PICK TOOL

A New Generation Computer Series

Introduction to Artificial Intelligence (AI)

Coding

Python

Scratch

Artificial Intelligence

Office
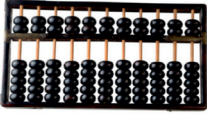
HTML

Teacher's Manual

6 to 8

YBPL **YELLOW BIRD PUBLICATIONS PVT. LTD.**

PICK TOOL - 6

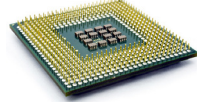## Chapter - 1 — Computer - A Machine

Beginning Drill

Abacus

Integrated Circuits

Miscroprocessors

Mock Time

1. Four   2. False

Exercise

1. a. (i)   b. (iii)   c. (i)   d. (ii)
   e. (ii)   f. (ii)
2. a. Vacuum tubes   b. Artificial Intelligence
   c. Mnemonic code   d. High-level   e. Interpreter
3. a. Third generation of computers introduced integrated circuits. It made computer smaller, cheaper and more powerful than their predecessors.

   b. The first generation of computers spans the period from the 1940s to early 1950s. They used vaccum tube technology. They used punched tape input or output. Instructions were given in the form of binary language (0 and 1). They generate a lot of heat and are based on machine language. Examples- EDVAC, ENIAC, MARK-I.

   The second generation of computers emerged in the late 1950s and continued into the early 1960s. They used transistors technology. They were smaller in size, faster, more efficient and less expensive as compared to the first generation computers and were based on Assembly language. Exaples IBM 700, CDC 160.

   c. They are designed to provide a higher level of abstraction compared to earlier generations. They are characterized by their focus on database management and manipulation, ease of use and increased productivity for software development.

   d. Machine language is the lowest-level programming language that a computer can understand directly. It consists of binary code, which is a series of 0s and 1s that represent instructions and data that the computer's processor can execute directly.

Example-

Binary code for "Hello world" in Machine Language

48	64	6C
6C	6F	20
57	6F	72
6C	64	

Assembly Language is a low-level programming language that uses symbolic codes, known as mnemonics, to present machine code instructions, It is a human readable representation of machine language, making it easier to write and understand code.

Example-

Assembly code for "Hello world" MOVAH, 09 MOV DX, OFFSET Hello message INT 21H

   e. High-level language are designed to be more human-readable and abstracted from the hardware architecture. These languages provide a more natural and efficient way for programmers to write code. Example- C/C++, Java, BASIC, etc.

   f. The characteristics of a computer are:

     1. Diligence - Computers do not get tired or bored.

     2. Speed- Computers can process information at incredible speeds.

     3. Accuracy - Computers perform calculations and operations with a high degree of accuracy.

     4. Reliability - When designed and maintained properly, computers are highly reliable.

     5. Scalability - Computers can be scaled in terms of processing power, memory and storage.

4. a. True   b. True   c. False   d. False   e. True

NEP-Aligned Questions

   B. A project combining the history of computing and language development can enhance understanding across subjects in several ways:

     1. In Interdisciplinary connections

     2. Language and culture

     3. Arts and designs

     4. Critical thinking

     5. Contextualizing technology

     6. Case studies

     7. Chronological understanding

8. Collaborative projects
9. Primary sources
10. Reflection and Debate.

C. The study of computer generations and programming languages can encourage students to explore cultural and diversity and global connectivity in several ways:
1. Global collaboration
2. Language and culture
3. Historical context
4. Global applications
5. Translation and localization
6. Open-source software
7. Case studies
8. Multilingual programming

D. Integrating computer generation studies with language learning is crucial for several reasons:
1. Enhanced Language Understanding
2. Language representation in technology
3. Communication in the digital age
4. Language learning through technology
5. Cultural exchange and global connectivity
6. Digital Literacy
7. Language preservation and evolution
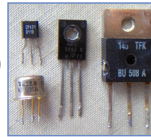8. Career opportunities

a. The First Generation

b. The Second Generation

c. The Third Generation

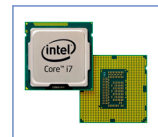d. The Fourth Generation

e. The Fifth Generation

(a)

(b)

(e)

(c)

(d)

Teacher's Point

1. Here's an overview of the evolution of computers from the first generation to modern systems:

   Ist Generation (1940s-1940s)
   a. Use of vacuum tubes
   b. large, room-sized machine
   c. Limited programming capabilities
   d. Examples- ENIAC, UNIVAC

   IInd Generation (1950s-1960s)
   a. Transistors replaced vacuum tubes
   b. Smaller, faster and more reliable
   c. Introduction of assembly languages
   d. Examples: 1BM 1401, PDP-8

   IIIrd Generation (1960s-1970s)
   a. Integrated circuits replaced transistors
   b. Microprocessors emerged
   c. Operating systems developed
   d. Examples- IBM System/360, PDP-11

   IVth Generation (1970s-1980s)
   a. Microprocessor became more powerful and affordable
   b. Personal computers emerged (e.g. Appple II)
   c. Graphical used interfaces introduced
   d. Examples- Apple, Macintosh, IBM, PC/AT

   Vth Generation (1980s-1990s)
   a. Artificial Intelligence and expert systems developed
   b. RISC architecture emerged
   d. Examples- SPARC, PowerPC

   Modern System (1990s-Present)
   a. Advances in microprocessor technology
   b. Increased focus on mobility
   c. Cloud computing and visualization
   d. AI and Machine learning integration
   e. Internet of things and edge computing

2. **Compare Languages–** Python and Java, C++ and Rust, Javascript and Ruby, Haskell and Lisp

   Contrast Languages– Typing Systems (Static vs dynamic)

   Memory Management (Garbage collection Vs manual memory)

   Paradigms (OOP, functional)

