-Defined Functions: User-defined functions are created by the user according to the need of the program. Once the user defines a function, the user can call it in the same way as the built-in functions.

d. Two built-in functions to manipulate strings:

   1. len(): The len() function calculates and returns the length of a string supplied as an argument.

      Syntax of using len() function is:

      ```
      len(string_name)
      ```

   2. lower(): The lower() function converts all uppercase letters to lowercase. Syntax of using lower() function is:

      ```
      string_name.lower()
      ```

5. a. Arjun can use the .upper() function in Python to convert his name to uppercase.

   b. Yes, Rohit can join multiple strings using the string concatenation operator (+).

TECH ZONE

LET'S SOLVE

a. The original string is : Good Morning
   The resultant string : GOOD MORNING

b. 5 has occurred 2 times.

LET'S EXPLORE

Do it yourself.

TECH PRACTICE

Do it yourself.

11. Domains of AI

LET'S PLUG-IN (Page no. 166)

Do it yourself.

Natural language processing and Computer Vision

TEST YOUR SKILLS

1. a. (iii)   b. (i)   c. (i)   d. (i)

2. a. T   b. T   c. T   d. T

3. a. Data refers to facts and figures that are processed to find meaningful results.

   b. NLP is a subfield of AI which helps in communication between human and computer using natural language. It enables a computer to read and understand data by mimicking human natural language.

   c. Computer Vision is a very popular field of AI that trains a computer to understand and interpret the visual world.

4. a. Two real life usages of NLP are:

   1. NLP checks the sender of the email and categorises the mails as spam or junk.

   2. NLP also finds its use in the autocomplete and spell-check feature of word processors.

   b. Two advantages of AI are:

   1. **Quick Decision Making:** Humans spend a large amount of time and effort to analyse and filter data, but AI systems can manage and organise huge volumes of data in much less time.

   2. **Accuracy:** Human intelligence is not failure proof, but AI systems are. AI driven software can only be faulty due to human limitations or hardware failure. Therefore, AI is used in production lines to detect small cracks or defects in parts that are normally undetectable by the human eye.

   c. Data refers to facts and figures that are processed to find meaningful results. Data plays a pivotal role in the field of AI. Data collection is the process of collecting and sourcing information from numerous sources.

5. a. Maya's AI-powered gadget belongs to the area of Computer Vision.

   b. The feature Raj used is possible due to Natural Language Processing (NLP).

TECH ZONE

LET'S SOLVE

Do it yourself.

Do it yourself.

Do it yourself.

Periodic Assessment–4
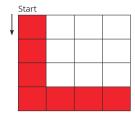
(Based on chapters 8 to 11)

A. Repeat 4 times

(Move 1 down and Fill Colour)

Repeat 3 times

(Move 1 right and Fill Colour)

B. num = int(input("Enter a number: "))

factorial = 1

if num < 0:

   print("Factorial does not exist for negative numbers.")

elif num == 0:

   print("The factorial of 0 is 1.")

else:

   for i in range(1, num + 1):

      factorial = factorial * i

   print("The factorial of", num, "is", factorial)

C. 1. Natural Language Processing

2. Computer Vision

3. Artificial Intelligence

D. 1. Data refers to facts and figures that are processed to find meaningful results. Data plays a pivotal role in the field of AI.

2. A **function** is a block of organised and reusable code designed to perform a single or related set of actions.

3. There is a situation when the control of the program needs to be transferred out of the loop body, even if all the values of the iterations of the loop have not been completed. For this purpose, jumping statements are used in Python. Python offers two jumping statements— break and continue, which are used within the loop.

Test Sheet–2

(Based on chapters 6 to 11)

A. 1. (i)   2. (iii)   3. (iii)   4. (iv)   5. (ii)   6. (ii)

      7. (i)   8. (iii)

B. 1. in-built   2. break, continue   3. Augmented Reality

      4. Artificial Intelligence   5. human intelligence   6 <FRAMESET>

      7. HREF

C. 1. F   2. F   3. T   4. F   5. T

D. 1. Looping refers to the process of repeating a set of statements repeatedly on the basis of a condition until the condition is falsified.

    2. Artificial Intelligence (AI) is a branch of computer science that aims to create computers and machines that are as intelligent as human beings.

    3. The <TEXTAREA> tag is used to create a multiline text box that can accept long text values.

    4. HREF stands for Hypertext Reference.

    5. Computer Vision is a very popular field of AI that trains a computer to understand and interpret the visual world.

    6. Conditional statements are used in a program to instruct the computer to make a decision. The result of the condition will always be either true or false.

E. 1. Internet of Things (IoT) describes the network of physical devices that have unique identifiers (UIDs) and are capable of communicating with other devices over the network.

    For example, a lightbulb can be switched ON using a smartphone app.

    2. **Built-In Functions:**

    The print() and input() belong to the category of built-in functions. Python has many built-in functions that are already defined and ready to use like range(), type(), etc.

    User-Defined Functions: User-defined functions are created by the user according to the need of the program. Once the user defines a function, the user can call it in the same way as the built-in functions.

    3. **By using while loop:**

```
count = 1
num = 2
sum_even = 0
while count <= 10:
    sum_even += num
    num += 2
```

```
    count += 1
print("Sum of first ten even numbers (while loop):", sum_even)
```
By using for loop:
```
sum_even = 0
for i in range(1, 11):
    sum_even += i * 2
print("Sum of first ten even numbers (for loop):", sum_even)
```

4. The break is a keyword in Python which is used for bringing the program control out of the loop. When a continue statement is encountered inside a loop, control of the program jumps to the beginning of the loop for next iteration, skipping the execution of rest of the statements of the loop for the current iteration.

5. AI is divided into 3 domians Natural Language Processing (NLP), Data, Computer Vision.

   • **Natural Language Processing:** This is a subfield of AI which helps in communication between human and computer using natural language.

   • **Data:** Data refers to facts and figures that are processed to find meaningful results.

   • **Computer vision:** Computer Vision is a very popular field of AI that trains a computer to understand and interpret the visual world.

6. today = "Sunday"

   match = "yes"

   IF today = "Sunday" AND match = "yes"

   THEN

   　　PRINT "We have a match on Sunday"

   ELSE

   　　PRINT "No match on Sunday"