Class 8

Answer key

Digicode AI

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
5. Google Sheets 6. Google Slides

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.

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

IMPRINT 1

Competency-based/Application-based questions

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

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. Keyframe 2. Stage 3. Timeline

TECH READY

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

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

D. 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.

   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.

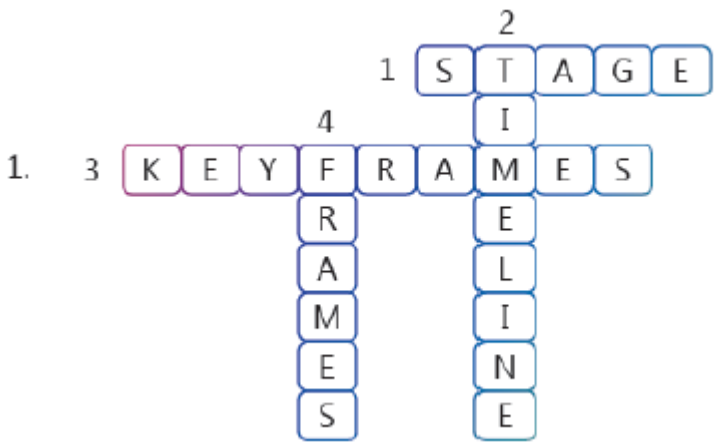
4. Timeline is used to control and manage the animation of different objects and layers.

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

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.

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. (iii) 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. Robots are nowadays used to build cars, manufacture and pack items, perform surgeries.

2.

- Sophia is considered the most advanced humanoid robot. It is the world's first robot citizen.
- Aibo is a robotic dog. It can develop emotional bonds with family members and provide love and affection.
- Pepper is a friendly humanoid designed to be a companion in home and help customers at retail stores.

3. Augmented Reality 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. For Example, Snapchat, Pokemon Go.

   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.

4. 3D Printing or 3-Dimensional Printing is a process of making a physical object from a threedimensional physical model. The object can be made using a number of printing materials, including plastics, powders, filaments, paper or even human tissue. Tvasta is India's first 3d printed house which was created in 2020, in Chennai.

TECH TWISTER

A. Do it yourself

B. 1. Ameca robot's movements are more lifelike than other robots. Companies creating AI or machine learning technology can use Ameca to test and present their technology in front of a live audience.

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 recognize faces and objects.

Competency-based/Application-based questions

1. Voice Recognition

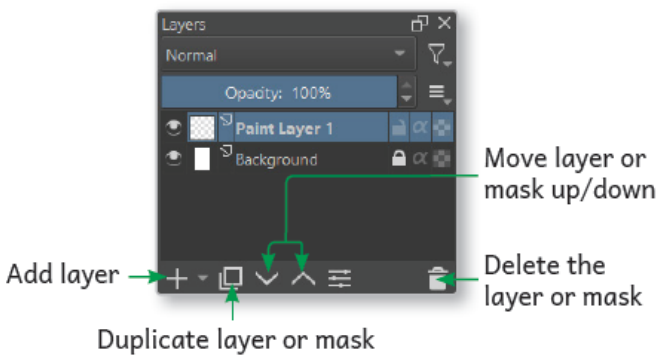
2. 3D Printing

Periodic Assessment 1

(Based on chapters 1 to 3)

A. 1. Like button 2. Google sheet 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.

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. Do it yourself.

2. Try harder

CODE QUEST (Page no. 55)

1. TEA 2. COFFEE 3. TEA

CODE QUEST (Page no. 56)

Repeat 4 times

(Move 1 right)

Repeat 4 times

(Move 1 up)

TECH READY

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

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

IMPRINT 1

C. 1. A sequence of instructions when repeated for a fixed number of times or until a condition is true is called a loop.

2. a. AND: results in YES only if both the conditions are true. If any condition is false, the result will be false.

OR: results in YES if any one of the conditions is true. If both are false, the result will be false.

b. Counting loops: These repeat a certain number of times.

Conditional loops: These repeat until a certain condition is reached which means they keep going until some condition remains true.

3. if (today is Sunday and a Cricket match)

then

display "Yes"

else

display "No"

4. if (today is Weekday or Your Exam)

then

display "Yes"

else

display "No"

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

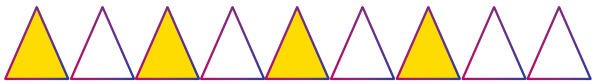
×	✓				
	×	✓			
		×	✓		
			×	✓	
				×	✓
					×

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 - 1
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. 63)

1. T
2. F

CODE QUEST (Page no. 69)

1. The main purpose of using functions is to get rid of the repetitive block of code.
2. When an operation is performed inside a function it gives back a value, which can be used later in the program to get the results, which makes a function more useful.