   Use Cases (Data Analyisi, Web development System programming)

Chapter - 2 — Parts of a Computer

Beginning Drill

1. Recycle Bin
2. Microsoft Edge
3. Google Chrome
4. Adobe Acrobat

Time 4 Fun

Graphical User Interface

Exercise

1. a. (iii)   b. (i)   c. (ii)   d. (i)
   e. (iii)   f. (i)   g. (i)

2. a. disappear b. Disk cleanup c. Contimuum Mode
   d. points e. Snap Assist

3. a. Windows 10 is an operating system developed by Microsoft. It provides us a Graphical User Interface (GUI). It is designed to work on variety of devices, including desktops, laptops, tablets and even some smartphones.

   b. It clears away files you don't need anymore. It finds and removes things that take up space but are not useful, like tempory files, old staff in the Recycle Bin, and extra files from updates.

   c. In window 10, "Auto-hide" refers to a feature that allows you to hide the taskbar or other bars automatically. When they are not in use. This means that the bar will slide out of sight, freeing up screen space, and only reappear when you move your cursor to the edge of the screen where the bar is located.

   d. Font is a style or design of writing. It refers to the visual representation of text, encompassing various attributes such as typeface, size, weight, style (bold, italic, underline, etc.), and spacing.

   To view fonts follow the given steps:

   Step 1: Open Control Panel

   Step 2: Click on the Appearance and Personalization option.

   Step 3: Click on the Fonts option. The fonts windows appears.

   Step 4: Double-click on only font.

   e. Snap Assist makes multitasking easier by helping to manage multiple windows on their screen more efficiently.

   It displays a set of thumbnails of other open windows allowing you to select and snap them to the available space on the screen. It is useful for arranging and organizing multiple application side by side, making it simple to compare information or work on different tasks simultaneously.

4. a. False   b. False   c. True   d. True   e. False

Activity Time

					S							O		
F			W	I	N	D	O	W	S			P		
O					A							E		
N					P							R		
T	A	S	K	B	A	R						A		
S					S							T		
					S							I		
				D	I	S	K	C	L	E	A	N	U	P
					S							G		
		C	O	R	T	A	N	A						
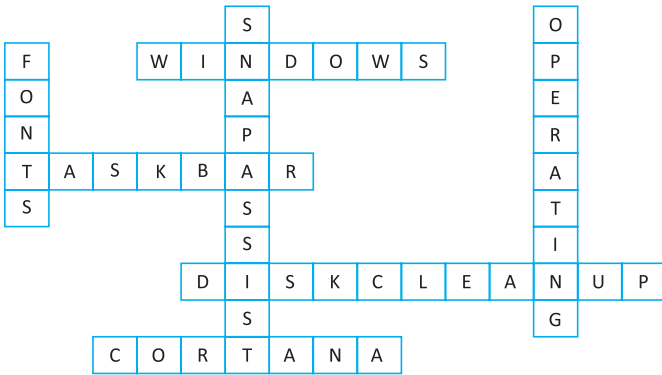
NEP-Aligned Questions

C. Understanding operating systems like windows 10 is crucial in today's technology era for several reasons:
1. Digital Literacy
2. Skill Development
3. Productivity
4. Software Applications
5. Career Readiness
6. Troubleshooting
7. Cybersecurity
8. Collaboration
9. Accessibility
10. Future-Proofing

Teacher's Point

A. Step-by-step guide to help students navigate the start menu in window
    Opening the Start Menu:
a. Click the windows icon in the bottom left corner of the screen.
b. Press the windows key on your keyboard.
    Opening Applications:
a. Click on the application's icon in the start menu.
b. Type the application's name in the search bar and select it from the results.
c. Browse through the "Au Apps" list and click on the application's icon.
    Accessing Settings:
a. Click on the gear icon in the start menu.

b. Type "settings" in the search bar and select it from the results.
   Accessing Files:
a. Click on the "File Explorer" icon in the start menu.
b. Type "File Explorer" in the search bar and select it from the results.
c. Browse through the "Quick Access" or "This PC" sections to find your files.
   Pinning Applications to the Start Menu:
a. Right click on an application's icon in the start menu.
b. Select "Pin to start" from the context menu.
c. Drap and Drop the application's icon to the desired position in the start menu.
2. Step-by-step guide to teach students how to snap windows to specific positions in windows 10:
   Snapping Windows:
a. Snap to sides:
b. Snap to corners:
c. Snap to Top or Bottom:
d. Snap to Quadrants

Chapter - 3 — Uses of a Computer

Time 4 Fun

a. Ctrl+B   b. Ctrl+L
c. Alt+N+H (header) and Alt+N+O (footer)   d. Ctrl+I
e. Ctrl+J   f. Ctrl+S

Mock Time

1. Ctrl+End   2. Paragraph Spacing

Exercise

1. a. (i)   b. (iv)   c. (ii)   d. (iv)   e. (ii)
2. a. Page Margin   b. Column formatting   c. Layout
    d. Potrait   e. Hyperlink
3. a. Find feature helps to locate specific words or phrases within the document. Replace feature not only finds text but also you to replace it with different text or formatting.
    b. Drop cap is used to make the first letter of a paragraph in a much bigger size than the rest of the letters. You can make it big and fancy, making your text look special and stylish.
    c. It is like a bridge that connects different parts of your document or even other documents, web pages or online resources. It is a clickable link that when selected directs you to another location, like a website, etc.

d. Mail Merge is a feature used to create personalized documents, such as letters, envelopes, labels or emails by merging a template (main document) with a data source (like a list of names and addresses).

e. The steps to replace a text are:

Step 1: Click on Replace option in the Editing Group. A Find and Replace dialog box appear on the screen.

Step 2: Enter the text which you want to replace in the find what box. For example, 'Network'.

