Class 8

Answer Key

Trackpad PRO (Ver. 5.1)

1. Networking Concepts

QuizBee

Page-19

1. 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.
2. It is a satellite-based navigation system which is used to identify the geographical location of an object.
3. HTTP stands for Hypertext Transfer Protocol. It is the primary protocol used to exchange data between a web browser and a website.

ASSESS YOURSELF

1.	a. (ii)	b. (ii)	c. (iii)	d. (iv)	e. (i)
2.	a. Node	b. Modem	c. Hub	d. Bandwidth	e. Server
3.	3. a. F	b. T	c. T	d. F	e. F
4.	a. Gateway	b. IP Address	c. MAN (Metropolitan Area Network)		
	d. Ring topology	e. Protocol			

5. a. The Network Interface Card (NIC) connects a computer to a network and allows it to communicate with other computers on the network.

b.

Client-server network	Peer-to-peer network
This is the most efficient network architecture that consists of two parts: client system and server system. One computer is designated as the server and all the other computers connected into the network are called the clients.	An alternative to the client-server approach is the peer-to-peer approach. There are no dedicated servers. All computers are equal and can share their resources to be used by others and are therefore known as peers.

c. A router is used when multiple devices need to connect to the Internet using the same IP. It works on the network layer.

d. The short form of Global Positioning System is GPS. It is a satellite-based navigation system which is used to identify the geographical location of an object. It is made up of a network of 24 satellites placed into orbit by the U.S. Department of Defense.

e. Modem is a device which is used to transmit data over a network. It is attached to computers that can convert digital signals (to be transmitted over telephone lines) to analog (continuous electrical waves) and convert analog signals to digital signals at the receiving end.

f. HTTP is the primary protocol used to exchange data between a web browser and a website. Whereas HTTPS is an extension of HTTP used for secure communication over a network. It establishes a secure connection by establishing an encrypting link between the browser and server, hence maintaining data integrity by encrypting the data.

6. a.

LAN	MAN
i. LAN stands for Local Area Network.	i. MAN stands for Metropolitan Area Network.
ii. It is a digital communication system that interconnects a larger number of computers and other peripheral devices within a radius of less than 1 km.	ii. Its major disadvantage is that if the root node fails to operate, the entire network is inoperable.

b.

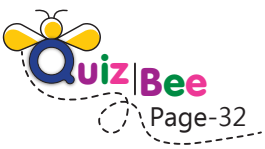
Mesh Topology	Tree Topology
i. In this topology, every single node in a network is connected to all the other nodes or computers in the network.	i. In this topology, nodes are connected as branches of a tree where the hub acts as a root node. It is scalable as it is easier to add new or remove the faulty nodes.
ii. There are minimal chances of network failure in this topology due to redundant connections.	ii. Its major disadvantage is that if the root node fails to operate, the entire network is inoperable.

7. a. Ring topology would be the best choice for Riya.
   b. (i) Internet
   (ii) Campus Area network

{CODING ZONE}

1. l oryh frglqj
2. seeyouonmonday
3. a. Acrtwtakfo h ett mes
   b. B oetehns

2. Animation in Krita



1. Krita can used to create digital art, illustrations, and even 2D animations.
2. Onion Skins Docker

ASSESS YOURSELF

1.	a. (iii)	b. (iii)	c. (ii)	d. (iv)
2.	a. Layers	b. Frame	c. keyframe	d. Animation Timeline

3. a. Stage b. Animation c. GIFs, MP4s, and image sequences

4. a. A frame is a single image in the sequence that makes up your animation. Whereas a keyframe is a special frame where a new symbol instance appears in the timeline.

   b. The animation feature lets you make your drawings move, just like a cartoon! It's a fun tool that helps bring your creative ideas to life.

   c. (i) Stage: The Stage refers to the main drawing area where you create and view your artwork and animations. It's the canvas where you draw your individual frames, layers, and scenes.

   (ii) Onion Skins Docker: The Onion Skins Docker in Krita is a helpful tool for animators. It allows you to see multiple frames at once by showing transparent versions of the previous and next frames while you work on the current one.

5. a. Anita can adjust the animation speed in Krita in Animation Timeline Docker.

   b. Blank frames are necessary in animation to show moments when the ball is off the ground or out of sight, making the bounce look more natural and realistic.