CODE QUEST (Page no. 71)

1. readability
2. sequentially

CODE QUEST (Page no. 74)

1. Error or bug
2. Conditional or selection statements

TECH READY

A.	1. (iv)	2. (iv)	3. (iv)	4. (iii)	5. (i)	6 (ii)
B.	1. T	2. T	3. F	4. F	5. T	6. T
C.	1. d	2. a	3. e	4. b	5. c	

D. 1. The three basic types of control structures are: Sequential, Selection/Conditional and Iteration.

2. (This question was printed incorrectly in the book. Please correct it in your textbook.)

Question: Which method is used to add an element in an array? Explain with the help of an example.

Ans. append() is a method to add an element to an array. For example:

```
a=[ ]
for I in range(11)
m.append(i)
print(m)
```

3. A function is a block of code which is made up of a set of steps that result in a single specific action.
4. The variables in an Array are always ordered sequentially with the index starting from 0.
5. To search an element in an array, Python uses the indexing method.

   Consider an array:

   X=[“R”, “D”, “F”, “H”]

   print(x.index(“F”))

   If you run the above code, you would get ‘2’ as output.

   The index method works on numeric arrays too:

   x=[1,6,5,3,4]

   print(x.index(5))

   If you run the above code, you would get ‘2’ as output.
6. (This question was printed incorrectly in the book. Please correct it in your textbook.)

   Question: Write any one advantage of array.

   Ans. It improves the readability of the code.

TECH TWISTER

A. 1. int age
```
if age > 18:
    print('You are eligible to vote')
else:
    print('Not eligible to vote')
```

2. num = int(input(“Enter a Number: “))
```
if num > 10:
    print(“Number greater than ten”)
elif num < 10:
    print(“Number less than ten”)
else:
    print(“ “)
```

3. arr=[10, 20, 30, 40, 50, 60]
```
print(arr.index(60))
```

4. Input first number (Num2)
   Input second number (Num1)
   Sum = Num1 + Num2
   Print Sum

B. 1. Yes! Triangle can be drawn
2. 0
   3
   6
   9
3. Number is divisible by both 3 and 7
4. You are Adult

Competency-based/Application-based questions

1. pop()

2. if-else statement

Periodic Assessment 2

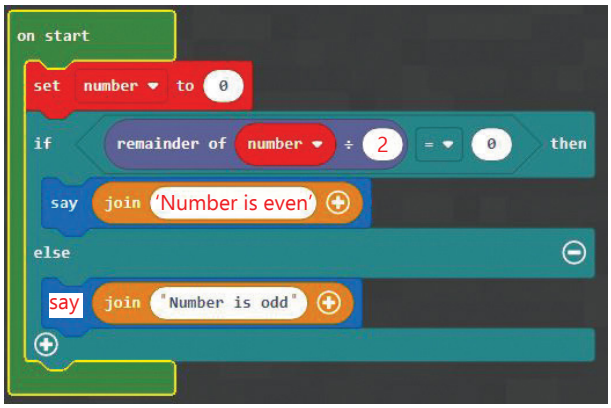
(Based on chapters 4 & 5)

A. Repeat 5 times
(
Fill Colour
Move 1 right
Move 1 down
)

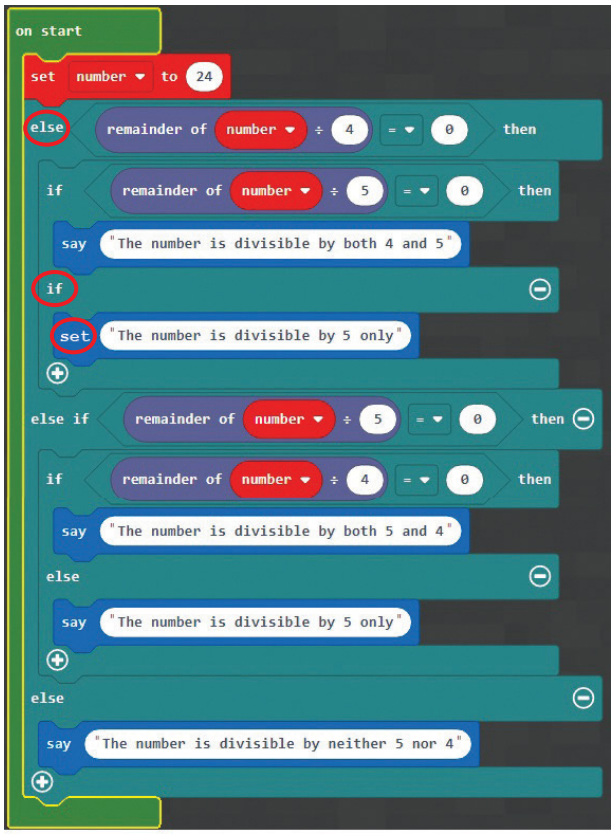
Repeat 5 times
(
Move 1 up
)