Step 3: Enter the new text which you want to replace with your selected text in the Replace with box. For example 'Networking'.

Step 4: Click on the Replace button.

Step 5: Click on the Replace All button to replace all text in one time and click on the more button to get more search option. A message is displayed when word replaces the text.

Step 6: Click on Cancel button. You will get the word 'Networking' instead of the word 'Network'.

4. a. True   b. False   c. False   d. True   e. False

Activity Time

1. a. PAGE MARGIN   b. HYPERLINK   c. MAIL MERGE
    d. ORIENTATION   e. DROP CAP
2. a. Column formatting   b. Line spacing
    c. Hyperlink   d. Hyperlink   e. Drop Cap

Chapter - 4 — The Keyboard

Beginning Drill

    a. Outline View   b. Slide Sorter View   c. slide Show View

Time 4 Fun

    First Slide — Ctrl + Home   Last Slide — Ctrl + End

Exercise

1. a. (iii)   b. (ii)   c. (i)   d. (ii)   e. (iii)
2. a. Presentation   b. Graphs, Charts   c. Transitions
    d. SmartArt   e. Animation
3. a. Smart Art is a feature in Powerpoint that helps to create impressive visuals like diagrams, flowcharts and more without much effort. It is a stylish way that represents your text in graphical and different featured manner.

Pick Tool (TM)

b. It makes objects move along a specified path on the slide. This can include custom paths.

c. Slide transition in a powerpoint presentation serve special purpose:

1. It adds a professional and polished look to your presentation, making it more engaging and visually appealing.

2. It can help to tell a story by creating a sense of continuity and flow between slides.

3. Transitions can draw attention to important information or key points, emphasizing their significance,

4. It can help control the pace of your presentation, allowing you to slow down or speed up the flow of information.

5. It can create a specific mood or atmosphere, such as fade- in for a dramatic effect or a swipe for a dynamic feel.

d. In a presentation, an animation effect refers to a visual effect that is applied to text, images, charts, or other elements on a slide to make them move, appear, or disappear in a specific way.

e. To add sound effect to animated text or an object follow the given steps:

Step 1: On the Animations tab, in the advanced Animation group, Click Animation pane.

Step 2: Click the down arrow and then click effect options.

Step 3: From the Effect tab, under Enhancements, in the Sound box, Click the arrow to open the list.

Step 4: Click a sound from the list, and then click OK.

Step 5: Click on Play option to preview your slide.

4. a. False   b. True   c. False   d. False   e. False

Activity Time
a. SLIDE TRANSITION   b. ANIMATION
c. ANIMATION PANE   d. SMART ART

Chapter - 5 — The Computer Mouse

Beginning Drill
b.   i. Generate Chart and Graphs
    ii. Create Formulas and Functions
    iii. Manage and Organize data

Mock Time
1. It is a basic unit of storage and data entry in a worksheet.
2. Ctrl + Z

Exercise

1. a. (iii) b. (i) c. (i) d. (iii) e. (ii)
2. a. Spreadsheet b. cell c. formula box
   d. equal e. Auto fill
3. a. MS Excel performs automatic calculation. It represent data in graphical formats like charts and graphs. It provides built-in formulae used for calculating average, percentage, interest, etc.

   b. In Excel, formatting refers to the process of changing the apprearance of data in a cell or range of cells to make it more readable, visually appealing, and meaningful. By applying formatting the data becomes more readable, attractive, informative and easy to analyze.

   c.

	Worksheet		Workbook
1.	A single page within a workbook.	1.	A collection of one or more worksheets.
2.	A collection of cells where you can enter and manipulate data.	2.	A file that contains all the worksheets, their data, and formatting.
3.	It is identified by a unique name (e.g., "sales", "Expenses".	3.	It is identified by a unique file name (e.g., "Budget, xlsx", "Report, xls")
4.	It has its own formatting formula and data.	4.	It has multiple worksheets, each with its own data and formatting.

   d. Sheet tab refers to the small tabs located at the bottom of the Excel window. Each tab represents a separate worksheet within the Excel workbook. These tabs allow you to navigate between different worksheets contained within the same Excel file.

   e. Autofill is a feature in Excel that allows you to quickly fill a range of cells with a value, formula, or format based on a pattern. It can be applied in several ways:

   1. Select the cell with the value you want to fill, move your cursor to the bottom right corner of the cell and drag it down to the desired range.
   2. Select the cell range, move your cursor to the bottom-right corner, and click on the Autofill handle to open the Autofill options menu.
   3. Select the cell range and press Ctrl +D to fill down or Ctral+R to fill right.
   4. Select the cell with the value, move your cursor to the bottom-right corner, and double click to fill down to the last row with data in the adjacent column.

Activity Time

1.

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

2. a. Feature of Home tab in Excel is Bold button. It allows you to make the text in a selected cell or range of cells bold.

   b. Feature of the Insert tab in Excel is the Table tool. It allows you to create a table from a range of data.

   c. Feature of the Formulas tab in Excel is the Function Library. It provides access to a wide range of built-in functions.

   d. Feature of the Page Layout tab in Excel is the Orientation tool. It allows you to set the page orientation to either Potrait or Landscape.

Chapter - 6 — Paint

Exercise

1. a. (iv)   b. (i)   c. (iii)   d. (ii)   e. (i)
2. a. Pens   b. Costume c. Wait   d. Repeat   e. Variables
3. a. A sprite is a graphical character or object that performs various actions within a project. To add a sprite there are four ways:

   Step 1: Choose new sprite from library.

