Class 7

Answer Key

Information Technology (Ver. 5.0)

1. Fundamentals of Computer

Tech Trivia

Section A (Objective)

A. 1. b. 2. b. 3. c. 4. b. 5. b. 6. a.
7. d. 8. c.

B. 1. Process 2. Light Pen 3. Output devices 4. System Software
5. Disk Cleanup 6. Volatile 7. Barcode 8. Folder

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

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

Answer Arcade

Section B (Subjective)

A. 1. Hybrid devices are gadgets that can do more than one thing. It can act as both an input and an output device.

2. A device driver is software that allows a computer to communicate with hardware devices like printers and scanners. Without the correct driver, the device won't work even if it's connected to the computer.

3. File Explorer, previously called Windows Explorer, is a program in the Windows operating system that lets you access all the files and folders on your computer.

4. • Speed: Computers can process information and perform calculations at incredibly high speeds, much faster than humans.
   • Accuracy: Computers follow instructions exactly, making them highly accurate with minimal errors if the instructions are correct.

5. The basic unit for measuring the memory of a computer is byte. A byte consists of a group of eight bits.

Memory units in ascending order according to their size: KB < MB < GB < TB

B. 1.

Hardware	Software
Hardware refers to the parts of the computer that we can see and touch. These include all devices used for input, processing, output, and storage. For example, a keyboard, mouse, and monitor are all hardware components of a computer system. The hardware components are divided into four groups: • Input Devices • Processing Device • Output Devices • Storage Devices	Software is a set of instructions given to a computer to perform tasks. For example, in a mobile phone, the device is the hardware, and the apps installed are the software. Computer software is broadly classified as system software and application software. • System software: This is the main software necessary for the computer. Without it the computer is just a dummy. Examples include Windows, Linux, Ubuntu, DOS, Disk Management, etc. • Application software: These are software designed for specific tasks. Examples include Microsoft Word, Excel, PowerPoint, Paint, etc.

2. The operating system acts as an intermediary between users and computer hardware, ensuring smooth communication and coordination of system resources like the CPU, memory, storage, input/output devices, and network connections.

   Operating systems manage hardware resources and ensure smooth communication between components. They also allow users to interact with the system through a graphical or command-line interface.

   Some examples of operating systems include: Windows, macOS, Linux, Unix, Android and Ubuntu.

3. The CPU has three main parts:

   i. ALU (Arithmetic Logic Unit): It handles basic math like addition and subtraction, and compares things like greater than or less than.

   ii. CU (Control Unit): It manages the flow of data, making sure it moves correctly between input, processing, and output, like a traffic controller.

   iii. MU (Memory Unit): It stores data, both processed and unprocessed.

   Together, these three units ensure that the computer can carry out all tasks efficiently and correctly.

4. When shutting down a computer, the system provides several options, each serving a specific purpose:

   i. Lock: This option locks the screen, requiring a password or PIN to unlock and resume work.

   It's useful if you want to step away briefly and keep your session and data secure.

   ii. Sleep: This puts your computer in a low-power state, saving your session as it is.

When you wake the computer (usually by pressing a key or moving the mouse), it resumes quickly from where you left off.

iii. Shut down: This option closes all programs and turns off the computer completely. Use this option if you won't be using your device for a while.

5. Advanced searching helps you in searching a file when you are not sure of the file name. Wildcard characters can be particularly useful in these situations. Some of the wildcard characters are:

   - Asterisk (*): It can be used when we are not sure of the exact file name.
     For example: *.docx will find all files with the .docx extension, which are typically document files.
   - Question Mark (?): It can be used to search for a single missing character.

     For example: If you have a file named Vinodproject.docx but you're not sure if it starts with "Vinod" or "Binod," you can search for ?inodproject.docx. This will find both files.