{CODING ZONE}

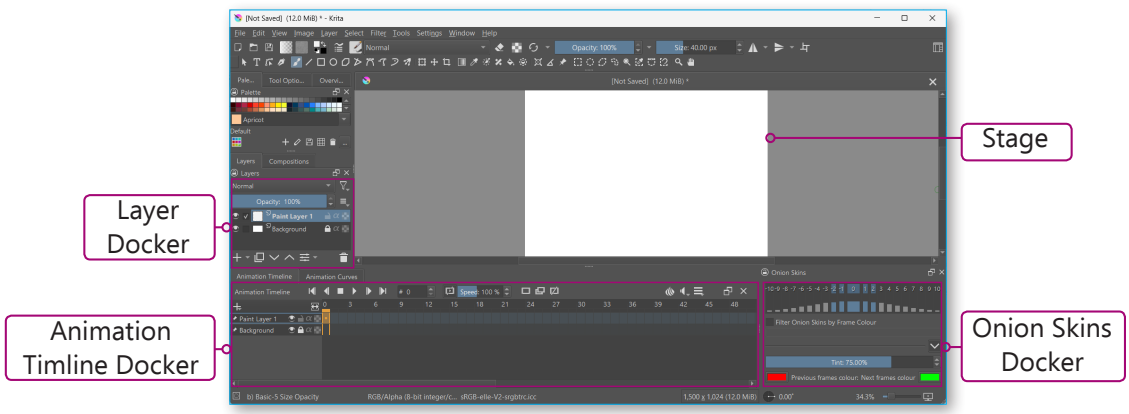
1. 95 2. None 3. Circle 4. They will meet after 2 hours.

PERIODIC ASSESSMENT 1

(Based on chapters 1 to 3)

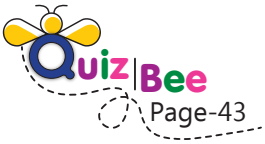
1. a. (v) b. (iv) c. (iii) d. (ii) e. (i)

2.



3. a. Stage b. Animation
   c. Animation Curve Editor d. File Tab

3. Dynamic Web Pages in Html5



src

ASSESS YOURSELF

1.	a. (i)	b. (iii)	c. (ii)	d. (ii)	e. (ii)
2.	a. Mocha	b. prompt()	c. text/javascript	d. //	e. client
3.	a. F	b. T	c. T	d. F	e. T

4. a. Comments b. document.write() method
   c. parseInt() d. prompt()

5. a. JavaScript is a client-side scripting language used for enhancing users' interaction with the web page by making web pages dynamic.

   Some of its important features are:

   - It is used in both client-side and server-side applications.
   - It is platform-independent; hence, it runs on many operating systems.
   - It is used with HTML code and runs on web browsers.

   b. To include an external JavaScript file, we can use the script tag with the attribute src.

   c. JavaScript keywords are the reserved words that have a special meaning for the JavaScript interpreter. Some of the keywords are: car, switch, let, etc.

   d. The prompt() method in JavaScript is used to take input from the user. We can use prompt() method in the following ways:

   ```
   var age = prompt("Enter your age: ");
   ```

6. a. Client-Side JavaScript refers to the implementation of JavaScript code that is executed within the user's web browser. Its primary function is to enhance the user interface and interactivity of web pages by manipulating the Document Object Model (DOM), handling user events, and facilitating asynchronous communication with the server.

   Server-Side JavaScript, conversely, denotes the execution of JavaScript code on a web server. This paradigm is employed for developing the backend logic of web applications, encompassing tasks such as handling HTTP requests, processing data, interacting with databases, and generating dynamic server-rendered content.

b. Internal JavaScript involves embedding JavaScript code directly within the <script> tags of an HTML document. This method is suitable for small, page-specific scripts.

External JavaScript, in contrast, entails writing JavaScript code in separate files (with a .js extension) and linking these files to HTML documents using the src attribute within <script> tags. This approach promotes code reusability, improves the organization of web development projects, and facilitates better maintainability.

7. a. She should use the var keyword to declare a variable.

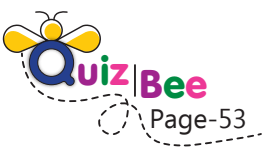
b. He should use the alert() function to display the message:

```
alert("Registration successful, Ankit!");
```

{CODING ZONE}

1. (d) 2. (b) 3. (c)

4. Latest IT Trends



B2C (Business-to-Consumer)

ASSESS YOURSELF

1. a. (iii) b. (ii) c. (ii) d. (ii) e. (iii)
2. a. Internet b. Augmented Reality c. Virtual reality
   d. Robotic Process Automation e. E-banking
3. a. T b. T c. F d. T e. F
4. a. E-Shopping b. Shakey c. Natural Language Processing
   d. Pattern Recognition e. Intelligent Apps
5. a. E-commerce refers to the buying, selling and exchanging goods online. Some of the applications of E-commerce are e-shopping, e-banking, etc.

   b. (i) Electronic Data Interchange (EDI) is a system for accepting payments for online transactions.