   Step 2: Paint new sprite

   Step 3: Upload sprite from file

   Step 4 : New sprite from camera will be created.

b. Forever block is a control block that allows a script to run continuously, repeating the blocks inside it indefinitely, until the program is stopped. It does so many things like creating loops, animate sprites, handle user input, update game state, create simulations, etc.

c. Control blocks are used to control the flow of a program's execution, allowing you to make decisions, repeat actions, and manage events. Types of control blocks are:

1. If - Then blocks - used for decision making these blocks execute a script only if a certain condition is true.

2. If - Then - Else blocks - similar to if - then blocks, but also specify an action to take if the condition is false.

3. Wait blocks - Pause the script for a specified amount of time or until a certain condition is met.

4. Repeat blocks - Execute a script a specified number of times.

5. Until blocks - Execute a script repeatedly until a certain condition is met.

6. Stop blocks- End the execution of a script or all scripts.

d. The IF - Else block in scratch is a fundamental control block that allows you to make decision and execute different scripts based on conditions. It is used in decision making, it handles the error, it creates conditional statement to control game behaviour, creates animations.

e. The Wait Util block pauses the script's execution until a specified condition becames true.

4. a. True   b. False   c. True   d. True   e. False

Lab **Activity**

| Triangle | Square | Hexagon | Spiral |

Activity Time

```
//Play music and start dance animation simultaneously
    play Music ( );
    Start Dance Animation ( );
//Function to play music
    Function to play Music( ){
//code to play music goes here
}
//Function to start dance animation
    functioon start dance animation goes here
}
```

Chapter - 7 — Introduction to Artificial Intelligence

Beginning Drill

a. Collection of web pages that are publicly accessible through the Internet.
b. Software program that retrieves and ranks data from the Internet based on a user's search query, providing a list of relevant results.

Mock Time

1. It lets you send the received email to someone else.
2. Signing out of email account is necessary to prevent unauthorized access.

Exercise

1. a. (i)   b. (iv)   c. (ii)   d. (i)   e. (ii)
2. a. Internet   b. E-mail   c. Inbox   d. Paperclip e. junk
3. a. Search Engine is a software program that retrieves and ranks data from the Internet based on a user's search query, providing a list of relevant results.

    b. It is a widely used communication tool on the Internet. It enables individuals and organizations to send and receive message, documents and files electronically. It is the way by which we can send or receive messages from one computer to another computer anytime, anywhere in the world.

    c. To restore deleted e-mails there are many ways:

    1. By checking the Trash folder
    2. We can use the 'UNDO SEND' feature.
    3. We can contact our email provider.

4. We can use email recovery software.
5. We should check email client's backup.
6. We can restore from a backup.

d. CC - It means Carbon copy. To send a copy of the same email to the other students, type their email addresses in CC column.

BCC- It means Blind Carbon copy. If you want to send a copy of the same mail to other people, and want that those email ids will not be visible to the recipient or the recipient in CC, type their addresses in BCC Column.

e. An attachment refers to a file or document that is sent along with an email message. Attachements are sent separately from the email body and are typically stored on the recipient's device when they download or open the attachement.

f. Follow the given steps to attach a document:

Step 1: Click on Attach a file in the compose window. (open a dialog box appears on the screen).

Step 2 : Choose the file and click on the open button. Yur file is being loaded as an attachment. After sometime you can see the name of your attached file and its size in the compose window.

Steps 3: Click on the send option. Your e-mail with the attached file is send.

4. a. False   b. True   c. True   d. False   e. False

NEP-ALIGNED QUESTIONS

C. The Internet has undergone significant evolution since its inception in the 1960s. Here's a brief overview:

1. Early years (1960s - 19080s) :

The Internet originated as a US Departarment of Defense project, ARPANET

2. Expansion (1980s - 1990s) :

The Internet expand to universities, research centres, and eventually the general public.

3. WWW (1991) : Tim Berners-Lee invented the World Wide Web, making it easy for users to access and share information.

4. Broadband and Mobile (2000s): Widespread adoption of broadband and mobile devices enabled faster and more convenient access.

5. Social Media and Cloud Computing (2004-Present) Social Media platforms and cloud computing transformed the way we communicate, collaborate, and store information.

D. Advantages of email communication:
   1. Convenience
   2. Speed
   3. Record-keeping
   4. Cost-effective
   5. Accessibility

   Disadvantages of email communication:
   1. Privacy concerns
   2. Information overload
   3. Misinterpretation
   4. Spam and junk mail
   5. Depersonalization

   Effective Communication tips:
   1. Clear Subject lines
   2. Concise content
   3. Proper formatting
   4. Proofread
   5. Use Encyryption

   Best practices for privacy and information sharing:
   1. Use strong password
   2. Enable two-factor authentication
   3. Be cautious with attachments
   4. Use secure protocols
   5. Regularly update software

E. Understanding email etiquette and safe Internet practices contributes to developing students life skills in several ways:

   Email Etiquette:
   1. Professionalism
   2. Respect and empathy
   3. Organization and time
   4. Clear communication

   Safe Internet Practices:
   1. Digital citizenship
   2. Critical thinking
   3. Risk management
   4. Privacy and security

These skills benefit students in:
1. Future careers
2. Personal relationships
3. Academic success
4. Online Safety and Well-being

Activity Time

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

Chapter - 8 — AI and Robotics

Beginning Drill
1. Robot   2. Autonomous Car

Time 4 Fun
1. ROBOT   2. CORTANA

Exercise
1. a. (iii)   b. (ii)   c. (ii)   d. (i)
2. a. humanoid   b. robot   c. educational   d. end-effector
3. a. Artificial Intelligence refers to the process of simulating human intelligence in man-made machines like computer. It focusses on creating machines that can think, learn and make decisions like humans.

   b. A robot is a machine designed to carry out taks automatically. It can be controlled by a computer program or act autonomously based on its programming and sensors.

   c. Robots have 'senses' like human beings. Sensors allow them to detect things like light, sound, touch and distance, helping them to perceive the world around them.

d. Industrial robots are used in factories to perform repetitive tasks like assembling cars, welding or packaging products. They increase efficiency and accuracy in manufacturing.