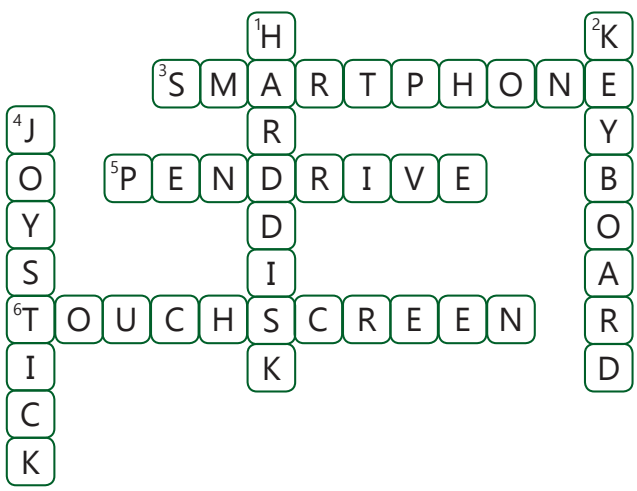
C. 1. Samarth should use a drawing application to create the poster because these applications provide features like inserting shapes, colours, images, and text in a free-form layout, which are essential for creating attractive and well-designed posters. Whereas, a word processor like Microsoft Word is better suited for editing and printing text documents.

Using the correct software ensures better results, saves time, and allows the user to utilise the full range of tools suited for that specific task.

2. Seema should use a spreadsheet software like Microsoft Excel, Google Sheets, or LibreOffice Calc.

3. Nitin should consider using a plotter.

Code Clues Page 36



Digital Drills Page 37

Do it yourself.

2. Algorithm and Flowchart

Tech Trivia

Section A (Objective)

A. 1. c. 2. b. 3. b. 4. b. 5. d. 6. b.

B. 1. Diamond 2. Instructions 3. Sequential 4. Control structure 5. Problem

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

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

Answer Arcade

Section B (Subjective)

A. 1. Problem-solving is a fundamental skill that helps us find solutions to various challenges in everyday life and in fields like mathematics, science, and computer science. In programming, problem-solving often involves breaking down a task into smaller steps and creating a logical sequence to solve it.

2. Control structure is defined as an order of execution of a statement in an algorithm. It helps control the flow of instructions and determines the sequence in which operations are performed.

3. Sequential, Selection, Repetition.

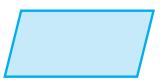
4. Parallelogram represents information entering or leaving the system, i.e., input and output.

5. A flowchart is a graphical representation of an algorithm. It makes use of symbols that are connected through arrows to show the direction of flow of information.

B. 1.

Algorithm	Flowchart
It is a step-by-step approach to solve a problem.	It is a step-by-step visual/graphical approach to solve a problem.
It is a Pseudocode(false code) of a program.	It is a graphical representation of a program.
Difficult to represent branching and looping.	Easily represents branching and looping through symbols.
Easy to find the errors.	Difficult to find the errors.
Can be used for simple, complex or long processes	Advisable to use only for simple processes.

2. The disadvantages of flowcharts are as follows:
   - It is a time-consuming process.
   - It is difficult to make flowcharts for complex and long programs.
   - Modification of the program through flowchart is sometimes time-consuming.
3. Problem-solving is a fundamental skill that helps us find solutions to various challenges in everyday life and in fields like mathematics, science, and computer science. In programming, problem-solving often involves breaking down a task into smaller steps and creating a logical sequence to solve it.
4. Some of the basic guidelines that we can follow while writing an algorithm are as follows:
   - It begins with the keyword "Start" and ends with "Stop".
   - It is written in simple, case-insensitive English-like statements.
   - It is presented in a step-by-step, with or without numbering.
   - It should follow a logical flow: input → process → output.
   - It must terminate after a finite number of steps.
5. The following symbols are used to create flowcharts:

Symbol Name	Symbol	Purpose
Oval		It is used to show the start and stop points of the flowchart. It usually contains the words 'Start' or 'Stop'.
Parallelogram		It represents information entering or leaving the system, i.e., input and output.
Rectangle		It shows a process, action, or operation to be performed.
Diamond		It indicates a question or branch in the process flow. It is used when there are 2 options (Yes/No).
Arrow		It indicates the direction of flow between steps in the process.