   (ii) Consumer-to-consumer (C2C) is a business model where consumers buy and sell products or services directly to each other. C2C transactions can take place online or in person.

c. The Internet of Things (IoT) refers to a network of physical objects, or things, embedded with sensors, software, and connectivity, allowing them to collect and exchange data with other devices and systems over the internet without human intervention.

d. The purpose of m-commerce (mobile commerce) is to enable the buying and selling of goods and services through mobile devices, offering businesses the ability to reach customers and conduct transactions anywhere, anytime, while providing consumers with convenient and flexible shopping experiences.

e. Augmented Reality is the blending of virtual world and real life where as in Virtual Reality, we create a virtual world that user can interact with.

6. a. He can use E-banking.

b. Yes, Lata can use M-commerce by using mobile apps such as MakeMyTrip, Google Pay, or airline apps to book the ticket using her smartphone.

{CODING ZONE}

1. (b) 2. (c)

5. Cloud Computing

ASSESS YOURSELF

1.	a. (ii)	b. (ii)	c. (iv)	d. (ii)	e. (ii)
2.	a. T	b. T	c. F	d. F	e. F
3.	a. demand	b. cloud computing	c. SkyDrive		
	d. public cloud	e. community cloud			
4.	a. Cloud Storage	b. Four	c. Hybrid Cloud	d. Apple	e. OneDrive

5. a. Three benefits of cloud computing are:

(i) Easy Accessibility: Cloud services are available and accessible globally to everyone who has a computer or any device with an Internet connection. No specialised hardware or software is required.

(ii) Cost Effective: One has to pay minimal to no subscription charges to avail the services. It saves us from buying expensive specialised hardware or software.

(iii) Flexibility: The services provided by cloud computing are available 24 hours a day and seven days a week, and can also allow us to increase and decrease computing needs, hence, providing users with the flexibility to work as per their requirements.

b. Cloud computing can be divided into two parts: front end and the back end. The Internet is the link that joins both these ends. The front end includes the users/clients who access the data via the Internet, while the back end consists of the cloud computing infrastructure maintained by the cloud service provider.

The front end includes computers, user interfaces, and all the means required to access the cloud servers. The back end includes various applications and the dedicated servers for each program. This gap between the client and the cloud is then bridged by the Internet.

c. We need to follow the given steps to share a file with others on OneDrive:

1. Select the file that you want to share.
2. Click on the Share button.
3. Enter the email address of the people with whom you want to share your file.
4. Choose the level of access.
5. Click on the Send button.

d. To upload files or folder on OneDrive, follow the given steps:

1. Click on the Add new button.
2. Select the Files upload or Folder upload option.
3. Navigate the location where the file or folder is stored.
4. Select the file or folder which you want to upload.4.4.
5. Click on the Open button.

e. (i) Public cloud: A public cloud is owned by a third-party service provider (any organisation) whose services are easily accessible to the general public. The organisation sells its services to the general public and other organisations. To ensure that no resources provided by them are wasted, the users are supposed to pay for what they use.

(ii) Private cloud: A private cloud is owned by a single company and allows its services to be accessed only within the company's firewall. It is not meant for the general public. This is best suited for companies with dynamic computing needs where they can maintain control over the cloud environment.

(iii) Front end: The front end includes the users/clients who access the data via the Internet. The front end includes computers, user interfaces, and all the means required to access the cloud servers.

(iv) Back end: Back end consists of the cloud computing infrastructure maintained by the cloud service provider. The back end includes various applications and the dedicated servers for each program. This gap between the client and the cloud is then bridged by the Internet.

6. a. The Internet

b. Ravi must select the folder, click Share, enter classmates' email addresses, choose access rights, and click Send.