Service robots are a type of robot designed to perform tasks that assist or serve humans in various ways. These robots are generally intended to make our lives easier, safer or more convenient. For example, cleaning robots like Roomba, etc.

4. a. True   b. False   c. True   d. False   e. False

NEP-Aligned Questions

B. Robotics plays a vital role in the fields of science, technology, engineering, and mathematics, driving innovation and advancements in various areas. Its importance can be seen in:
1. Research and Development
2. Manufacturing and Automation
3. Healthcare
4. Environmental Monitoring
5. Education

The benefits of robotics to society include:
a. Improved productivity
b. Enhanced safety
c. Increased accessibility
d. Economic growth
e. Scientific discovery

Activity Time

1. a. Sensors   b. Artificial Intelligence   c. Autonomous
    s. Automation   e. End-Effector

Fun with Coding

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

Teacher's Point

AI, or Artificial Intelligence, refers to the ability of machines to think and learn like humans. Here are some exciting uses of AI:
a. Virtual assistants
b. Image recognition
c. Natural Language Processing
d. Predictive Analytics
e. Gaming
f. Healthcare
g. Autonomous vehicles
h. Education
i. Customer Service
j. Space exploration

WORKSHEET-1

1. a. High-Level b. Page Margin c. Snap Assist
   d. Animation e. Transitions
2. a. (iii) b. (i) c. (ii) d. (ii) e. (ii)
3. a. T b. F c. F d. F e. T
4. a. Machine Language is the lowest-lewel programming language, consisting of binary code (0s and 1s) that a computer's processor understands directly.

   Example:

   Binary code for "Hello World" in Machine language (X86 processor):

   48   65   6C   6F   20
   57   6F   72   6C   64

   Assembly language is a low-level programming language that uses symbolic code to represent machine language instructions. It is translated into machine language using an assembler.

   Example:

   Assembly code for "Hello World"

   MOV AH, 09
   MOV DX, OFFSET   Hello Message
   INT   21H

   Translated to machine language:

   1010   0111   0000   1001
   0000   0000   0000   1001
   0000   0001   0010   0001

   b. It clears away files you don't need anymore. It finds and removes things that take up space but are not useful, like temporary files, old staff in the recycle bin and extra files from updates.

   c. Mail Merge is a featured used to create personalized documents, such as letters, envelopes labels, or emails by merging a template with a data sources.

   d. In a presentation, an animation effect refers to a visual effect that is applied to text, images, charts or other elements on a slide to make them move, appear or disappear in a specific way.

   e. Smart Art is a feature in powerpoint that helps to create impressive visuals like diagrams, flow charts and more without much effort. It is stylish way that represents your text in graphical and different featured manner.

5. a. It represents a vision for the future of computing, characterized by advancements in Artificial Intelligence and the ability of machines to emulate human-like cognitive functions. They are used in areas such as designing, robotics, etc. They are based on high level language.

   b. Font is a style or design of writing. It refers to the visual representation of text, encompassing various attributes such as typeface, size, weight, style and spacing.

   c. Motion path refers to the trajectory or route that a sprite follows when it moves around the stage. It's the path that the sprite takes as it animates from one location to another.

   d. High-level language are designed to be more human-readable and abstracted from the hardware architecture. These languages provide a more natural and efficient way for programmers to write code. Example- JAVA, BASIC, etc.

   e. It is known as a link, is a reference or navigation element in a digital element in a digital document, such as website, email, or document, that connects to another online resource such as another web page, an email address, a file or document, a specific location within a web page.

6. a. Column Formatting   b. Line spacing
   c. Hyperlink   d. Hyperlink   e. Drop cap

WORKSHEET-2

1. a. Spreadsheet   b. Costume   c. Inbox
   d. robot   e. paperclip

2. a. (ii)   b. (i)   c. (i)   d. (iii)   e. (i)

3. a. F   b. T   c. F   d. F   e. F

4. a.

		Worksheet		Workbook
	1.	A single page within a workbook.	1.	A collection of one or more worksheets/
	2.	A collection of cells where you can enter and manipulate data.	2.	A file that conains all the worksheets, their data, and formatting.
	3.	It is identified by a unique name (e.g.; "sales", "expenses").	3.	It is identified by a unique name (e.g.; "Budget. xls").
	4.	It has its own formatting formula and data.	4.	It has multiple worksheets, each with its own data and formatting.

b. It is a control flow block that allows you to make decisions in your code based on conditions. It's used to execute different blocks of code depending on whether a certain condition is true or false.
   Usage:
   1. Drag and drop the IF-Else block into your code.
   2. Add code blocks to the "Do" section that will run if the condition is true.
   3. Add code blocks to the "Else" section that will run if the condition is false.

c. Steps to attach a document are:
   Step 1: Click on Attach a file in the compose window.
          (open a dialog box appears on the screen).
   Step 2: Choose the file and click on the open button. Your file is being loaded as an attachment. After sometime you can see the name of your attached file and its size in the compose window.
   Step 3: Click on the send option. Your email with the attached file is send.

d. Industrial robots are used in factories to perform repetitive tasks like-assembling cars, welding or packaging products. They increase efficiency and accuracy in manufacturing.
   Service robots are a type of robot designed to perform tasks that assist or serve humans in various ways. These roborts are generally intended to make our lives easier, safer or more convenient. For example cleaning robots like Roomba, etc.

e. Autofill is a feature in Excel that allows you to quickly fill a range of cells with a value, formula or format based on a plattern. It can be applied in several ways:
   1. Select the cell with the value you want to fill, move your cursor to the bottom-right corners of the cell and drag it down to the desired range.
   2. Select the cell range, move your cursor to the bottom right corner and click on the autofill handle to open the autofill options menu.
   3. Select the cell range and press Ctrl+D to fill down or Ctrl+R to fill right.
   4. Select the cell with the value, move your cursor to the bottom-right corner and double-click to fill down to the last row with data in the adjacent column.

