Class 8

Answer Key

DigiCode AI (Ver. 2.1)

1. Google Apps

TECH SET GO (Page no. 7)

1. Facebook (United States)
2. WhatsApp (United States)
3. X (United States)
4. Instagram (United States)

BYTE QUEST (Page no. 18)

1. Gmail
2. Google Drive
3. Google Maps
4. Google Docs

TECH READY

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

B. 1. Sundar Pichai 2. Google Sheets
3. Share 4. Map, Satellite, Terrain 5. Saved

C. 1. Google Drive is a cloud-based storage service. The synchronisation feature allows you to download and upload files into the remote server.

2. Gmail account is used to access other apps of Google.

3. Google Maps is a digital navigation program that provides detailed information about the geographical regions of any particular area. Google Map was launched on February 8, 2005. It became available in the Play Store from December 2012.

4. Perform the following steps to download a file from Google Docs:

   Step 1 Click on the File option.

   Step 2 Click on the Download option.

   Step 3 Select the desired format and click on save button.

IMPRINT 1

TECH TWISTER

1. Google Slides 2. YouTube 3. Google Sheets 4. Broadcast Yourself
5. Google Docs 6. Google Drive 7. Gmail 8. Map view 9.Google

Competency-based/Application-based questions

1. She can use preview option to change the view of files.
2. Google Map

BYTE TASK (Page no. 23)

Do it yourself.

2. Animation in Krita

TECH SET GO (Page no. 24)

1. Crop Tool
2. Freehand Brush Tool
3. Polygon Tool
4. Rectangle Tool
5. Smart Patch Tool

BYTE QUEST (Page no. 29)

1. (d) 2. (c) 3. (b) 4. (a)

BYTE QUEST (Page no. 35)

1. Layers 2. Stage 3. Timeline

TECH READY

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

B. 1. F 2. F 3. T 4. T 5. T 6. T

C. 1. Layers are transparent sheets containing objects which are stacked on top of each other so that the individual properties of an object are preserved.

2. Layers are useful in Krita as the layers help edit an object without affecting other objects.

3. To use the multiple layers in a file , follow the given steps:

Step 1: Insert an image into the file as a new layer.

Step 2: Click on the Text Tool.

IMPRINT 1

Step 3: Apply desired formatting styles and click on **Save** button.

New object can be added as separate layers without affecting the properties of the objects in the other layer.

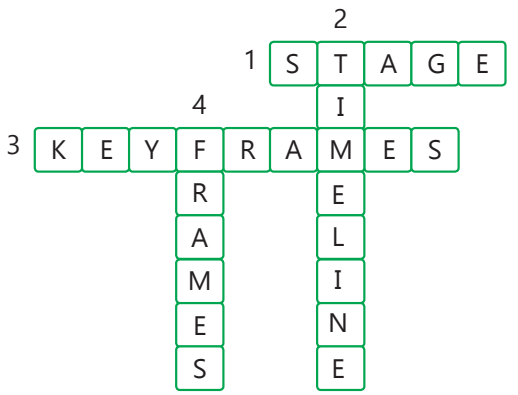
4. Timeline is used to control and manage the animation of different objects and layers.
5. The animation takes place in number of small steps where an object is moved in small steps one at a time. Each step is depicted as a frame in the timeline.

TECH TWISTER (Page no. 38)

A.

1. Add Layer button
2. Duplicate layer or mask button
3. Delete the layer or mask button
4. Closed-eye-shape icon
5. Open-eye-shape icon

B.



Competency-based/Application-based questions

1. Choose workspace icon.
2. She can change Speed in the Timeline.
3. To delete a layer without affecting other, she should:

   Step 1: Select the layer which she wants to delete.

   Step 2: Click on the Delete the layer or mask button at the bottom right corner of the Layers docker.

BYTE TASK (Page no. 39)

Do it yourself.

IMPRINT 1

3. Trending Technologies

TECH SET GO (Page no. 41)

Do it yourself.

BYTE QUEST (Page no. 44)

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

BYTE QUEST (Page no. 46)

TECH READY

A. 1. (i) 2. (ii) 3. (ii) 4. (ii) 5. (i)

B. 1. T 2. F 3. F 4. T 5. T 6. T

C.