1. c 2. 13.04% 3. 4

Periodic Assessment 2

(Based on chapters 3 to 5)

1. a. If a company buys or sells products or services to other companies online through a sales portal, it is known as the business-to-business model of e-commerce.
   b. Electronic Fund Transfer (EFT) is a technology that allows the transfer of funds online from one bank account to another.
   c. It is a system of connected computing devices, mechanical and digital machines that create a virtual network where a monitoring centre ensures that everything is working smoothly.
2. a. Public Cloud b. Private Cloud c. Community Cloud
3. (i) Missing `<HEAD>` tag before `<TITLE>`
   (ii) `<BODY>` and `<HEAD>` are wrongly placed
   (iii) Using SRC in `<SCRIPT>` with content inside

Test Sheet 1

(Based on chapters 1 to 5)

1. a. (i) b. (iii) c. (iv) d. (ii)
   e. (iii) f. (iv) g. (ii)
2. a. communication channel b. Personal c. keyframe
   d. Animation timeline docker e. Augmented Reality
   f. LAN (Local Area Network)
3. a. T b. F c. F
   d. F e. T f. F
4. a. A network is a collection of computers and their peripheral devices (the network's components) connected by communication links (wired or wireless) through which data is transferred in the form of signals.
   b. Networking is a way of getting all the devices to communicate with each other and use the same data files and resources through a physical pathway called the transmission medium. This connection between devices can be either wired or wireless.
   c. Two components of Krita are:
      (i) Layers Docker (ii) Animation Timeline Docker
   d. Animation Timline panel is used to set keyframes, play your animation to preview it, and manage multiple layers for different parts of your scene, like characters and backgrounds.

e. Two features of JavaScript are:

(i) It is used in both client-side and server-side applications.

(ii) It is platform independent; hence, it runs on many operating systems.

f. E-commerce refers to the buying, selling and exchanging of goods, services or information over the Internet.

g. Cloud computing works through two main parts: the front end users accessing data via the Internet and the back end cloud servers and applications managed by service providers.

5. a. Data: Data refers to raw facts and figures that are unprocessed and have no meaning by themselves. It can include numbers, characters, symbols, or images. For example, marks obtained by students in a test before calculation are data.

Information: Information is processed or organised data that is meaningful and useful. It is obtained after analysing or interpreting data. For example, the average marks of students calculated from raw test scores is information.

Multimedia: Multimedia is a combination of different types of content such as text, audio, images, animation, and video used together to present information in an interactive and engaging way. It is widely used in education, entertainment, and communication.

b. Frame: A frame is a single image in the sequence that makes up your animation.

Keyframe: A keyframe is a special frame where a new symbol instance appears in the timeline.

c. Animation in Krita creates the illusion of movement by displaying a sequence of still images rapidly. It allows artists to make their drawings move frame by frame, like in a cartoon, and helps bring creative ideas to life.

d. To upload files or folder on OneDrive, follow the given steps:

1. Click on the Add new button.
2. Select the Files upload or Folder upload option.
3. Navigate the location where the file or folder is stored.
4. Select the file or folder which you want to upload.4.4.
5. Click on the Open button.

e. The syntax for using external JavaScript is:

```
<HEAD>
<SCRIPT TYPE="text/javascript" SRC="D:\first.js">
</SCRIPT>
</HEAD>
```

f. Business-to-Business (B2B): If a company buys or sells products or services to other companies online through a sales portal, it is known as the business-to-business model of e-commerce.

Consumer-to-Consumer (C2C): There are various websites that allow buying and selling between the consumers. They offer online auctions where one can buy and sell products.

6. Algorithmic Intelligence

Quiz Bee Page-85

It's a holiday

Entry not allowed

Quiz Bee Page-87

1. b. 2. a. c. b. d. b.

ASSESS YOURSELF

1. a. (ii) b. (iii) c. (iii) d. (i)
2. a. condition b. if c. else d. conditional
3. a. Loops help us automate repetitive tasks and make the code more efficient by avoiding the need to write the same instructions multiple times.

   b. 1 Start
   2 Ask the user: "What day is today?" → Store the answer in today
   3 Ask the user: "Is there a cricket match today? (yes or no)" → Store the answer in match
   4 If today is "Sunday" and match is "yes", then
   a. Display "We have a match on Sunday"
   5 Else
   a. Display "No, match on Sunday"
   6 Stop

   c. 1 Start
   2 Ask the user: "What day is today?" → Store the answer in today
   3 If today is not "Saturday" and today is not "Sunday", then
   a. Display "Exam today"
   4 Else
   a. Display "No exam on weekend"
   5 Stop

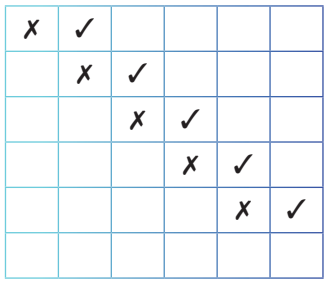
4. a.