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

B.


on start
set number to 0
if remainder of number ÷ 2 = 0 then
say join 'Number is even'
else
say join "Number is odd"

C.


on start
set number to 24
else remainder of number ÷ 4 = 0 then
if remainder of number ÷ 5 = 0 then
say "The number is divisible by both 4 and 5"
if
set "The number is divisible by 5 only"
else if remainder of number ÷ 5 = 0 then
if remainder of number ÷ 4 = 0 then
say "The number is divisible by both 5 and 4"
else
say "The number is divisible by 5 only"
else
say "The number is divisible by neither 5 nor 4"

Test Sheet 1

(Based on chapters 1 to 5)

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

7. (iii) 8. (iii)

B. 1. else 2. conditional 3. Sundar Pichai 4. Google Sheets
5. Share 6. saved 7. if 8. if

C. 1. F 2. F 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.

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

5. Sophia is considered the most advanced humanoid robot. It is the world's first robot citizen.

Aibo is a robotic dog. It can develop emotional bonds with family members and provide love and affection.

Pepper is a friendly humanoid designed to be a companion in home and help customers at retail stores

6. Augmented Reality 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. For Example, Snapchat, Pokemon Go. 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.

7. if (today is Sunday and a Cricket match)

   then

   display "Yes"

   else

   display "No"

8. To search an element in an array, Python uses the indexing method.

   Consider an array:

   X=["R", "D", "F", "H"]

   print(x.index("F"))

   If you run the above code, you would get '2' as output.

   The index method works on numeric arrays too:

   x=[1,6,5,3,4]

   print(x.index(5))

   If you run the above code, you would get '2' as output.

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. 88)

1. for <variable> in <iterator>:

   Statements

2. while (test expression):

   Statements

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. (This question was printed incorrectly in the book. Please correct it in your textbook.)

Question: What is the use of range(n) function?

(i) Generates a set of whole numbers starting from 0 to (n+1).

(ii) Generates a set of whole numbers starting from 1 to (n+1).

(iii) Generates a set of whole numbers starting from 0 to (n-1).

(iv) Generates a set of whole numbers starting from 1 to (n-1).

Ans. (iii)

2. (This question was printed incorrectly in the book. Please correct it in your textbook.)

Question: Which of the following is a looping statement in Python?

(i) for statement (ii) continue statement

(iii) if statement (iv) break statement

Ans. (i)

3. (i) 4. (iii)

B. (This question was printed incorrectly in the book. Please correct it in your textbook.)

Question: Fill in the blanks using the words given below.

infinite, break, iterative, continue, two

1. Looping statements are also knowns as _____ statements.
2. Python provides _____ types of looping statements.
3. The _____ loop never ends.
4. The _____ and _____ are the jump statements in Python.

Ans. 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 syntax of for loop is

   for <variable> in <iterator>:

   Statements
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.