5. a. Control blocks are a type of block that helps you control the flow of your program's execution. They determine when and how other blocks are executed, allowing you to create more complex and dynamic programs.

Pick Tool (TM)

b. Spreadsheet is a software application or digital tool used for storing, organizing and analyzing data in a table format. It consists of rows, columns, and cells that can contain numbers, text, formulas and functions.

c. A robot is a machine designed to carry out tasks automatically. It can be controlled by a computer program or act autonomously based on its programming and sensors.

d. Forever block is a control block that allows you to create an infinite loop, where a set of blocks will repeat continuously until the program is stopped.

e. Email is a method of exchanging digital messages from one computer user to another through a network, typically the Internet.

6. a. Sensors   b. Artificial Intelligence   c. Autonomous
   d. Automation   e. End-Effector

National Cyber Olympiad

1. — (b)	2. — (b)	3. — (a)	4. — (b)	5. — (a)
6. — (d)	7. — (d)	8. — (b)	9. — (b)	10. — (c)
11. — (a)	12. — (d)	13. — (b)		

PICK TOOL - 7

Chapter - 1 — Computer Networking

Mock Time

Local Area Network, Campus Area Network

Exercise

1. a. (i)   b. (ii)   c. (iv)   d.   (ii)
   e. (i)   f.   (ii)
2. a. Network   b. Communication
   c. Network Interface Card   d. a Ring   e. router
3. a. Computer network is like a big web that connects computers and other devices together to share resources, information and services.

   b. Hub-It is used to connect devices within a network. They are less common now. They pass on data to all connected devices, which could lead to network congestion as all devices receive the data.

   Switch- It connects multiple devices within a local network, such as computers, printers or servers. It manages data traffic, sending message only to the intended recipient, enhancing network efficiency compared to hubs.

   c. In client-server network, devices are divided into two categories clients and servers. Servers are powerful computers or systems that provide services or resources to clients. Clients are devices that request and consume these resources or services from the servers. The server is like the shop that has all the important stuff and your computer asks for what it needs.

   d. LAN- Local Area Network is type of computer network that covers a small geographic area, typically within a single building, office, school or home. LAN's connect devices like computers, printers, servers and other peripherals, allowing them to communicate and share files, applications, and printers.

   WAN- A Wide Area Network (WAN) is a type of computer network that spans a large geographical area, allowing connectivity between geographically dispersed locations, cities, states, countries or even continents. Example of WAN is Internet.

   e. Topology in networking refers to the physical layout of devices, connections and nodes in a network. It defines how these elements are arranged and how data flows between them. There are various types of topologies like Bus topology, Star topologgy, ring topology, etc.

f. Bus Topology- In a bus topology, devices connect along a single cable, known as a bus. Data travels on this cable and each device listens to the data but only the intended device processes it. If the main cable has a problem, the whole network might be affected.

Star Topology- All devices in a network are connected to a central device, usually a hub or a switch. Each device has its cable that connects directly to a central hub or switch. This central hub manages communication and links all devices. If one device has a problem, it doesn't affect the others, making it easy to find and fix issues.

4. a. True   b. True   c. False   d. False   e. False

NEP-ALIGNED QUESTIONS

A. A few key connections are:
1. Energy consumption of Network Infrastructure.
2. Data Center Efficiency.
3. Network Traffic Management.
4. Green Networking Technologies.
5. Smart Grids and Environmental monitoring.
6. Impact of the Internet of Things.

B. You can create diagrams for different types of network topologies:

Star Topology
```
        A
        |
        |
        |
B----C----D
        |
        |
        |
        E
```

Bus Topology
```
A-------B-------C-------D
```

Ring Topology
```
A--------B
:        :
:        :
D--------C
```
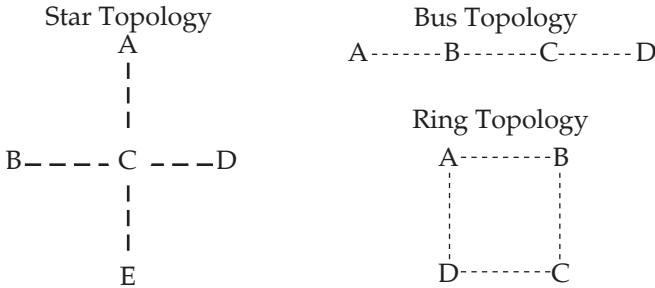
Activity Time

1. a. Peer-to-Pear Network   b. Local Area Network
    c. Personal Area Network   d. Client-Server Network
    e. Wide Area Network   f. Campus Area Network
2. a. Network Interface Card   b. Router   c. Modem
    d. Switch   e. gateway

Teacher's Point

1. Some basic networking concepts explained in simple terms:
    a. Network- Collection of connected computers and devices that share resources and information with each other.

b. Router- A device that directs data between different networks.

c. Switch- A switch is a device that connects devices within the same network.

d. IP Address- It is a unique number assigned to each device on a network.

e. Firewall- A firewall is a security device or software that controls what data can enter or leave your network to protect it from unauthorized access.