Num1	4	7	87	45	22
Num2	7	5	34	32	90
Print	num2 is greater	num1 is greater	num1 is greater	num1 is greater	num2 is greater

b.

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

c. start



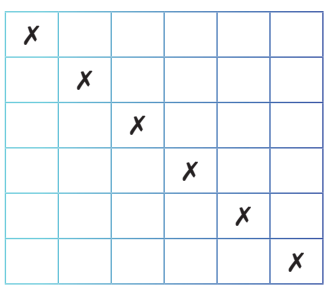
d.

	8	8	8	8	8

start

5. a. start

b. start



6. a. A loop – specifically a counting loop to reduce repetition in code.

b.
```
IF year MOD 4 = 0 AND year MOD 100 = 0 THEN
    PRINT "Yes"
ELSE
    PRINT "No"
```

7. Control Structures in Python

ASSESS YOURSELF

1. a. (iii) b. (ii) c. (i) d. (iii) e. (iii)
2. a. if b. else c. for d. elif e. continue
3. a. while loop b. Nested if c. elif d. Control structure
4. a. A control structure is a programming construct which affects the flow of the execution of a program. Various types of control structures provided by Python are:
   - Sequential Statements
   - Selection Statements
   - Iterative Statements

   b. The if statement is a decision-making statement that is used to control the flow of execution of statements. It contains a conditional expression using which data is compared. A decision is made based on the result of the comparison. If the result of the expression is true, the statements within the if block are executed and if the result of the expression is false, the statements within the if block are not executed.

   Whereas the if-else statement is used to evaluate whether a given statement is true or false. If the given condition is true, the if block is executed. If the given condition is false, the else block is executed.

   c. The continue statement causes the program to skip the rest of the statement of the current block and move to the next iteration of the loop. It immediately transfers control to the evaluation of the test expression of the loop for the next iteration of the loop.

   On the other hand the break statement is used in the for and while loops to terminate the loop and completely transfer the control from the loop to the next statement after the body of the loop.

   d. The syntax of for loop is as follows:

```
for <counter variable> in range(start, stop, step_size):
statements
```

   The syntax of while loop is as follows:

```
while(condition):
statement(s)
increment/decrement
```

e. These statements are used to jump out of the loop iterations even if the condition has not become false. They alter the flow of control unconditionally. The jump statements defined in Python are break and continue.

5. a. y is greater than or equal to x

   b. The sum of the first 10 natural numbers is: 55

   c. 10
      8
      6
      4
      2

   d. Factorial of 7 is 5040

6. a. She should use the continue statement.

   b. She should use the if-elif-else statement.

{CODING ZONE}

1. (i) = should be == (comparison operator)

   (ii) `print` statement needs indentation

2. (i) => is incorrect; it should be >= (greater than or equal)

   (ii) Missing colon : after `else`

   (iii) `print` statements need indentation

8. Functions, String and List in Python

1. A string is a sequence of characters enclosed in single, double, or triple quotes in Python.
2. Escape sequences are special characters used in strings to represent actions like new lines (\n) or tabs (\t).

ASSESS YOURSELF

1. a. (ii) b. (iv) c. (ii) d. (ii) e. (iii)
2. a. append b. function c. lower d. string e. length
3. a. T b. F c. T d. F e. F
4. a. Traversing b. Square brackets [ ] c. Arguments
   d. commas(,) e. extend( )
5. a. A function can be defined as a block of reusable code that performs a specific task. This concept is the foundation upon which the procedural programming concept operates. In Python, a function's key components are the def keyword, function name, parameters, a colon, indented code block (function body).
   b. The main difference between these two categories is that built-in functions do not require to be written by us whereas a user-defined function has to be developed by the user at the time of writing a program.
   c. 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. The backslash (\) is a special character and is also known as the escape character in Python. It is used to represent white space characters, for example, '\t' for tab, '\n' for new line, and '\r' is for carriage return.
   d. The Python return statement marks the end of a function and specifies the value or values to pass back from the function. Return statements can return data of any type, including integers, floats, strings, lists, dictionaries, and even other functions.
   e. upper(): The upper() function converts all lowercase letters to uppercase. Syntax of using upper() function is: string_name.upper().
   capitalize(): The capitalize() function returns a string with the first character in capital. Syntax of using capitalize() function is: string_name.capitalize().
6. a. Hello, World! b. 8 c. python
   d. [1, 2, 3, 4] e. Hello f. 6
7. a. Function to add missed list items: append() or extend().
   b. Mira can use: capitalize().
   c. Aadya can use: + operator to concatenate strings.

