1. App Development

TECH SET GO (Page no. 7)

Do it yourself.

BYTE QUEST (Page no. 8)

The application that is mainly developed for computer or laptop is called a desktop application whereas a Web app is an application program that is stored on a remote server and accessed over the Internet through a Web browser interface.

BYTE QUEST (Page no. 10)

BYTE QUEST (Page no. 20)

In the Project Designer window, we design the interface by choosing buttons, images or text boxes and specify the functionalities of our app.

TECH READY

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

B. 1. Hybrid 2. Desktop 3. iOS 4. Entertainment 5. install

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

D. 1. An app is a software program primarily developed for hand-held smart devices such as mobile and tablet.

2. Web apps are essentially web applications that provide a user experience similar to native apps.

3. Native apps are platform dependent which means that these apps are primarily developed for a specific platform.

4. Backpack, Workspace, Trash

5. There are mainly three types of applications, which are:

- **Desktop:** The application that is mainly developed for computer or laptop is called a desktop application.

- **Mobile:** Mobile application (also known as mobile app) is software program that is developed for hand-held devices such as smartphones and tablets.

- **Web:** A Web app is an application program that is stored on a remote server and accessed over the Internet through a Web browser interface.

6. To change the display name of button, follow the given steps:

Step 1 Click on the button in the Viewer pane.

Step 2 Type a new name for the button in the Text box.

7. Web apps are different from websites. The major difference is that a web app can be a small part of a website which provides a particular functionality. On the other hand, a website can contain many web apps.

8. Educational apps provide a platform for children to learn from anywhere and anytime. These apps use advance methodologies and new concepts to make the learning easier. The most commonly used educational apps are Khan Academy, Vedantu, and Learn English Grammar.

TECH TWISTER

1. Web apps   2. App Store   3. Hybrid app
4. Gaming apps   5. Educational app   6. Social networking apps

Competency-based/Application-based questions

1. Gaming app

2. Trash

2. Krita—Image Editing

TECH SET GO (Page no. 24)

Do it yourself.

BYTE QUEST (Page no. 37)

1. Polygonal Selection Tool

2. Contiguous Selection Tool

3. Rectangular Selection Tool

TECH READY

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

B. 1. Freehand Selection 2. Workspace 3. Text 4. Clone

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

D. 1. Elliptical Selection Tool is used to select an oval or circular portion of an image.

2. It displays different options and properties that are available for the selected tool.

3. To make a contiguous selection, follow these steps:
   Step 1 Click on the Contiguous Selection Tool.
   Step 2 Click on the section to be selected.

TECH TWISTER

1. Crop Tool

2. Freehand Brush Tool

3. Polygon Tool

4. Rectangle Tool

5. Smart Patch Tool

Competency-based/Application-based questions

1. He can use Crop Tool in Krita.

2. She can use Clone Tool.

3. Advanced Features of Excel 2016

TECH SET GO (Page no. 42)

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

BYTE QUEST (Page no. 45)

1. Form 2. New 3. Close

BYTE QUEST (Page no. 48)

1. ✓ 2. ✓ 3. ✗ 4. ✓

TECH READY

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

B.   1. Cell   2. Highlight Cells Rules   3. Conditional formatting

       4. subtotal   5. pivot table

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

D.   1. Data validation means to restrict the user to enter a specific range of values in a particular cell or a range of cells.

       2. Conditional formatting is used to highlight all the cells that satisfy a condition.

       3. Steps to search a particular record in a form are as follows:

         Step 1   Click on the Insert tab.

         Step 2   Click on the Form command.

         Step 3   Click on the Criteria button.

         Step 4   Type the desired field value which you want to search and press the enter key.

TECH TWISTER

1. Data validation   2. Filter   3. Conditional Formatting   4. Data Bars

Competency-based/Application-based questions

Top/Bottom Rules

Periodic Assessment 1

(Based on chapters 1 to 3)

A.   1. Uber   Calculator

       2. Blinkit   Bhim UPI

       3. YouTube   Netflix

       4. Facebook   LinkedIn

       5. OLX   Flipkart

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

C. 1. Data validation means to restrict the user to enter a specific range of values in a particular cell or a range of cells.