Chapter - 2 — Formula and Functions in Excel 2019

Beginning Drill

1. Row Limit (1,048, 576) rows
2. Column Limit (16,384) columns
3. Active cell
4. Range

Mock Time

= Average (range)

Exercise

1. a. (ii)   b. (ii)   c. (iv)   d. (i)   e. (iii)
2. a. formula   b. Filtering   c. relative
    d. $ e. MIN
3. a. A formula is defined as a mathematical equation that represents the relationship between various quantities. It is an expression that defines how one cell relates to another cell, such as, you might define cell A4 (column A and Row 4) with the formula. The rule are:

    1. It must begin with an '=' sign.
    2. Some arithmetic operators must be there to operate on numeral or data.
    3. The data can be a cell address also.

    b. Functions are predefined formulas that simplify complex calculations or operations. They have a specific syntax and identified by their names, followed by parentheses containing arguments.

    c. Cell referencing is a method used to identify and access specific cells or ranges within a worksheet. It involves using a unique address or identifier to refer to a particular cell, allowing you to perform calculations, manipulate data or create formulas that involve those cells. There are three types of cell referencing:

1. Relative Cell Referencing - Cell addresses within formulas or functions change relative to the position of the formula when it is copied or moved to other cells.

2. Absolute Cell Referencing- It does not change across the rows or columns when a formula is copied and pasted in the new cell location.

3. Mixed Cell Referencing- It combines elements of both relative and absolute cell referencing within a single cell reference.

d. Absolute Cell Referencing- It does not change across the rows or columns when a formula is copied and pasted in the new cell location. It involves fixing or locking cell references in a formula to prevent them from changing when the formula is copied or moved. For example- If the formula in C3 = A1, after copying it using the fill handle, the formula automatically appears as same in the cell C4, = A1 in cell C5, = A1, C6, = A1 and in cell C7, = A1.

Relative Cell Referencing- Cell address within formulas or functions change relative to the position of the formula when it is copied or moved to other cells. It occurs when a cell is entered in a formula without using the symbol.

For example- When a formula is copied to a new cell, the reference moves the same distance as the copied formula moves. If the formula in C1 = A1/B1, after copying the formula using the fill handle, the value of formula is automatically changed in cell C2 = A2/B2.

e. In Excel, basic filtering allows you to narrow down data to show only rows that meet specific conditions, such as showing only values in a certain range or only rows that contain specific text. Basic filtering uses pre-defined criteria and filters data based on a single column. Example- Basic Filtering: shows only sales data for the "North" region.

Custom Filtering- It refers to the ability to filter data based on specific criteria that you define yourself, rather than using basic filters like greater than, less than or equal to. With custom filtering, you have more control over the conditions used to filter your data. It allows you to create complex criteria involving multiple conditions, text, numbers, data or combinations there of.

4. a. True   b. True   c. False   d. False   e. True

NEP-Aligned Questions

A. Significance of Financial Literacy:
   1. Informed Decision = Making
   2. Budgeting and Saving
   3. Debt Management
   4. Investing
   5. Planning for the future
   6. Avoiding financial exploitation

Role of technology in managing personal finances:
1. Budgeting Apps
2. Online Banking
3. Investment Platforms
4. Financial Planning Software
5. Automated Savings
6. Education and Resources

Teacher's Point

1. The fundamental concepts of Excel are:
   a. Cells- basic building blocks where data is entered.
      Ranges- group of cells
   b. Formulas- expressions that perform calculations or other actions on data.
   c. Functions- Predefined formulas that simplify common calculations.
   d. Data Management sorting and filtering. Pivot Tables
   e. Charts and Graphs
      They visualize data trends and patterns, making it easier to interpret and present data.

2. Example 1 : = IF (And (A1>10, B1<5, "Pass", "Fail")
   Breakdown:
   AND (A1>10, B1<5) : Checks if both conditions are true
   IF (...) : If the result of the AND function is true, it returns "Pass". otherwise, it returns "Fail".
   Example 2 : INDEX (A1 : C10, MATCH ("Apple", B1 : B10, 0), 1)
   Breakdown : MATCH ("Apple", B1 : B10, 0)
   Finds the row number where 'Apple' is located in column B.
   INDEX (A1 : C10, row_num,1)- retrieves the values from column 1 (A) of the row found by MATCH.

Crossword solution:

- AVERAGE (down)
- FUNCTION (down)
- ARGUMENT (down)
- CELL REFERENCING (across)
- FORMULA (down)
- FILTER (down)
- CUSTOM FILTERING (across)

Chapter - 3 — Charts in Excel

Beginning Drill

1. Cell A4   2. Cell B3   3. Cell A5   4. Cell A2
5. Cell B4   6. Cell B2

Time 4 Fun

Pie Chart

Exercise

1. a. (ii)   b. (iv)   c. (i)   d. (ii)   e. (iii)
2. a. Data Series   b. data   c. Line
   d. Horizontally   e. Sparklines
3. a. A chart in Excel is a graphical representations of the data. It helps us see and understand information more easily. Different conponents of a chart are:

   1. Chart Title- It is the text at the top of the chart that tells is what the chart represents.
   2. Plot Area- It is the area of the chart where the actual chart is plotted.
   3. Data Points- They are individual units of data represented on the chart.
   4. Data Series- It is a collection of data points from which a chart is derived.
   5. Chart Area- It is the entire chart area where all the chart components are enclosed.

   b. There are various types of chart:

1. Line Chart- It is a type of graph that displays information as a series of data points connected by straight lines. It displays continuous data over the time. It has a horizontal and a vertical axis and uses one or more lines to show where two values intersect.
2. Column Chart- Column chart is like a series of vertical bars standing side by side with the values axis being displayed on the left side of the chart. It shows changes in data over a period of time.
3. Bar Chart- They stand horizontally. It displays data in the form of long rectangular rods. It compares numerical values like integers and percentages.
4. Area Chart- Area is a graph that combines a line chart and a bar chart to show changes in quantities over time.
5. Pie Chart- It is a circular graph divided into segments, resembling slices of a pie or pizza.
c. To create a chart follow the steps:
1. Select the cell within the table that you want.
2. Clink on the Insert tab.
3. Clink on Recommended charts in the charts group.
4. Select the chart type and its subtype that you want.
5. Click on the Ok button. You will get the desired chart in the current worksheet.
d. Some benefits of chart are:
1. Chart provide a compact way to convey information.
2. They effectively display large data quantities in a simplified and understandable manner.
3. They helps in summarizing a very large data in an easy manner.
4. They offer a visually appealing way to represent data, providing audiences with a quick and clear visualization of information.
5. They enable clever comparisons between different data sets or categories, making it easier to identify patterns, trends or difference.
e. Sparklines in Excel are small, simple and compact charts embedded in a single cell, providing a visual representation of data trends or variations.