1. 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.
2. Machine Learning (ML) is a technology that enables computers to learn from data and improve their performance on a task without being explicitly programmed for that task.
3. Augmented Reality is a technology that superimposes sounds, images and text on the real world that we can see. For Example, Snapchat, Pokemon Go.

   Virtual Reality is a technology that creates a complete virtual world that users can interact with. For Example, HTC Vive and Google Cardboard.
4. 3D Printing or 3-Dimensional Printing is a process of making a physical object from a threedimensional physical model. Tvasta is India's first 3d printed house which was created in 2020, in Chennai.

IMPRINT 1

TECH TWISTER

A. Do it yourself.

B.
1. Ameca robot's movements are more lifelike than other robots.
2. Sophia is considered the most advanced humanoid robot. It is the world's first robot citizen.
3. Aibo is a robotic dog. It can develop emotional bonds with family members and provide love and affection.
4. Nao is a small humanoid robot, packed with sensors. It can walk, dance, speak, and recognise faces and objects.

Competency-based/Application-based questions

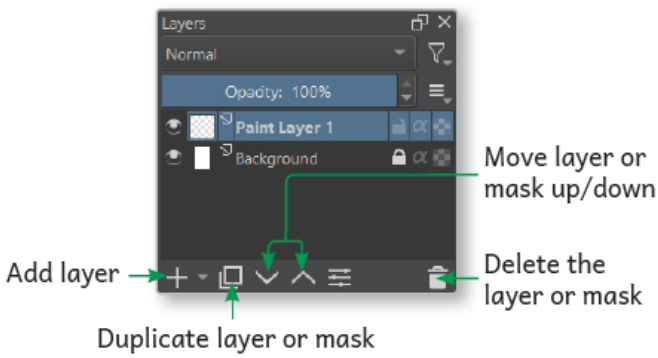
1. Voice Recognition
2. 3D Printing

Periodic Assessment 1

(Based on chapters 1 to 3)

A. 1. Like button 2. Google Sheets 3. Google Maps 4. Dislike button

B.



C.
1. Animation is a method by which images are manipulated in a manner so that they appear as moving objects.
2. Timeline is a rectangle shape section which is used to control and manage the animation of different objects and layers.
3. Keyframes are special frames where some change is defined in the properties of an object. This change can be as change in size, shape, colour, position, etc.

IMPRINT 1

D.

1. Augmented Reality (AR) is a technology that superimposes sounds, images and text on the real world that we can see. Images are created by developers within applications that blend in with content in the real world.
2. Virtual Reality is a technology that creates a complete virtual world that users can interact with. In this world, you can experience places as if you were actually there. While using virtual reality, the user almost always wears VR devices such as HTC Vive or Google Cardboard.
3. Robotic Process Automation (RPA) is a software robot running on 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.
4. Internet of Things (IoT) describes the network of physical devices that have unique identifiers (UIDs). This technology can transfer data over a network without any human intervention.

4. Algorithmic Intelligence

TECH SET GO (Page no. 53)

1. You can vote
2. You can do better!

CODE QUEST (Page no. 55)

1. It's a holiday
2. Entry not allowed

CODE QUEST (Page no. 56)

Program without loop:

Move 1 step right

Move 1 step right

Move 1 step right

Move 1 step right

Move 1 step up

Move 1 step up

Move 1 step up

Program with loop:

Repeat 4 times

  Move 1 step right

Repeat 3 times

  Move 1 step up

TECH READY

A. 1. (ii) 2. (iii) 3. (iii) 4. (i)

B. 1. condition 2. if 3. else 4. conditional

C. 1. Loops help in automating repetitive tasks and make the code more efficient by avoiding the need to write the same instructions multiple times.

2.
```
today = "Sunday"
cricket_match = True
IF today = "Sunday" AND cricket_match = True THEN
    PRINT "Yes"
ELSE
    PRINT "No"
```

3.
```
IF today IN ["Monday", "Tuesday", "Wednesday", "Thursday", "Friday"]
OR exam_day = True THEN
      PRINT "Exam today"
   ELSE
      PRINT "No exam on weekend"
```

TECH TWISTER

A. 1.

Num1	4	7	87	45	22
Num2	7	5	34	32	90
Print	Num 2 is greater	Num 1 is greater	Num 1 is greater	Num1 is greater	num2 is greater

2.