6. a. Step 1: Start

   Step 2: Input Name and Year of Birth

   Step 3: If (Year of Birth % 4 == 0 and Year of Birth % 100 != 0) or (Year of Birth % 400 == 0)

   Display "Leap Year"

   Else

   Display "Not a Leap Year"

   Step 4: Stop

b. Step 1: Start

Step 2: Set NUM = 1

Step 3: Repeat the following steps until NUM > 10

Display NUM * 5

NUM = NUM + 1

Step 4: Stop

c. Step 1: Start

Step 2: Input Length and Breadth

Step 3: Calculate Perimeter = 2 × (Length + Breadth)

Step 4: Display Perimeter

Step 5: Stop

C. 1. **Algorithm:**

Step 1: Start

Step 2: Input Name

Step 3: Input marks in Subject1, Subject2, Subject3, Subject4, Subject5

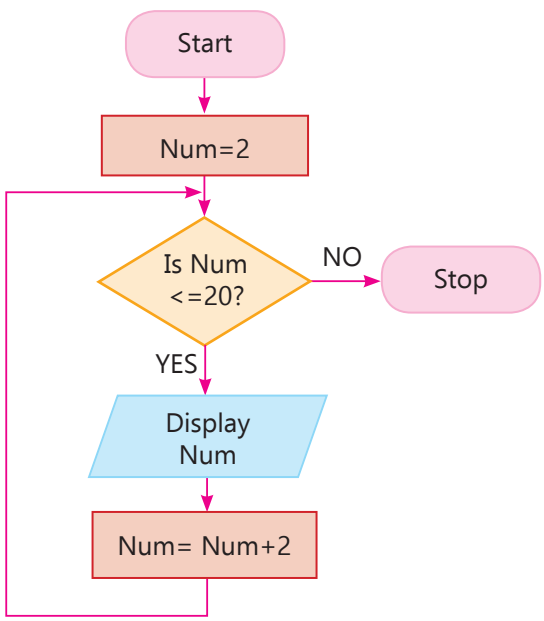
Step 4: Calculate Total = Subject1 + Subject2 + Subject3 + Subject4 + Subject5

Step 5: Calculate Average = Total / 5

Step 6: Display Name and Average

Step 7: Stop

2.

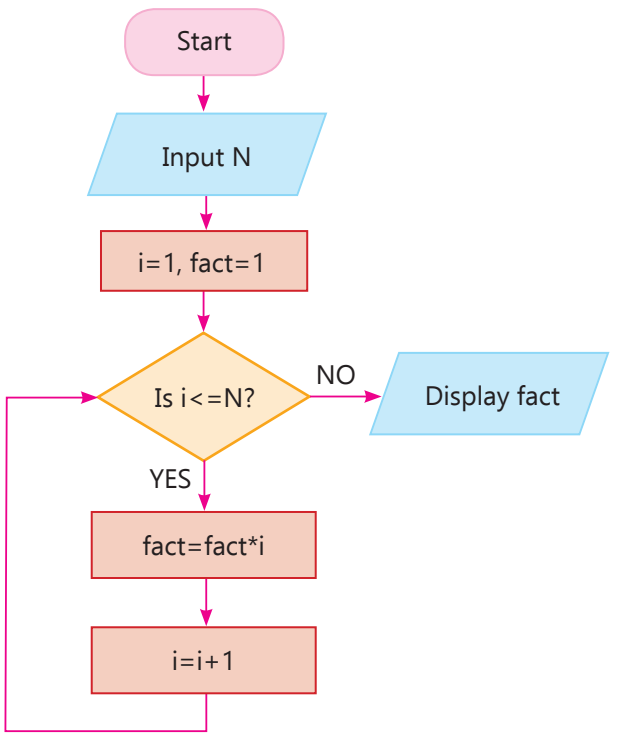


W	E	A	D	G	Y	J	F	F	D	G	J	F	V	D	H	J	M
G	H	S	X	B	M	O	Q	L	A	D	Z	F	H	K	M	F	B
D	C	V	B	N	A	L	G	O	R	I	T	H	M	X	C	B	N
X	V	F	H	B	J	N	K	W	S	C	G	B	M	J	M	W	Z
X	V	B	N	H	N	G	H	C	Q	R	Y	U	O	N	G	J	I
B	H	J	G	D	D	E	T	H	G	U	D	G	H	E	J	B	D
S	E	Q	U	E	N	T	I	A	L	R	T	Y	G	D	S	S	B
C	V	B	H	B	H	D	S	R	E	P	E	T	I	T	I	O	N
C	G	B	S	E	L	E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