{CODING ZONE}

1. a.
```
def greet():
    print("Hello")
greet()
```
Output: Hello

b.
```
def add(a, b):
    return a + b
print(add(2, 3))
```
Output: 5

c.
```
s = "Hello"
print(s)
```
Output: Hello

d.
```
lst = [1, 2, 3]
lst.append(4)
print(lst)
```
Output: [1, 2, 3, 4]

e.
```
def subtract(a, b):
    return a - b
print(subtract(5, 3))
```
Output: 2

Periodic Assessment 3

(Based on chapters 6 to 8)

1. a.
```
Hello Trackpad
Hello Trackpad
Hello Trackpad
Hello Trackpad
Hello Trackpad
Hello Trackpad
```

b.
```
0
1
2
3.
```

2.
```
for num in range(1, 26):
    if num % 2 != 0:
        continue
    print(num)
```

3. a. The len() function calculates and returns the length of a string supplied as an argument.
   b. The append() function inserts the object passed to it at the end of the list.
   c. The capitalize() function returns a string with the first character in capital.
   d. We use the del statement to remove an element or a slice of element from a list.

9. Artificial Intelligence and its Domain

Quiz Bee
Page-134

(i) Data

(ii) Computer Vision

(iii) Natural Language Processing

ASSESS YOURSELF

1. a. (ii) b. (ii) c. (iii) d. (iii) e. (iii)
2. a. F b. T c. F d. F e. T
3. a. Narrow AI b. Data analysis c. Images
   d. Elementary e. Exploring spaces
4. a. Narrow AI b. Computer Vision c. Data d. General AI
5. a. It is a widely known fact that the capabilities of the human mind vary from time to time, situation to situation, their surroundings, and physical and mental exertion. Whereas, AI, on the other hand, has no such limitation and can function efficiently even under harsh conditions. Similarly, AI also has some other advantages over human intelligence like process automation, quick decision making and accuracy.

   b. The starting point of every application is data, which is also the foundation of artificial intelligence. Data is all around us, be it a google search, a passport scan or an online shopping history, all of this contains data that is collected, analysed, and monetised. Data is not just collected but also properly formatted and aligned with the project requirements.

   c. Machine learning enables a computer to understand the context of visual data by using algorithmic models. To achieve this, enough data needs to be fed through the model so that the computer can teach itself to recognise images.

   Convolutional Neural Network (CNN) helps a machine learning model to process the image by breaking it down into pixels. It then transforms it into digital data by applying algorithms before comparing the captured images with those stored in the database. These systems are used to identify an individual based on their facial features like the spacing of their eyes, ears, chin, etc.

   d. AI technology can make mistakes, like giving wrong answers or showing bias. For example, a robot using AI might not recognise people of all skin tones equally. Also, AI can reduce jobs if machines replace human workers.

6. a. Benefits: Fast diagnosis, reduced human error, 24×7 availability.

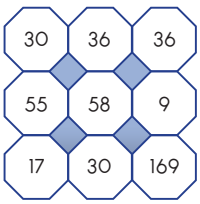
   Challenges: High setup cost, reliance on data quality, lack of emotional understanding.

   b. NLP enhancing real-world experiences:

   Example: Chatbots for 24×7 customer support

   Benefit: Saves human time, gives instant responses, improves user satisfaction

{CODING ZONE}

1. 

2. 354

10. Fields of Artificial Intelligence

Quiz Bee
Page-142

AI helps banks and financial sectors in various ways. AI predicts future scenarios by analysing past user experiences. This enables banks to predict future outcomes and trends. It also helps banks identify fraud and detect anti-money laundering patterns.

ASSESS YOURSELF

1. a. (ii) b. (iii) c. (iii) d. (iii) e. (ii)
2. a. F b. F c. T d. F
3. a. Monitoring b. Interactive c. Smart Cities
   d. Voice e. Information
4. a. Fyle b. E-commerce c. Alexa d. Socratic e. Amazon
5. a. AI in e-commerce helps in interactive and personalized buying experience. With the AI-enabled systems, companies can see their customer's preferences and can boost their sales by reliable and customized shopping experiences. AI helps in the real-time database analysis to predict

the number of customers willing to buy a new product, and it also helps in running a cashier less store.

b. Four benefits of Smart Homes are:

Power Saver: Smart Homes are great at saving power. Often it is found that people are lazy in turning off lights, which increases the consumption of power and water. These types of homes allow their users to turn off the lights and electronic gadgets even when they are off to bed.