2. The Pivot Table feature of Excel 2016 allows you to analyse the large amount of data.

3. Conditional Formatting command is present under Home tab.

4. Algorithmic Intelligence

TECH SET GO (Page no. 56)

1. AA2   BB4   (CC3)   DD8

2. AB   (DF)   GH   JK

3. 1234   6789   (2354)   4567

4. 0001   (1002)   0101   0111

CODE QUEST (Page no. 58)

1. 0010, 0011, 0101, 0111

2. 0010, 0100, 0110, 1000, 1010

3. 1001

4. 0011, 0110, 1001

CODE QUEST (Page no. 59)

A. Do it Yourself.

B. Do it Yourself.

TECH READY

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

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

C. 1. Information processing involves acquiring, storing, analysing, retrieving and displaying data.

2. An algorithm is a set of step-by-step instructions in a sequential manner to solve a problem.

3. Computers use binary code, composed of 1s and 0s, to store and process data. These 1s and 0s represent electrical signals: ON for 1 and OFF for 0.

4. The program executes the statements written inside the IF block when the condition is True. If the condition is False, the statements written inside the else block will be executed.
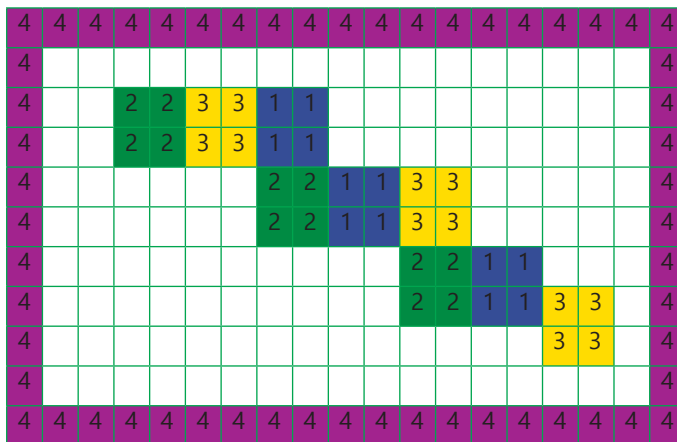
5. READ Day

```
IF Day = "Sunday" THEN
        PRINT "Picnic"
    ELSE
        PRINT "School"
```

TECH TWISTER

A.

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

B. READ number

IF number % 3 = 0 THEN

```
    PRINT "Divisible by 3"
ELSE
    PRINT "Not divisible by 3"
```

Competency-based/Application-based questions

1. Do it yourself.
2. Do it yourself.
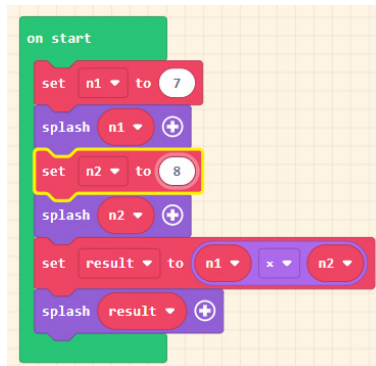
5. More on MakeCode Arcade

1. Sprites block
2. Controller block
3. Game block
4. Loops block

CODE QUEST (Page no. 75)

TECH READY

**A.**   1. (ii)   2. (iv)   3. (ii)   4. (iv)

B.   1. variable   2. letter   3. initialisation   4. Game

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

D.   1. A keyword is a predefined word in any programming language.

     2. Math blocks are used to perform various mathematical operations and computations in your games and projects, like addition, subtraction, multiplication and division.

     3. There are two conditional blocks in MakeCode Arcade, which are as follows:
       a. if-then
       b. if-then-else

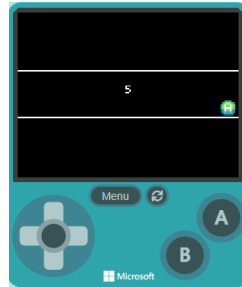   4. Logical and block return true values if both the conditions are true.

1.