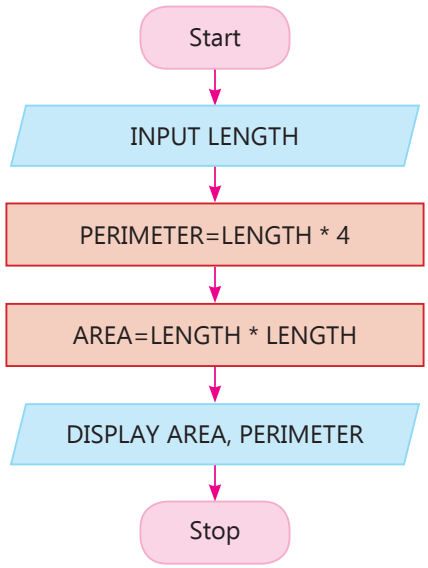
Digital Drills

Page 52

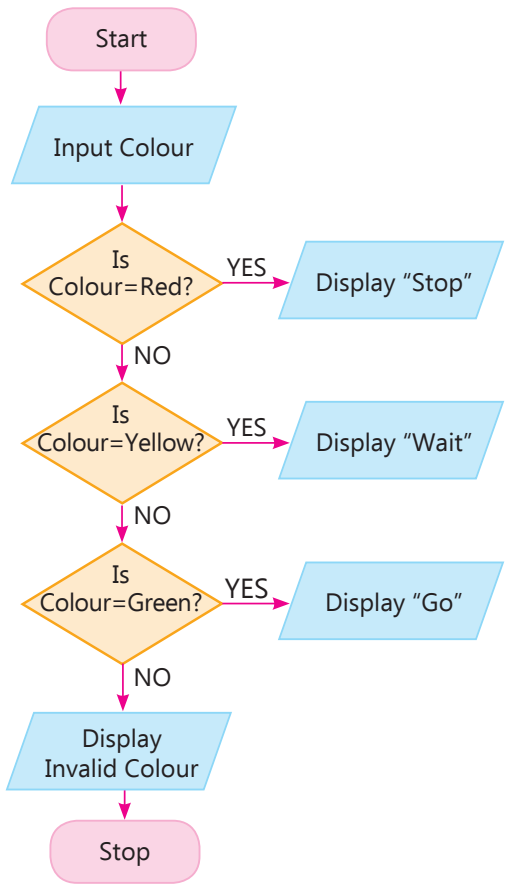
- Flowchart to calculate the factorial of a number:



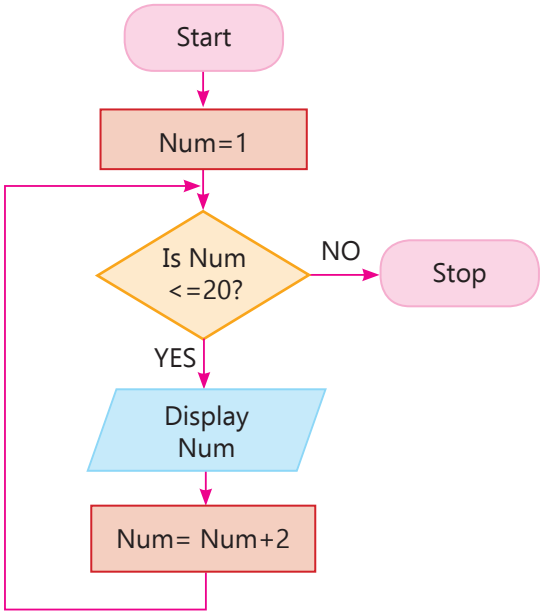
- Flowchart to calculate area and perimeter of a square.