   For example,

   Program:

```
i = 0
a = input("Enter the string: ")
while i<len(a):
    print("Current Letter: ", a[i])
    i += 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 break statement 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.

TECH TWISTER

1. 55

2. 2

4

3. apple

banana

cherry

4. 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. Name of the function, Arguments

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. (This question was printed incorrectly in the book. Please correct it in your textbook.)

Question: Which of the following receives data in the form of arguments and uses it to run a specified set of statements and produces the final output?

(i) Function (ii) Operator

(iii) Parameter (iv) Sequence

Ans. (i)

2. (This question was printed incorrectly in the book. Please correct it in your textbook.)

Question: Which of the following are the features of functions?

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

(ii) It also reduces the length of the program.

(iii) It makes debugging easy and makes the code efficient, both in terms of time and memory.

(iv) All of these

Ans. (iv)

3. (iv) 4. (iii) 5. (iii)

B. (This question was printed incorrectly in the book. Please correct it in your textbook.)

Question: Fill in the blanks using the words given below.

def, user-defined, arguments, command, return

1. A function may or may not _____ a value.
2. The input given to the functions are referred to as _____.
3. functions are created by the user according to the need of the program.
4. _____ keyword begin the function definition.
5. A function can be called anytime from other functions or from the _____ prompt after the definition.

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

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

IMPRINT 1

D. 1. (This question was printed incorrectly in the book. Please correct it in your textbook.)

Question: What are built-in functions?

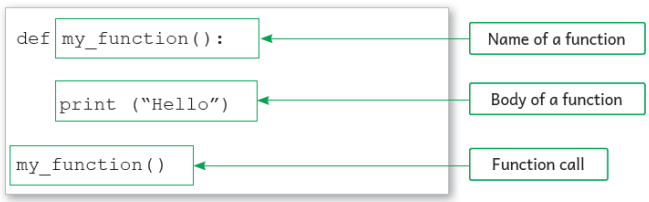
Ans. Built-in functions do not require to be written by us, for example range(), type(), etc.

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. (This question was printed incorrectly in the book. Please correct it in your textbook.)

   Question: What are statements in reference of functions in Python?

   Ans. The statements are the executable instructions that the function can perform.
5. For calling a function, we type the function and pass the parameters.

   For example: To call a function.



6. (This question was printed incorrectly in the book. Please correct it in your textbook.)

   Question: Explain different categories of user-defined functions.

   Ans. User-defined functions are divided into various categories:
   - 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.
7. (This question was printed incorrectly in the book. Please correct it in your textbook.)

   Question: How can we create a function? Explain in detail.

   Ans. We can create a function in the following way:
   - 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>

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

(i) built-in function

8. Parts of Robots

TECH SET GO (Page no. 103)

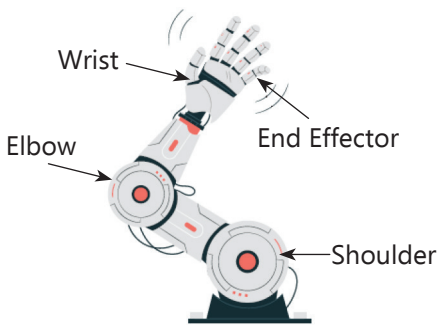
1. Machine Learning (ML) is a technology that discovers rules causing a problem by using the data and finding a solution to that problem.

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. (This question was printed incorrectly in the book. Please correct it in your textbook.)

Question: _____ controllers repeat the same operation over and over.

(i) Simple (ii) Strong Sensory Controller

(iii) Hydraulic (iv) None of these

Ans. (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 end. They are expected to perform the tasks traditionally performed by human fingers and palm of a human hand. The end effectors usually do the work. They are attached to the robot's wrist and controlled through a computer.

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 never come back to life.	Robots cannot die; they can be repaired.

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: 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.

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. A wide range of sensors is used in a robot system to perform the tasks.

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	Y	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.
```
sum = 0
i = 1
while(i<6):
    sum += i
    i += 1
print("The sum of the first five natural numbers is: ", sum)
```

C. 1. Built-in functions do not require to be written by us, for example range(), type(), etc.

2. The input given to the functions are referred to as arguments. A function can or cannot have any arguments.

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)

1. 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. (This question was printed incorrectly in the book. Please correct it in your textbook.)

Question: _____ is a subfield of AI which helps in communication between human and computer in natural language.

(i) Computer Vision
(ii) Natural Language Processing
(iii) Big Data
(iv) Machine Learning

Ans. (ii)

3. (ii)

4. (This question was printed incorrectly in the book. Please correct it in your textbook.)

Question: Which of the following information adds value to the Big data pool?

(i) Social media accounts (ii) Product reviews

(iii) Shared content (iv) All of these

Ans. (iv)

B. (This question was printed incorrectly in the book. Please correct it in your textbook.)

Question: Fill in the blanks using the words given below.

voice assistants, computer vision, artificial intelligence, natural language processing

1. _____ enables a computer to read and understand data by mimicking human natural language.
2. Google Assistant is example of _____ .
3. _____ can be used to check the patient's image and determine the ailment.
4. _____ is the part of computer science concerned with designing intelligent computer systems.

Ans. 1. natural language processing 2. voice assistance 3. computer vision