2.

3.

Competency-based/Application-based questions

1.

2.
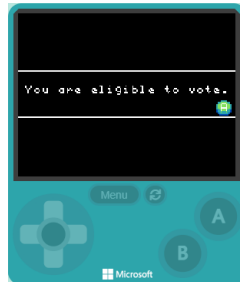
Periodic Assessment 2

(Based on chapters 4 & 5)

A.
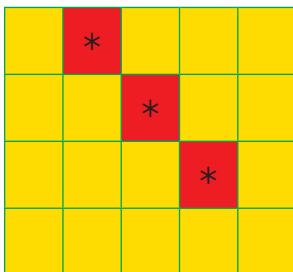
B.
```
IF (side1 == side2 && side2 == side3)
    PRINT "The triangle is equilateral."
ELSE
    PRINT "The triangle is not equilateral."
```

C.
```
IF (score >= 60)
    PRINT "You have passed the exam."
ELSE
    PRINT "You have failed the exam."
```

D.
1. Variable is a name given to a location in the memory, to store values or data.
2. Once a variable is created, you need to assign a value to it. This process of assigning a value to a variable is called initialisation.
3. Math blocks are used to perform various mathematical operations and computations in your games and projects, like addition, subtraction, multiplication and division.
4. Logic blocks are used to handle decision-making and control flow in your projects. We can access these blocks by clicking on the Logic blocks category.

Test Sheet 1
(Based on chapters 1 to 5)

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

B. 1. Desktop 2. Hybrid 3. Text 4. Subtotal 5. PivotTable
6. Cell 7. Conditional Formatting 8. Workspace

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

D.
1. An app is a software program primarily developed for hand-held smart devices such as mobile and tablet.

2. Web apps are actually web applications which give a user experience similar to native apps.

3. It displays different options and properties that are available for the selected tool.

4. To make a contiguous selection, follow these steps:
   Step 1 Click on the Contiguous Selection Tool.
   Step 2 Click on the section to be selected.

5. Steps to search a particular record:
   Step 1 Click on the Insert tab.
   Step 2 Click on the Form command.
   Step 3 Click on the Criteria button.
   Step 4 Type the desired field value which you want to search and press the enter key.

6. Data validation means to restrict the user to enter a specific range of values in a particular cell or a range of cells.

7. There are two conditional blocks in MakeCode Arcade, which are as follows:

   a. if-then

   b. if-then-else

8. Logical and block return true values if both the conditions are true.

6. More on Python

TECH SET GO (Page no. 82)

1. Sum of 3 and 2 is 5
2. Enter days: 65
   Months = 2 Days = 5

CODE QUEST (Page no. 90)

1. Precedence of operators determines the order in which the operators are executed.

2. Arithmetic operators perform arithmetic operations between two operands.

3. Assignment operators are used to assign the value of the right expression to the left operand.

TECH READY

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

B. 1. assignment   2. operators   3. true   4. false   5. else

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

D. 1. A string is a sequence of one or more characters put in single quotes, double quotes or triple quotes which are used to represent text-based information.

2. Data types are used to define the type of value a data can contain.

3. Following are the relational operators provided by Python: \

Operator	Name	Description	Example (x=8 and y=6)	Output
==	Equal to	It checks if the values of two operands are equal or not. If the values are equal, then the condition becomes true.	x == y	False

!=	Not equal to	It checks if the values of two operands are equal or not. If the values are not equal, then the condition becomes true.	!= y	True
>	Greater than	It checks whether the value of the left operand is greater than the value of the right operand. If it is, the condition evaluates to true.	x > y	True
<	Less than	It checks whether the value of the left operand is less than the value of the right operand. If it is, the condition evaluates to true.	x < y	False
>=	Greater than or equal to	It checks whether the value of the left operand is greater than or equal to the value of the right operand. If it is, the condition evaluates to true.	x >= y	True
<=	Less than or equal to	It checks whether the value of the left operand is less than or equal to the value of the right operand. If it is, the condition evaluates to true.	x <= y	False

4. Comments in Python can be used to explain parts of the code. It can also be used to hide the code as well. Comments enable us to understand the way a program works. In python, any statement starting with # symbol is known as a comment.