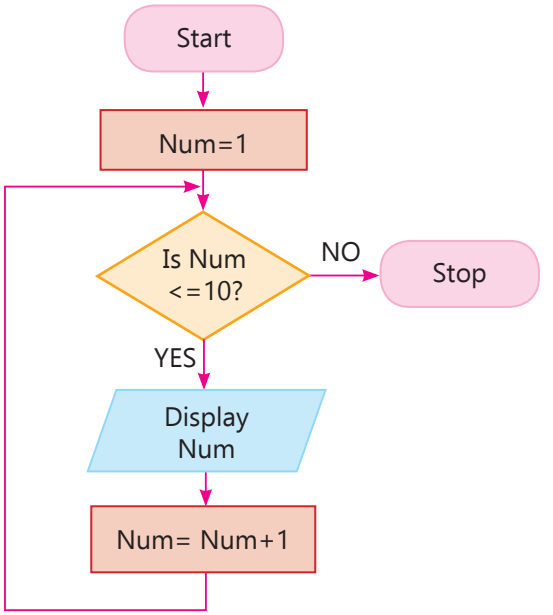
- Flowchart to input colour of a traffic signal light and display:
  - 'Stop' if the colour is 'Red'
  - 'Wait' if the colour is 'Yellow'
  - 'Go' if the colour is 'Green'



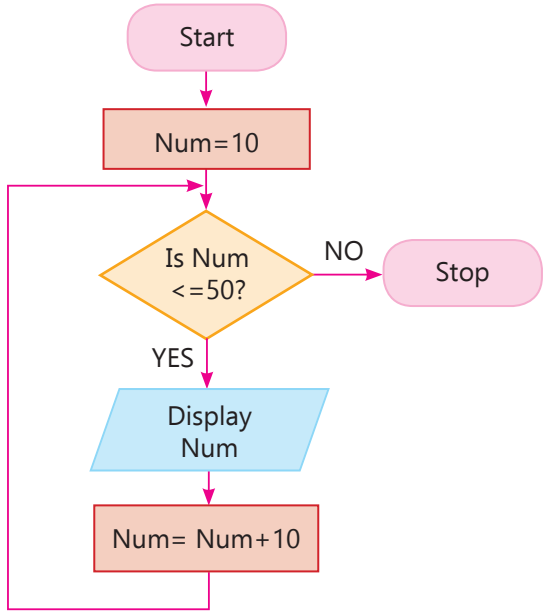
- Flowchart to display odd numbers from 1 to 20.



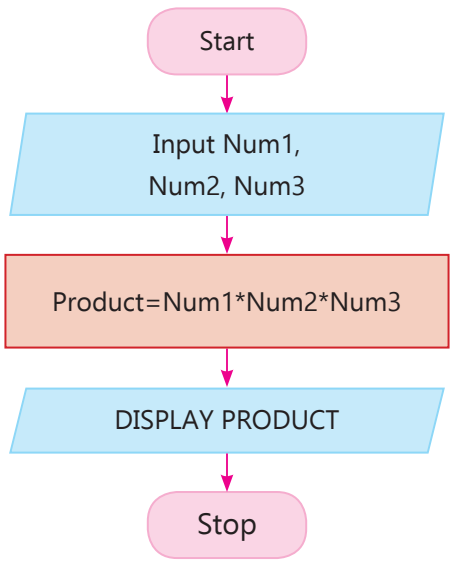
- Flowchart to display the first 10 natural numbers.



- Flowchart to display the multiple of 10 till 50.



- Flowchart to print the multiplication of 3 numbers entered by the user.