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

3. Start

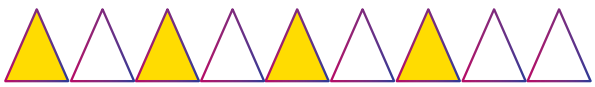
×	✓				
	×	✓			
		×	✓		
			×	✓	
				×	✓

4.

	8	8	8	8	8

Start

B. 1.



2. Start

×					
	×				
		×			
			×		
				×	
					×

Competency-based/Application-based questions

1. He can use Loop in the code.
2. If ((year % 4 = 0) and year % 100! = 0)) or (year % 400 = 0)
   then
   display 'Yes'
   else
   display 'No'.

5. Advanced MakeCode Arcade

TECH SET GO (Page no. 61)

Step 1: Input a number (Num)
Step 2: If Num is less than 2
Step 3: Print "It's not a prime number"
Step 4: For each whole number i from 2 to √Num
Step 5: If Num is divisible evenly by i
Step 6: Print "It's not a prime number"
Step 7: Exit the loop
Step 8: Print "It's a prime number"

CODE QUEST (Page no. 75)

1. The main purpose of using functions is to get rid of the repetitive block of code.
2. Argument: The actual value passed to a function when it's called. It fills in the placeholders defined by the parameters.

   Parameter: A variable defined in a function's definition. It's like a placeholder for a value that will be passed to the function when it's called.

TECH READY

A.	1.	(iv)	2.	(iv)	3.	(ii)	4.	(ii)	5.	(iii)
B.	1.	Loop	2.	While	3.	Forever	4.	Break	5.	Function
C.	1.	T	2.	F	3.	T	4.	F	5.	F

D.

1. Loops are fundamental programming constructs that allow you to repeat a set of instructions multiple times. In MakeCode Arcade, loops are especially useful for tasks like animating sprites, creating repeated patterns, or controlling different elements.
2. The break statement changes the normal flow of execution of the statement by exiting the existing loop and continuing the flow of the statement after that loop.
3. Benefits of using functions are:
   - **Reusability:** Avoid writing the same code multiple times.
   - **Modularity:** Break down complex programs into smaller, manageable parts.
   - **Organisation:** Easier to locate and modify specific code sections.
4. **Parameter:** A variable defined in a function's definition. It's like a placeholder for a value that will be passed to the function when it's called.

IMPRINT 1

Argument: The actual value passed to a function when it's called. It fills in the placeholders defined by the parameters.

5. To create a function follow the given steps:

   i. **Open the Functions Block:** In the MakeCode Arcade editor, look for the "Functions" block category. It usually resides at the bottom of the toolbox.

   ii. **Create a New Function:** Drag and drop the "function" block onto your workspace.

   Rename the function to something descriptive. For example, if the function will handle player movement, you could name it "movePlayer".

   iii. **Add Code to the Function:** Inside the function block, add the code that defines the function's behaviour. This could involve moving sprites, playing sounds, or any other actions you want to perform.

   iv. **Call the Function:** To use the function, you need to "call" it. Drag and drop a "call movePlayer" block (or whatever you named your function) where you want the function's code to be executed.

TECH TWISTER

A. Do it yourself.

Competency-based/Application-based questions

1. Swarna can reduce the number of repeated statements in her program by using loops.

2. Maya can use parameter and argument functions.

Periodic Assessment 2

(Based on chapters 4 & 5)

A.

```
Repeat 5 times
(
Fill Colour
Move 1 right
Move 1 down
)

Repeat 5 times
```

```
(
Move 1 up
)

Repeat 5 times
(
Fill Colour
Move 1 left
Move 1 down
)
```

B. This program effectively counts down from 10 to 0, displaying each value during the countdown.

C. Do it yourself.

Test Sheet 1

(Based on chapters 1 to 5)

A.

1.	(iii)	2.	(ii)	3.	(iv)	4.	(i)	5.	(ii)
6.	(i)	7.	(iii)	8.	(iv)				

B.

1.	else	2.	conditional	3.	Sundar Pichai	4.	Google Sheets
5.	Share	6.	saved	7.	forever		

C.

1.	F	2.	T	3.	F	4.	T	5.	T
6.	T	7.	T	8.	T				

D.

1. Layers are useful in Krita as the layers help edit an object without affecting other objects.
2. To use the multiple Layers in a file , follow the given steps:

   Step 1: Insert an image into the file as a new layer.