Python supports two types of comments: Single-line comment and Multi-line comment.

5. a. Float data types represent numbers that contain a decimal point. For example, 0.6, -3.257.

b. Boolean is a data type with two built in values: True or False. They are used for logical evaluation.

6. (i) AND returns true, if both operands are true.

Example: (2 < 5) and (2 < 10). Output: TRUE.

OR returns true, if one of the operands is true.

Example: (2 < 5) or (2 > 10). Output: TRUE.

(ii) Modulus Operator divides left hand operand by right hand operand and returns remainder.

Example: 7 % 3. Output: 1

Division Operator divides left hand operand by right hand operand.

Example: 7 / 3. Output: 2.33

7. Decision making in Python is done by called conditional statements which decide the flow of program execution. Conditional statements allow a program to make decisions and execute specific code blocks based on whether conditions are True or False.

1. 2.0

2. 12

3. 4

   True

4. 6

5. Enter a First Number: 5

   Enter a Second Number:4

   First number is greater than second number

6. Positive number

7. Above ten

   and also above 20!

8. b is not greater than a

Competency-based/Application-based questions

Conditional Statement

7. Humans and Machines

TECH SET GO (Page no. 103)

S. No.	Human Intelligence	Artificial Intelligence
1.	Created by nature	Created by human intelligence
2.	Processes information slower	Process information with high speed
3.	Less accurate	More accurate
4.	Capable of adapting changes	Can't easily adapt changes
5.	Has the capacity of multi-tasking	Performs single task more efficiently

1.   a. Intention

      b. Selection

2.   Once the course of action is set it moves for the execution. In this stage the action is performed.
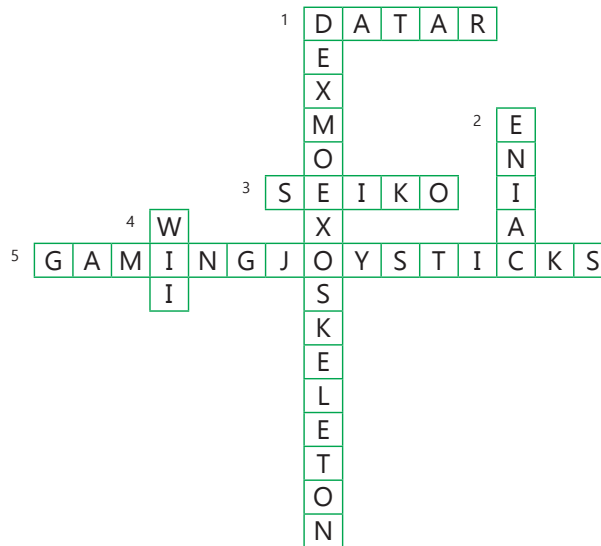
AI QUEST   (Page no. 110)

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

TECH READY

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

B.   1. Voice user   2. Eye tracker   3. XBOX   4. Android   5. Smart gloves

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

D.   1. This interface lets its user to interact using screens or menus. It is also a very common way of interaction. You switch between menus to reach your goal.

      2. Intention, Selection, Execution and Evaluation.

      3. Advantage: It is good for expert users as system gives immediate response, it needs the least computer resources.

      Disadvantage: Users must have knowledge of specific commands or languages, as text-based interface is not as user-friendly as graphical interfaces.

      4. Ivan Sutherland created the first head-mounted display called Sword of Damocles in 1968. It was connected to a computer. The idea behind its creation was to change the perspective image as the user moved his head.

5. In future, the user interface is going to achieve a new level with the integration of AI. The keyboard and mouse will be replaced by smart gloves that will be able to recognise gestures and act accordingly. For example, instead of selecting series of menus, user wearing a smart glove which will have an integrated camera system, will just make small gestures in a closed environment and the menu would appear.