Increased Energy Efficiency: Smart Home technology makes it possible to make the home energy-efficient. The control of heating and cooling of the home with a programmable thermostat learns the user's preferences and then suggests the best energy efficient settings throughout the day. Even the lights could be programmed to automatically switch to an evening mode as the sun sets or automatically turn off when no one is at home.

Protect the Home and Its Belongings: The home is protected from intruders with AI systems. Once they are configured, the door/window and motion sensors notify the owner when someone tries to break in their house, when no one is at home. There are wireless doorbells and intelligent locks that provide an additional level of security to live with mental peace.

Interactive Home: The AI enabled appliances are controlled through voice or smart phones. Some appliances even support gestures by sensing the motion like hand gestures or tap recognition like a knock.

c. Some challenges in developing smart cities include high costs, lack of proper planning, poor internet connection, and data privacy issues. It's also hard to train people and upgrade old systems to work with new smart technology.

d. A smart camera is more effective for home security because it covers more areas and records all activity. A video doorbell is helpful too, but it mostly shows who is at the door, not the whole house.

6. a. Nimi's father is talking about Alexa.

b. Smart thermostat.

4	2	1	3
1	3	4	2
3	4	2	1
2	1	3	4

11. Introduction to SDGs and Data Science

Quiz Bee
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Unstructured Data

ASSESS YOURSELF

1. a. (iv) b. (ii) c. (ii) d. (iii) e. (iii)
2. a. T b. F c. T d. F e. T
3. a. Big data b. Organised, Formatted c. Data
   d. Hadoop e. Components
4. a. Structured Query Language (SQL)
   b. Python
   c. Tableau
   d. Unstructured Data
5. a. AI can help in reaching out the goal by tracking food wastage, finding ways to grow yields, identifying diseases and pest outbreaks, analysing means to reduce population, etc.
   b. Some of the key challenges to sustainable development are given below:
      - There is instability and conflict between the nations.
      - There is lack of proper planning and implementation of programmes to fit the local level.
      - Non-profit organisations may lack skilled resources such as data scientists and NLP engines.
      - Human bias may be embedded in AI models or datasets.
      - Sensitive data needs to be protected from being made public.
   c. AI in education can be used to achieve quality education goals by developing smart content, providing personalized guidance, round the clock assistance, virtual learning environment and creating more secured online exams.
   d. A data scientist is someone who uses data sets to create a hypothesis and then works on the data set to analyse the data, interprets it and makes sense of it. A data scientist is responsible for dealing with all types of data. He/she uses various tools and practises to recognise patterns within the data.

6. a. To improve healthcare in remote regions, I would:
   - Use AI diagnostic tools (like smart apps or scanners) to assist with disease detection.
   - Implement wearable devices for real-time patient monitoring.
   - Use AI-based learning platforms to train local health workers.
   - Set up AI chatbots and telemedicine platforms to provide remote consultations.

   b. To enhance AI for customer service:
   - Collect and clean real customer interaction data.
   - Use data labelling for training NLP and vision models.
   - Apply machine learning to build and improve models.
   - Monitor and reduce data bias for fair results.
   - Use user feedback to retrain and improve AI performance.

{CODING ZONE}

a. 58 b. Do it yourself. c. Do it yourself.

d. 2 e. 354

PERIODIC ASSESSMENT 4

(Based on chapters 9 to 11)

1. a. ROBOTICS
   b. ARTIFICIAL INTELLIGENCE
   c. CINEMAS VISION
   d. LOGISTICS PLANNING
   e. ALAN TURING

2. a. SDG 05: Gender Equality: For sustainable development, it's necessary that we end all forms of discrimination against women. This is a basic human right. We need to provide equal access to resources, opportunities, power and property to women in the world. AI powered apps can be used by employers to use gender sensitive language for their recruitment-drive. AI can analyse a huge amount of data to find the area where more gender specific issues exist.

   b. SDG 02: Zero Hunger: This goal aims to end hunger issues by 2030 and ensure access to nutritious food for all children. AI can help in reaching out to the goal by tracking food waste, finding ways to grow yields, identifying diseases and pest outbreaks, analysing means to reduce population, etc.

c. SDG 15: Life on Land: This aims at protecting, restoring and promoting the sustainable use of terrestrial ecosystems, managing forests, fighting deforestation, reversing land degradation and stopping biodiversity loss. In future, AI methods may be used to create a digital dashboard for the planet, to help us monitor, model, foresee and manage environmental systems on a global scale.

d. SDG 16: Peace, Justice and Strong Institutions: This aims to guarantee justice and freedom for all people by 2030. The target is to significantly reduce all forms of violence with communities and governments to end conflict and insecurity.