   Step 2: click on the Text Tool.

   Step 3: Apply desired formatting styles and click on Save button.

   New object can be added as separate layers without affecting the properties of the objects in the other layer.
3. Gmail account is used to access other apps of Google.
4. Perform the following steps to download a file from Google Docs:

   Step 1: Click on the File option.

   Step 2: Click on the Download option.

IMPRINT 1

Step 3: Select the desired format and click on save button.

5. 3D Printing or 3-Dimensional Printing is a process of making a physical object from a three-dimensional physical model. Tvastais India's first 3d printed house which was created in 2020, in Chennai.

6. Augmented Reality is a technology that superimposes sounds, images and text on the real world that we can see. For Example, Snapchat, Pokemon Go.

   Virtual Reality is a technology that creates a complete virtual world that users can interact with. For example, HTC Vive and Google Cardboard.

7. Loops are fundamental programming constructs that allow you to repeat a set of instructions multiple times. In MakeCode Arcade, loops are especially useful for tasks like animating sprites, creating repeated patterns, or controlling different elements.

8. **Parameter:** A variable defined in a function's definition. It's like a placeholder for a value that will be passed to the function when it's called.

   Argument: The actual value passed to a function when it's called. It fills in the placeholders defined by the parameters.

6. Looping Statements in Python

TECH SET GO (Page no. 83)

1. F 2. T 3. T 4. T 5. F 6. T

CODE QUEST (Page no. 89)

1.
```
for <counter variable> in range(start, stop, step_size):
        Statements
```

2.
```
while (test expression):
        Statements
    increment/decrement expression
```

3. A. -10
-9
-8
-7
-6

-5

-4

-3

-2

-1

B. Orange Education

Orange Education

Orange Education

Orange Education

Orange Education

TECH READY

A. 1. (iii) 2. (i) 3. (i) 4. (iii)

B. 1. iterative 2. two 3. infinite 4. break, continue

C. 1. T 2. F 3. T 4. T 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. The values generated by this function are: 10, 12, 14, 16, 18.

3. Sometimes, 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.

4. The while statement is used to repeat a set of instructions until a condition evaluates to true. When the condition becomes false, the control comes out of the loop.

```
For example,

Program:

i = 0

a = input("Enter the string: ")

while i<len(a):

    print("Current Letter: ", a[i])

    i += 1
```


IMPRINT 1

Output:

Enter the string: Orange

Current Letter: O

Current Letter: r

Current Letter: a

Current Letter: n

Current Letter: g

Current Letter: e

5. • The **continue** statement is used inside loops. 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 inside the loop for the current iteration.

   • 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. A single **break** statement will break out of only one loop.

TECH TWISTER

1. 55

2. 2

4

3. 0

0

1

0

2

Competency-based/Application-based questions

While loop statement.

7. Functions in Python

TECH SET GO (Page no. 95)

```
sum = 0
for i in range(1, 6):
```

```
    sum += i
print("Sum of the first five natural numbers is", sum)
```

CODE QUEST (Page no. 97)

1. **Parameters:** These are the variables given inside the parentheses in the function definition.

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

2. 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.

TECH READY

A.

1.	(i)	2.	(iv)	3.	(iv)	4.	(iii)	5.	(iii)

B.

1.	return	2.	arguments	3.	User-defined	4.	def	5.	command

C.

1.	T	2.	T	3.	T	4.	T	5.	T

D.

1. Built-in functions do not require to be written by us, for example range(), type(), etc.
2. The features of functions are:
   - A program is divided into small modules and each module performs some specific task. Each module can be called as per the requirement.
   - 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.
3. Following are the advantages of functions:
   - You can write Python program in logically independent sections.
   - Functions provide better modularity for your application and a high degree of code reusing.
   - As the program grows larger, functions make it more organized and manageable.
4. 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.

   Parameters: These are the variables given inside the parentheses in the function definition.

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

   Return Value: A function may or may not return a value.
5. We can create a function in the following ways
   - **Defining a Function:** We use the **def** keyword to begin the function definition.

- **Naming a Function:** Provide a meaningful name to your function.
- **Supply Parameters:** The parameters (separated by commas) are given in the parenthesis following the name of the function. These are basically the input values we pass to the function.
- **Body of the function:** The body of the function contains Python statements that make our function perform the required task. Syntax of creating a function is:

```
def < name of the function > (list of parameters):
    <body>
        <return statement>
```

6. 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. User-defined functions are divided into various categories based on the parameters and return type. The functions that do not take any parameter or return anything are called type 1 functions.