Test Sheet 1

(Based on units 1 & 2)

A. 1. b. 2. b. 3. b.

B. 1. Process 2. Light Pen 3. Control structure

C. 1. F 2. T 3. F

D. 1. Hybrid devices are gadgets that can do more than one thing. It can act as both an input and an output device.

2. A device driver is software that allows a computer to communicate with hardware devices like printers and scanners. Without the correct driver, the device won't work even if it's connected to the computer.

3. Control structure is defined as an order of execution of a statement in an algorithm. It helps control the flow of instructions and determines the sequence in which operations are performed.

E. 1.

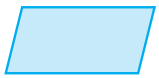
Hardware	Software
Hardware refers to the parts of the computer that we can see and touch. These include all devices used for input, processing, output, and storage. For example, a keyboard, mouse, and monitor are all hardware components of a computer system. The hardware components are divided into four groups: • Input Devices • Processing Device • Output Devices • Storage Devices	Software is a set of instructions given to a computer to perform tasks. For example, in a mobile phone, the device is the hardware, and the apps installed are the software. Computer software is broadly classified as system software and application software. • System software: This is the main software necessary for the computer. Without it the computer is just a dummy. Examples include Windows, Linux, Ubuntu, DOS, Disk Management, etc. • Application software: These are software designed for specific tasks. Examples include Microsoft Word, Excel, PowerPoint, Paint, etc.

2. An operating system acts as an intermediary between users and computer hardware, ensuring smooth communication and coordination of system resources like the CPU, memory, storage, input/output devices, and network connections.

Operating systems manage hardware resources and ensure smooth communication between components. They also allow users to interact with the system through a graphical or command-line interface.

Some examples of operating systems include: Windows, macOS, Linux, Unix, Android and Ubuntu.

3. The following symbols are used to create flowcharts:

Symbol Name	Symbol	Purpose
Oval		It is used to show the start and stop points of the flowchart. It usually contains the words 'Start' or 'Stop'.
Parallelogram		It represents information entering or leaving the system, i.e., input and output.
Rectangle		It shows a process, action, or operation to be performed.
Diamond		It indicates a question or branch in the process flow. It is used when there are 2 options (Yes/No).
Arrow		It indicates the direction of flow between steps in the process.

3. Learning Scratch

Tech Trivia

Section A (Objective)

A. 1. b. 2. a. 3. a. 4. a. 5. a. 6. b.
7. c. 8. b. 9. d. 10. b.

B. 1. Stage 2. Programming 3. Operators 4. Repeat All
5. Backgrounds 6. Motion 7. Control 8. Erase All

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

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

Answer Arcade

Section B (Subjective)

A. 1. The two ways to work in Scratch are:

- By dragging and dropping code blocks
- By editing the properties of the blocks

2. In Scratch, you can create a loop by using the 'repeat' block from the Control category and setting the number to 10.

3. The Costumes tab allows you to modify the appearance of sprites and backdrops.
4. This block makes the sprite display a speech bubble with the specified text indefinitely.
5. A- Blocks Palette, B- Stage Area, C- Coding Area, D- Sprites Pane

B. 1. a.

set pen color to ()	change pen color by ()
This block sets the colour of the pen to a specific colour or number.	This block changes the colour of the pen by a specific colour or a number.

b.

Repeat ()	repeat until ()
This block repeats the blocks inside this loop in a specified number of times.	This block repeats the blocks inside this loop until the specified condition is true.

2. The different components of Scratch are:
   - Stage: The stage can be viewed in small or large size and uses a 2D coordinate system with X (horizontal) and Y (vertical) coordinates. The centre is at (0, 0).
   - Backdrop: The backdrop sets the scene for your project. Multiple backdrops can be used, and you can switch between them during execution.
   - Sprite: A sprite is the character that acts on the stage. The default sprite is an orange cat, and each sprite has an X and Y position on the stage, indicating its horizontal and vertical location.
   - Go Button: The green flag starts the Scratch program when clicked.
   - Stop Button: The red button stops the running program.
   - Sprites Pane: This pane shows details of the sprites and backdrops in your project. You can add, delete, rename, or resize sprites, and change the backdrop.
   - Blocks Palette: Displays blocks categorised by function.
   - Script: A script is a collection of stacked blocks that form instructions. It must have at least two blocks.
   - Coding Area: The coding area is where you arrange blocks to create scripts. The blocks run sequentially when clicked.
   - Tabs: Scratch has three main tabs:
     - Code Tab: Contains block categories such as Motion, Looks, Sound, and more. The blocks connect like a puzzle to create scripts.
     - Costumes Tab: Allows you to modify the appearance of sprites and backdrops.
     - Sounds Tab: Used to add or change sounds for sprites and backdrops.