4. artificial intelligence

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

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
- Big Data

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

Big Data: Big Data helps to analyse this data and these data include information about consumer shopping habits, personalized marketing, fuel optimization tools, etc.

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 that trains a computer to understand and interpret the visual world.

TECH TWISTER

Do it yourself.

Competency-based/Application-based questions

1. Computer Vision

10. SDGs

TECH SET GO (Page no. 122)

1. Smart Hubs provide connectivity with appliances and systems to control through smart phones using the Internet.
2. Video doorbells provide security as the owner can watch who is outside the door before actually opening it.
3. Smart Thermostats is used to automatically control the temperature of a smart home.
4. Smart speakers can accept voice commands and can be controlled through smart phones.

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. (iii)

3. (This question was printed incorrectly in the book. Please correct it in your textbook.)

Question: Which of the following goals aims to end hunger?

(i) Goal 1 (ii) Goal 2

(iii) Goal 3 (iv) Goal 4

Ans. (ii)

4. (iii)

5. (This question was printed incorrectly in the book. Please correct it in your textbook.)

Question: Which of the following goals aims to achieve gender equality and empower all women and girls?

(i) Goal 3 (ii) Goal 4

(iii) Goal 5 (iv) Goal 6

Ans. (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. (This question was printed incorrectly in the book. Please correct it in your textbook.)

Question: How can AI helps to achieve the SDGs?

Ans. 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. (This question was printed incorrectly in the book. Please correct it in your textbook.)

Question: Write a short note on SDG goal 13.

Ans. 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.

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.

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. (This question was printed incorrectly in the book. Please correct it in your textbook.)

Question: With the advancement of AI, the field of space exploration is expanding rapidly.

Ans. T

4. T

IMPRINT 1

C. (This question was printed incorrectly in the book. Please correct it in your textbook.)

Question: Write the name of any five technical skills required to get a job in the field of AI.

Ans. 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
   - Critical thinking skills
   - Collaboration skills
   - Leadership skills

3. Organizations expect their employees to work in a collaborative manner. Departments like Design and Marketing need to collaborate with each other to reach to user experience and develop machines accordingly.

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 recognitionD.

TECH TWISTER

1. Niamai 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. NLP is a subfield of AI which helps in communication between human and computer in natural language.

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

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

2. It aims to achieve universal access to modern energy, increase in renewable energy and improvement in energy efficiency.

3. It aims to reduce water pollution and protect and restore ecosystems.

4. 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.

IMPRINT 1

Test Sheet 2

(Based on chapters 6 to 11)

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

4. (This question was printed incorrectly in the book. Please correct it in your textbook.)

Question: Which of the following receives data in the form of arguments and uses it to run a specified set of statements and produces the final output?

(i) Function (ii) Operator

(iii) Parameter (iv) Sequence

Ans. (i)

5. (i)

6. (This question was printed incorrectly in the book. Please correct it in your textbook.)

Question: Which of the following information adds value to the Big data pool?

(i) Social media accounts (ii) Product reviews

(iii) Shared content (iv) All of these

Ans. (iv)

7. (This question was printed incorrectly in the book. Please correct it in your textbook.)

Question: Which of the following goals aims to end hunger?

(i) Goal 1 (ii) Goal 2

(iii) Goal 3 (iv) Goal 4

Ans. (ii)

8. (i)

B. 1. machine learning 2. 270% 3. cooperate 4. water

5. (This question was printed incorrectly in the book. Please correct it in your textbook.)

Question: _____ can be used to check the patient's image and determine the ailment.

Ans. (i) computer vision

6. CPU 7. command

8. (This question was printed incorrectly in the book. Please correct it in your textbook.)

Question: Looping statements are also knowns as _____ statements.

Ans. (i) iterative

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

6. T 7. T

8. (This question was printed incorrectly in the book. Please correct it in your textbook.)

Question: With the advancement of AI, the field of space exploration is expanding rapidly.

Ans. T

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- Mathematics and Algorithms
- Signal processing techniques

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

- Big Data: Big Data helps to analyse this data and these data include information about consumer shopping habits, personalized marketing, fuel optimization tools, etc.
- 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.

IMPRINT 1

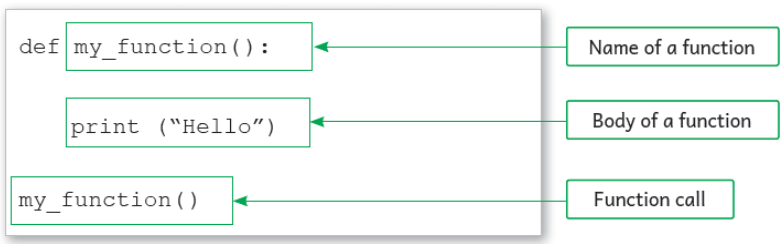
6. Locomotion Device: Human beings use muscles to give movements to their arms, palms and fingers. For a robot, the power comes from motors. Three fuels are used in locomotion, depending on the energy source.

   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. For calling a function, we type the function and pass the parameters.

   For example: To call a function.



8. The break statement 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.