   The type 2 functions take parameters but do not return anything. The type 3 functions take parameters and return output.

TECH TWISTER

1. testing...
   passing the value 4
   the function returns 4
2. Enter number2
   Raise to power3
   2 raise to power 3 is 8

Competency-based/Application-based questions

(ii) user-defined function

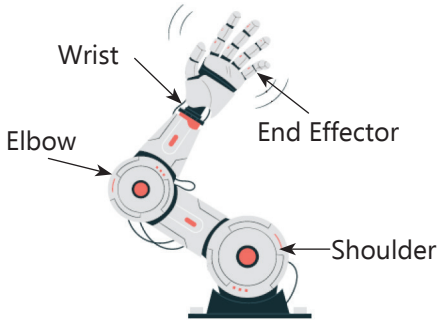
8. Parts of Robots

TECH SET GO (Page no. 103)

1. Machine Learning (ML) is a technology that discovers rules causing a problem by using the data and finding a solution to that problem.
2. An algorithm is a process or set of rules which need to be followed to solve the given problem.
3. Deep learning techniques will provide machine to perform high-level thoughts, image recognition, etc.

4. Pattern recognition is the process of identifying and classifying patterns within data or signals, often using machine learning algorithms to automate the task.

AI QUEST (Page no. 108)



TECH READY

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

B. 1. programmable 2. arm 3. Hydraulic
4. CPU 5. Electricity

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

D. 1. End effector is fixed at the end of the manipulator. Manipulators are usually set and End effectors are free to move and perform tasks. They are expected to perform the tasks traditionally performed by human fingers and palm of a human hand.

2. The robot's Manipulator is just like a human arm and has several joints and links. They are electronically controlled devices consisting of multiple sections. A manipulator uses strong links connected by joints with one fixed end and one free end to perform a given job, such as moving a box from one location to another.

3.

S. No.	Humans	Robots
1.	Humans are organic entities.	Robots are mechanical devices.
2.	Humans can die; they do not come back to life.	Robots do not die; they can be repaired or replaced.

4. Locomotion Device: Human beings use muscles to give movements to their arms, palms and fingers. For a robot, the power comes from motors. Three fuels are used in locomotion, depending on the energy source.

There are three widespread types of Locomotive devices, Electric, Hydraulic and Pneumatic.

5. Without the data supplied by the sense organs, the human brain cannot perform intelligently in any given situation. Similarly, controllers would be unable to perform if the robot's sensors do not constantly feed the controller about their position, force, temperature, etc. The sensors are the powerhouse of a robot's feedback system and act as eyes and ears.

TECH TWISTER

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

Competency-based/Application-based questions

1. Hydraulic locomotive device

2. (ii) Mobile robot

Periodic Assessment 3

(Based on chapters 6 to 8)

A. 1. It will create an infinite loop.

2. Name: Taarush

Age: 21

B.

```
Correct_password ="mySecret123"
while True:
        entered_password = input("Enter password: ")
        if entered_password == Correct_password:
            print("Correct password. Access granted!")
```

```
            break
        else:
            print("Incorrect password. Try again.")
```

C.
1. Built-in functions do not require to be written by us, for example range(), type(), etc.
2. The controller in a robot, like the CPU in humans, processes data collected by its sensors and triggers responses based on feedback from the environment.
3. The sensors are the powerhouse of a robot's feedback system and act as eyes and ears. A wide range of sensors is used in a robot system to perform the tasks.

9. Domains of AI

TECH SET GO (Page no. 113)

There are 4 stages of HMI. This involves the activities of intention, selection, execution and evaluation.

- Intention: This is the first stage of HMI. In this stage the user first sets the goal for interaction. And then perform actions using a system to reach to the goal. This is a mental stage.
- Selection: This stage is also defined as the selection of action. In this stage order of actions are set. This means that the user defines how the interaction is going to take place.
- Execution: Once the course of action is set it moves for the execution. In this stage the action is performed.
- Evaluation: This is very important stage in HMI as the success of the interaction depends upon the feedback.