3. a. General AI systems are intelligent systems designed to perform any intellectual task that a human can do, unlike narrow AI which is programmed for specific tasks.

b. E-commerce uses the Machine Learning domain of AI to analyse customer behaviour, recommend products, and optimize pricing strategies, while traffic pattern predictions are typically part of navigation or transportation applications.

Test Sheet 2

(Based on chapters 6 to 11)

1. a. (iii) b. (i) c. (iii) d. (iii)
   e. (i) f. (ii) g. (i)
2. a. control structure b. sequential
   c. Functions d. lower()
   e. Computer Vision f. Natural Language Processing (NLP)
   g. home automation
3. a. F b. T c. F d. F
   e. T f. T
4. a. Sometimes, we need to evaluate multiple statements to get a certain result. In such scenarios, we can use the if-elif-else statements to evaluate multiple scenarios.

   b. A control structure is a programming construct that affects the flow of the execution of a program. Various types of control structures provided by Python are:
   - Sequential Statements
   - Selection Statements
   - Iterative Statements

   c. A function can be defined as a block of reusable code that performs a specific task. This concept is the central aspect on which the concept of procedural programming works.

   d. A list is a type of container that is used to store a list of values of any type. One can store an integer, string as well as objects in a single list.

e. Convolutional Neural Network (CNN) helps a machine learning model to process the image by breaking it down to pixels. It then transforms it into digital data by applying algorithms before comparing the captured images with those stored in the database.

f. AI is extensively used in social media platforms to serve personalised content. These sites monitor the way you use the features that they provide and record the way you use them. This data is used to create ads that are customised according to your preferences.

g. AI can help in reaching out to the goal by tracking food waste, finding ways to grow yields, identifying diseases and pest outbreaks, analysing means to reduce population, etc.

5. a. These statements are used to jump out of the loop iterations even if the condition has not become false. They alter the flow of control unconditionally. The jump statements defined in Python are break and continue.

THE break STATEMENT

The break statement is used for exiting the program control out of the loop. The break statement stops the execution of the loop and program flow continues to the statement after the loop. It is mostly used when we need to exit a loop prematurely before the loop condition becomes false.

THE continue STATEMENT

The continue statement causes the program to skip the rest of the statement of the current block and move to the next iteration of the loop. It immediately transfers control to the evaluation of the test expression of the loop for the next iteration of the loop.

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 and pass the parameters. For example:

To call a function:

```
def my_function()
      print ("Hello")
my_function()
```

c. The starting point of every application is data and it is the foundation of Artificial Intelligence. Data is all around us, be it a google search, a passport scan or an online shopping history, all of this contains data that is collected, analysed, and monetised. Data is not just collected but also properly formatted and aligned with the project requirements.

Some examples of AI applications based on data are as follows:

- Weather prediction models using AI need data such as temperature, humidity and all underlying patterns that impact weather.
- AI is used in the prediction of upcoming customer orders for the next season. This enables retailers to plan the inventory and purchases which helps them predict and control the cost.

d. AI has lots of benefits, but it is not void of mistakes or errors. Let us understand the risks and limitations of this technology as well.
   - High cost of creation: AI is both an emerging field and a new technology. Hence, it is difficult to find people who can work on this technology.
   - Making humans lazy: The automated applications that perform the majority of work are making humans lazy. This might lead to an addiction to convenience in future generations.
   - Unemployment: Majority of repetitive tasks are being replaced by robots, causing organisations to replace less qualified employees with AI robots to do similar tasks.
   - No emotions: Decisions made by humans are heavily dependent on emotions. AI on the other hand, does not have any emotions yet, so it lacks human connect and may not always be effective.
   - No out-of-box thinking: Machines may have the ability to learn and get better than humans with tasks if coded and designed to do so, but when encountered with new situations which they are not programmed for, they tend to crash or give unusual outputs.

e. Data science is a field that studies data and the ways it can be transformed into valuable input and resources to create business and IT strategies. This is a science that combines domain expertise, programming skills and knowledge of mathematics to extract insights from the large and ever-increasing volumes of data collected by organisations.