TECH TWISTER

```
                    1 D  A  T  A  R
                      E
                      X
                      M            2 E
                      O              N
                  3 S E  I  K  O     I
            4 W       X              A
        5 G A M I  N  G  J  O  Y  S  T  I  C  K  S
              I      S
                     K
                     E
                     L
                     E
                     T
                     O
                     N
```

Competency-based/Application-based questions

Voice User Interface

Periodic Assessment 3

(Based on chapters 6 & 7)

A.
```
a = int(input('Enter a number: '))

if a % 2 == 0:

    print(a, 'is an even number.')

else:

    print(a, 'is not an even number.')
```

B. 1. Performs exponential (power) calculation on operands.

2. It multiplies right operand with the left operand and assigns the result to left operand. x*=3 is equivalent to x=x*3.

3. It returns true, if both conditions are true.

4. It checks if the values of two operands are equal or not. If the values are not equal, then the condition becomes true.

C. 1. To perform a dialog between human and a computer system there are three components that are interconnected— Human, Machine and the Interface between them. A computer interface or a program establishes interaction between the user and computer.

2. Voice User Interface

This interface allows audio mode to interact with the computing devices. The most common example of this system is the voice assistant available in the smartphones. Practically speaking, you can perform almost every action on your smartphone through voice commands.

Command Line Interface

This is also known as text based interface. This is mostly used by operating system that allows the user to type a command line and respond to the user in the same way. The advantages of this interfaces are many. It is good for expert users as system gives immediate response, it needs the least computer resources.

3. Dexmo was launched in 2016. This was world's first commercial portable two-handed wireless force feedback glove, combining hand motion capture and force feedback to deliver interactive experience in the field of aerospace, industrial training, educational research, medical rehabilitation, etc.

8. Types of AI

TECH SET GO (Page no. 117)

Do it Yourself.

AI QUEST (Page no. 120)

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

TECH READY

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

B. 1. Functionality 2. Narrow 3. Super AI

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

D. 1. AI in simple terms is a computer program which can learn and perform tasks that require a higher level of intelligence like learning from its past experience, planning and problem solving etc. which any human being does with ease.

2. AI is of three types, Weak AI, Strong AI and Super AI.

3. The characteristics of Strong AI are:
   - These machines have human like intelligence.
   - These machines have problem solving and learning capabilities.

4. The difference between weak AI, strong AI and super AI are:
   - Weak AI: Performs specific task.
   - Strong AI: Performs a wider range of different tasks with human like intelligence.
   - Super AI: Surpasses human intelligence.

TECH TWISTER

Do it Yourself.

Competency-based/Application-based questions

(ii) Weak AI

9. Smart Living

TECH SET GO (Page no. 124)

1. Mainly four steps are involved in face recognition technology which are as follows:
   a. Detects face using camera.
   b. Analyses the face by reading the geometry of the face.
   c. Converts the image into data.
   d. Matches the data with the existing database.

2. Four areas where AI-Powered Face Recognition is being used are:
   a. It is used in criminal identification.
   b. It is used in phones to unlock them.
   c. It is used in social media websites to spot faces when you upload a photo.
   d. It is used in surveillance cameras.

1. Two benefits of Smart Cities are:

   • They have better transportation facilities.

   • It improves economic growth opportunities.

2. Four devices used in Smart Home are:

   a. Smart Thermostats   b. Smart Hubs

   c. Video Doorbells   d. Smart Cameras

🤖 Ai **QUEST** (Page no. 132)

1. CCTV based monitoring using AI can help in building surveillance systems to keep a check on potential criminal incidents and security of the residents.

2. AI will have a huge impact on automated transport. Automated transportation will ensure that there are fewer accidents.

TECH READY

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

B. 1. Third 2. surveillance 3. Smart Thermostats

   4. Gateways 5. Smartphones

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

D. 1. A smart highway features green spaces with plants and trees along the road. There is a system that provides SMS alerts for traffic updates and medical emergencies.

   2. AI will have a huge impact on automated transport. Automated transportation will ensure that there are fewer accidents.

   3. General Motors, Ford

   4. Four challenges of establishing smart cities are:

      a. Financial challenges due to lack of proper funds.

      b. Growing population.

      c. Digital security issues.

      d. Lack of high-speed Internet facility and connectivity issues.