AI QUEST (Page no. 116)

1. Natural Language Processing (NLP), Computer Vision (CV)

2. Self-driving cars use computer vision to examine their surroundings and plan its path.

TECH READY

A. 1. (iii) 2. (ii) 3. (ii) 4. (iii)

B. 1. Natural language processing 2. Voice assistant
3. Computer vision 4. Artificial intelligence

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

IMPRINT 1

D. 1. There are different approaches or domains to achieve Artificial Intelligence. There are various methods through which we can develop artificially intelligent systems. Different domains of AI are:

- Natural Language Processing
- Computer Vision
- Data Science

2. Some real life applications of the different domains of AI:

Data Science: Personalised recommendation systems on platforms like Netflix and Amazon rely heavily on data science.

Computer Vision: Self driving cars, drones that can examine crop health, patient imaging and diagnostics and security and surveillance.

Natural Language Processing: Voice assistants and chatbots.

3. Real Life uses of NLP are voice text messaging and virtual assistants.

4. Computer Vision is a very popular field of AI that trains a computer to understand and interpret the visual world. Human vision starts at the "eyes" but machine uses digital images from a camera for vision. Deep learning models and machines accurately identify and classify objects that act according to what they see, using digital images from camera.

TECH TWISTER

Do it yourself.

Competency-based/Application-based questions

1. Computer Vision

10. SDGs

TECH SET GO (Page no. 122)

Do it yourself.

AI QUEST (Page no. 126)

1. Climate Action
2. Partnership For The Goals
3. No Poverty

4. Quality Education
5. Sustainable Cities and Communities
6. Responsible Consumption And Production
7. Life On Land
8. Clean Water And Sanitation
9. Decent Work And Economic Growth

TECH READY

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

B. 1. 2030 2. 10 3. 16 4. cooperate 5. water
6. economic

C. 1. F 2. F 3. T 4. F 5. T 6. T

D. 1. In 2015, the General Assembly adopted the 2030 agenda for Sustainable Development that includes 17 Sustainable Development Goals (SDGs). These are based on the principle of "Leaving none behind", where it emphasises a holistic approach to achieve SDGs. The 17 SDGs were laid to transform the world into a better place to live for everyone.

2. Goal 12 aims to achieve efficient use of natural resources and reduce global food waste at retail and consumer level.

3. AI is very good at routine tasks and in analysing a lot of data. This makes AI an indispensable ally in improving the condition of the world. AI can analyse data from the past years to make predictions that can improve the agriculture yield and also predict the weather patterns to make accurate future assumptions.

4. The SDG 13 aims to take urgent action to combat climate change and its impacts. It aims to improve the present conditions to mitigate natural disasters and create awareness among people.

TECH TWISTER

A. Do it yourself.

B. Do it yourself.

Competency-based/Application-based questions

He can relate with SDG 15 to complete his task.

IMPRINT 1

11. Possibilities with AI

TECH SET GO (Page no. 131)

1. F 2 F 3. F 4. T

AI QUEST (Page no. 136)

The skills required to be a Robotics engineer are:

- Creative ideas
- Programming mind-set
- Science, mathematics or applied mathematics, electronics, psychology and cognition.
- Knowledge of Robot Operating System and C++.

AI QUEST (Page no. 138)

Some of the AI start-ups in India are:

- Niramai Health Analytix
- Haptik.ai
- Discover.ai

TECH READY

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

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

C. 1. Some of the technical skills required to get a job in the field of AI are:

- Programming language
- Machine learning algorithm
- Artificial neural networks
- Mathematics and Algorithms
- Signal processing techniques

2. Following are the soft skills:

- Data literacy skills
- Collaboration skills
- Critical thinking skills

IMPRINT 1

- Leadership skills

3. Healthcare, Manufacturing, Transportation, Information Technology, Business Intelligence, Supply Chain Management, Construction, Retail and Cybersecurity are the industries impacted by AI revolution.
4. A Computer Vision Engineer is expected to have mastery over:
   - Image generation and segmentation
   - Classification of images
   - Object detection and tracking moving object over time
   - Optical character recognition
   - Face detection and recognition

TECH TWISTER

1. Niramai Health Analytix
2. Doxper
3. Expertrons
4. Haptik.ai
5. Niki.ai

Competency-based/Application-based questions

1. Expertrons
2. Technical skills required for data scientist are:
   - Machine Learning techniques
   - Data Visualisation and Reporting

Periodic Assessment 4

(Based on chapters 9 to 11)

A.
1. Natural Language Processing involves enabling computers to understand, interpret, and generate human language.
2. Computer Vision is a very popular field of AI that trains a computer to understand and interpret the visual world.