3. Any four Motion Blocks are:
   - Move () steps: Moves the sprite a specified number of steps forward.
   - Turn (clockwise) () degrees: Rotates the sprite clockwise by a specified number of degrees.
   - Go to x: () y: (): Moves the sprite to the specified x and y coordinates.
   - Glide () secs to (random position): Moves the sprite smoothly to a random position within the given time.
4. The Pen blocks allow you to stamp the sprite, draw lines on the stage, change the colour and thickness of lines. Follow the given steps to add Pen extension:

   Step 1: Click on the Add Extension button at the bottom left corner. The Choose an Extension window opens.

   Step 2: Click on the Pen extension. The Pen blocks appear in the Blocks palette.

C. 1. Grouping blocks makes it easier for users to find the required block quickly without confusion. The 'Looks' block category is used for controlling a sprite's appearance.

2. The student will need:
   - Move 10 steps block from Motion category
   - Say "Hello!" for 2 seconds block from Looks category

   These blocks should be connected one after another — first 'Move 10 steps', then 'Say "Hello!" for 2 seconds'.

3. Use the 'if touching color' block from Sensing category combined with 'stop all' block from Control category.

   Arrangement:
   - Place 'if touching color (wall color)' block inside a forever loop.
   - If condition is true, use 'stop all' to end the sprite's movement.

Code Clues Page 84

1. Menu bar
2. Green flag
3. Coding Area
4. Title bar

Digital Drills Page 84

Do it yourself.

4. Cyber Security

Tech Trivia

Section A (Objective)

A. 1. a. 2. b. 3. c. 4. b. 5. b. 6. b.

B. 1. Malware 2. Antivirus Software 3. Trojan Horse
4. Virus 5. Cyber Law

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

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

E. 1. Metropolitan Area Network
2. Internet Service Provider
3. Vital Information Resource Under Seize
4. World Wide Web

Answer Arcade

Section B (Subjective)

A. 1. A WAN spans a larger geographical area, often connecting LANs across cities, countries, or continents. The Internet is the largest WAN, enabling global connectivity and communication.

2. A computer worm is a type of malicious program that replicates on its own and can easily spread to other computers through the network. Once a worm infects a system, it can gain unauthorised access and carry out various malicious activities, such as deleting files, stealing data, or causing system instability.

3. You can avoid getting spam messages by following the given steps:
   - Keep deleting spam messages on a regular basis.
   - Do not provide your email address to unknown websites or post publicly.
   - Avoid clicking on unknown links while browsing the Internet.
   - Do not reply to spam messages.
   - Download spam filtering tools and antivirus software.
   - Do not use your personal or business email address when registering in any online contest or free services available on the Internet.

4. Malware, or malicious software, is designed to damage computer systems or networks. It can be in the form of files, scripts, or other software.

5. Cyberbullying is a form of bullying that occurs through digital technologies. It can take place on any digital platform, like social media, messaging platforms, gaming platforms, mobile phones, etc. It includes sending, posting, or sharing negative, harmful, or private information about someone else causing embarrassment or humiliation.

B. 1. Three types of networks are:

- Personal Area Network (PAN): A PAN is a network that connects devices within the personal range of an individual, such as smartphones, tablets, laptops, and wearable devices. Bluetooth and infrared are common technologies used for PANs.
- Local Area Network (LAN): A Local Area Network (LAN) connects computers within a small area, like a room, floor, school, or office building. It can be wired with Ethernet or optical fibre cables, or wireless using Bluetooth or Wi-Fi.
- Campus Area Network (CAN): A CAN is a network that connects multiple LANs within a university campus, corporate campus, or industrial park. CANs provide high-speed connectivity and centralised management of resources across multiple locations.