   5. Following are some of the benefits of Smart Cities:

      • They have adequate water supply.

      • They have better transportation facilities.

- It improves economic growth opportunities.

- The public utilities are very efficient.

- They have smart and more efficient energy grids.

6. Google's DeepMind has already beaten doctors in detecting fatal diseases like breast cancer in its early detection. It will not be very far that AI will detect even common diseases as well.

TECH TWISTER

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

Competency-based/Application-based questions

1. Smart Cameras, CCTV based monitoring using AI

2. AI-assisted Military technology

10. Fields Where Robots Are Used

TECH SET GO (Page no. 139)

Do it yourself.

Ai QUEST (Page no. 140)

Do it Yourself.

Da Vinci is a complete surgical system which performs complex surgeries with great skills of heart, head, neck and other sensitive areas.

🤖 Δi QUEST (Page no. 145)

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

TECH READY

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

B.   1. security   2. Nadine   3. Gravity
         4. Material handling   5. Shipwreck

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

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

E.   1. Merlin and Root AI

         2. Robotic arms

         3. Two uses of robots in healthcare are as follows:

         • Surgical robots help doctors in performing surgery in healthcare field.

         • They are also used as prosthetic limbs.

         4. NASA has made several of robotic devices to support or substitute astronauts to perform high risk tasks. Currently R1 and R2 are working as Robonaut. Robonaut 2 or R2 was the first humanoid robot sent to space as a part of STS-133 mission. RASSOR (pronounced as "Razor") is a lunar robot, Spidernaut is a robot constructed for maintenance and repair projects in space.

TECH TWISTER

1. Entertainment
2. Security and Surveillance
3. Space Exploration
4. Underwater Research

Competency-based/Application-based questions

(iii) Merlin

Periodic Assessment 4

(Based on chapters 8 to 10)

A. Weak AI is also known as Narrow AI. It is the most common type of AI that we can see and use all around us. Characteristics of this AI are :

- Narrow AI performs dedicated tasks with intelligence.

- It has a limited scope of functionality and can perform a specific task only.

B. 1. Smart Hubs

2. Video Doorbells

3. Smart Cameras

4. Smart Smoke detectors

5. Smart Lighting

C. 1. Robots can be deployed as security guards to protect humans.

2. Unimate was the first robot joined the assembly line in 1961.

3. MAARS looks like a tank and it contains tear gas and lasers to confuse enemies.

4. Nadine, a humanoid robot in Singapore can recognise people from the database of their previous visits.

5. Suzumo Sushi Chef prepares Japanese food.

6. Surgical robots help doctors in performing surgery in healthcare field.

7. Spidernaut is a robot constructed for maintenance and repair projects in space.

8. Root AI is a tomato picking robot.

Test Sheet 2

(Based on chapters 6 to 10)

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

6. (ii)   7. (ii)   8. (iv)

B. 1. assignment   2. Operators   3. Android
4. Seiko   5. Autonomous weapon   6. smartphones
7. Nadine   8. security

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

6. T

D. 1. A string is a sequence of one or more characters put in single quotes, double quotes or triple quotes which are used to represent text-based information.

2. Data types are used to define the type of value a data can contain.

3. This interface lets its user to interact using screens or menus. It is also a very common way of interaction. You switch between menus to reach your goal.

4. Intention, Selection, Execution and Evaluation.

5. The characteristics of Strong AI are:
   - These machines have human like intelligence.
   - These machines have problem solving and learning capabilities.

6. The difference between weak AI, strong AI and super AI are:
   - Weak AI: Performs specific task.
   - Strong AI: Performs a wider range of different tasks with human like intelligence.
   - Super AI: Surpasses human intelligence.

7. Four challenges of establishing smart cities are:
   a. Financial challenges due to lack of proper funds.
   b. Growing population.
   c. Digital security issues.
   d. Lack of high-speed internet facility and connectivity issues.

8. Two uses of robots in healthcare are as follows:
   - Surgical robots help doctors in performing surgery in healthcare field.
   - They are also used as prosthetic limbs.