B.
1. **Goal 2:** It aims to end hunger, achieve food security, improve nutrition and promote sustainable agriculture.

IMPRINT 1

2. **Goal 7:** It aims to achieve universal access to modern energy, increase in renewable energy and improvement in energy efficiency.
3. **Goal 14:** It aims to reduce water pollution and protect and restore ecosystems.
4. **Goal 16:** It aims to reduce violence, protect women and child abuse, promote rule of law.

C. 1. Machine Learning Engineer requires to be good at:

- Statistics.
- Deep learning, dynamic programming, neural network architectures, natural language processing, audio and video processing, reinforcement learning, advanced signal processing techniques, and the optimization of machine learning algorithms.

2. Aerospace engineers are required to be good at:

- Applied Mathematics
- Astrophysics
- Machine Learning
- Electronics

3. A robotics engineer requires to be good at:

- Creative ideas
- Programming mind-set
- Science, mathematics or applied mathematics, electronics, psychology and cognition.

Test Sheet 2

(Based on chapters 6 to 11)

A. 1. (i) 2. (iii) 3. (iv) 4. (i) 5. (i) 6. (ii)
7. (ii) 8. (i)

B. 1. machine learning 2. 270% 3. cooperate 4. water
5. Computer vision 6. CPU 7. command 8. iterative

C. 1. F 2. T 3. T 4. T 5. T
6. F 7. T 8. T

D. 1. Some of the technical skills required to get a job in the field of AI are:

- Programming language
- Machine learning algorithm
- Artificial neural networks

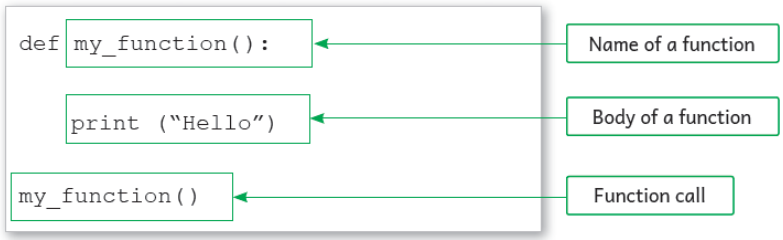
IMPRINT 1

- Mathematics and Algorithms
- Signal processing techniques

2. Following are the soft skills:
   - Data literacy skills• Collaboration skills
   - Critical thinking skills• Leadership skills
3. AI is very good at routine tasks and in analysing a lot of data. This makes AI an indispensable ally in improving the condition of the world. AI can analyse data from the past years to make predictions that can improve the agriculture yield and also predict the weather patterns to make accurate future assumptions. This way AI can help us to achieve the SDG and make this world a better place to live.
4. The SDG 13 aims to take urgent action to combat climate change and its impacts. It aims to improve the present conditions to mitigate natural disasters and create awareness among people.
5. Some real life applications of the different domains of AI:
   - **Data Science:** Personalised recommendation systems on platforms like Netflix and Amazon rely heavily on data science.
   - **Computer Vision:** Self driving cars, drones that can examine crop health, patient imaging and diagnostics and security and surveillance.
   - **Natural Language Processing:** Voice assistants and chatbots.
6. Locomotion Device: Human beings use muscles to give movements to their arms, palms and fingers. For a robot, the power comes from motors. Three fuels are used in locomotion, depending on the energy source.

   There are three widespread types of Locomotive devices.
   - Electric: This uses magnets and electric current to facilitate movement. They are noiseless and easy to program.
   - Hydraulic: This uses oil to facilitate movement. They are used in heavy machinery, which includes mining and construction equipment.
   - Pneumatic: This uses air to facilitate movement. They are used in Rock drills, pavement breakers, paint sprayers, etc.
7. A function can be called anytime from other functions or from the command prompt after the definition. To call a function, type the function name followed by parentheses. If the function requires parameters, include them inside the parentheses.

For example: To call a function.



8. • The continue statement is used inside loops. 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 inside the loop for the current iteration.
   • 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. A single break statement will break out of only one loop.