2. Networking the computers is becoming a basic need of today's world. Some of the main reasons to connect the devices into networking are sharing resources, communication, cost-effective and security.

- Communication: Networking allows people to talk to each other through email, messages, and video calls. It helps teams in different places work together easily.
- Cost-Effective: Buying separate software for each computer can be expensive. Storing it on one server and sharing it with other computers is cheaper.

3. Hacking refers to the unauthorised access to a computer system or a network for the purpose of stealing the data, altering the system configurations, or having access to the system, which may cause disruption to computer systems or networks.

   Hacking can be of two types:

- Ethical Hacking: It refers to the authorised access to the computer for legally testing of computer systems, networks, and applications for security reasons. This will help them identify weaknesses in systems and help the organisations improve their cybersecurity defences.
- Unethical Hacking: This involves hacking activities carried out with the intentions of stealing sensitive information, spreading malware, disrupting services, or causing financial harm.

4. Antivirus software is a program designed to prevent, detect, and remove malicious programs from the computer. After you install the antivirus software, it runs automatically in the background to provide real-time protection against virus attacks. You should also run full system scans periodically.

   List of jobs that an antivirus can do:

- Scans for new or unknown threats based on behaviour.

- Blocks malicious files or websites to prevent infections.
- Removes detected malware to avoid further damage.
- Requires regular updates to detect new viruses.

C. 1. Local Area Network (LAN)

2. Spam

Code Clues Page 100

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

Digital Drills Page 101

Do it yourself.

Test Sheet 2

(Based on units 3 & 4)

A. 1. a. 2. c. 3. c.

B. 1. backgrounds 2. Motion 3. Virus 4. Cyber Law

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

D. 1. The two ways to work in Scratch are:

- By dragging and dropping code blocks
- By editing the properties of the blocks

2. To create a loop that repeats an action 10 times, use the "repeat 10" block from the Control category and place the desired action inside the loop block.
3. A Wide Area Network (WAN) spans a larger geographical area, often connecting LANs across cities, countries, or continents. The Internet is the largest WAN, enabling global connectivity and communication.
4. A computer worm is a type of malicious program that replicates on its own and can easily spread to other computers through the network.

E. 1.

- Move steps: Moves the sprite forward by the specified number of steps.
- Turn clockwise: Turns the sprite clockwise by a specified number of degrees.
- Go to x: y: Moves the sprite directly to the specified x and y coordinates on the Stage.
- Glide to: Moves the sprite smoothly to a new position over a specified amount of time.

2. The Pen blocks allow you to stamp the sprite, draw lines on the stage, change the colour and thickness of lines. Follow the given steps to add Pen extension:

Step 1: Click on the Add Extension button at the bottom left corner. The Choose an Extension window opens.

Step 2: Click on the Pen extension. The Pen blocks appear in the Blocks palette.

3. Three types of networks are:

- Personal Area Network (PAN): A PAN is a network that connects devices within the personal range of an individual, such as smartphones, tablets, laptops, and wearable devices. Bluetooth and infrared are common technologies used for PANs.
- Local Area Network (LAN): A Local Area Network (LAN) connects computers within a small area, like a room, floor, school, or office building. It can be wired with Ethernet or optical fibre cables, or wireless using Bluetooth or Wi-Fi.
- Campus Area Network (CAN): A CAN is a network that connects multiple LANs within a university campus, corporate campus, or industrial park. CANs provide high-speed connectivity and centralised management of resources across multiple locations.

4. Networking the computers is becoming a basic need of today's world. Some of the main reasons to connect the devices into networking are sharing resources, communication, cost-effective and security.

- Communication: Networking allows people to talk to each other through email, messages, and video calls. It helps teams in different places work together easily.
- Cost-Effective: Buying separate software for each computer can be expensive. Storing it on one server and sharing it with other computers is cheaper.