There are three types of sparklines in Excel:
1. Line sparklines- It shows trends over a period using a line graph. It displays continuous data.
2. Column sparklines- It represents variation in data using columns within a single cell. They are effective for showing data changes or fluctuations.

3. Win/loss Sparklines- It indicates positive, negative or neutral trends with a simple visual representation. They are used for binary data.

4. a. True   b. False   c. False   d. True   e. True

NEP-Aligned Questions

A. Graphical representation play a pivotal role in effectively conveying information across various fields, including mathematics and art. The power of visual communication lies in its ability to present complex data and abstract concepts in a manner that is intuitive, engaging, and easily interpretable.

In mathematics, graphical representations such as graphs, charts, and plots are fundamental in elucidating relationships between variables and trends within datasets. For instance, a scatter plot can visually depict the correlation between two variables, allowing mathematicians and data scientists to quickly access the strength and direction of the relationship.

Activity Time

2. a. E   b. 31.25
    c. Product E (increasing)
        Product C (Stable/high)
        Product A (Stable)
        Product B (declining)
        Product D (declining)

Chapter - 4 — Adobe Animate CC

Beginning Drill

   a. Create Motion Graphics
   b. Develop Characters and Storylines
   c. Design and Animate special effects
   d. Build and Animate 3D Environments

Mock Time

   Pen Tool

Exercise

1. a. (iii)   b. (ii)   c. (i)   d. (ii)   e. (ii)
2. a. Timeline   b. Paint bucket   c. Pen   d. Keyframes
3. a. A Gradient fill is a smooth transition between two or more colours within a shape or area. It is formed by mixing two or more colours in an object. To apply gradient fill follow the steps:

1. Select the polygon using the free transform tool.
2. Click on the window>color option to display the color panel.
3. From the color type drop-down list, choose either linear gradient or Radial gradient option.
4. Double-click on the Left pointed bar. The colour palette appears. Select the red colour.
5. Select the Right pointer- The colour palette appears. Choose the yellow colour.
6. Under the flow section, select any mode among Extend, Reflect or Repeat.

b. Line tool is used to create a straight line swiftly.

   Pencil tool is used to draw and edit freehand lines. You can draw free from lines and shapes in the same way as we would use a real pencil to draw any shape.

c. Keyframes are special frames where changes like colour, position or shape can be made. Animate CC animations are created with the help of little rectangular keyframes.

   Fram involves creating a sequence of individual frames to simulate motion or action. Each frame contains a slightly modified image or drawing from the previous one. Creating the illusion of movement when played in sequence.

d. Lasso tool is used for making free form selections around multiple objects or elements on the canvas.

e. Follow the steps to add a symbol to library:
   1. Draw a polygon using Polystar tool.
   2. Click on selection tool to select the entire picture.
   3. Click on modify menu and select convert to symbol.
   4. Type the name Polygon and click on the Ok button. The symbol is added to the Animate CC library.
   5. Delete the polygon from the stage and drag the symbol Polygon from the Library onto the stage.
   6. Right click on stage symbol and click on the Edit symbols option.
   7. Select the symbol part and change as per your requirement.
   8. Click on scene/ to exit from the symbol editing mode.

4. a. False   b. True   c. False   d. True   e. True

NEP-Aligned Questions

A. 1. Dynamic Representation:

   Complex Processes- It involves dynamic processes that change over time.

Interactive Exploration- For the solar system animation can depict the orbits of planets around the sun.

2. Enhanced Engagement

   Visual Appeal- Animated visuals are more engaging compared to static images or text.

   Interactive Elements- Adobe Animate CC allows the inclusion of interactive elements such as clickable buttons.

3. Simplification of Complexity

   Clear Visualaizations- Adobe Animate CC enable the creation of clear and precise visualizations.

B. Adobe Animate CC can be utilized to enhance storytelling and artistic expression:

   1. Exploring Creative Concepts

      Story Development- It allows students to bring their story ideas to life through animation.

      Character Design- It offers robust tools for designing and animating characters.

   2. Enhancing Artistic Skills

      Drawing and Design Tools:

      Adobe Animate CC provides various drawing and design tools.
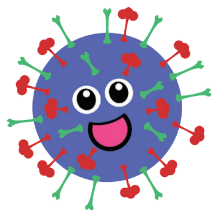
      Animation Techniques- It includes frame- by- frame animations, motion tweens.

C. It aligns with NEP principles by:

   1. Skill Development
   2. Creativity Enhancement
   3. Digital Literacy
   4. Practical Application
   5. Collaborative Learning

Chapter - 5 — Viruses and Antiviruses

Beginning Drill

Time 4 Fun
1. WannaCry (2017)   2. Melissa (1999)

Exercise

1. a. (ii)   b. (iii)   c. (iii)   d. (iv)
2. a. Trojan Horse   b. Antivirus c. Worm   d. malware
3. a. Computer virus are the programs that can damage our computer's data and make system process slow. Computer viruses can cause a range of harmful effects, including data corruption, system instability and unauthorized access to sensitive information. They corrupt data and programs of our computer system and due to this computer we cannot work properly.

   b. Worm- It is a self-replicating malware program that spread across computer networks and systems, leaving copies of itself in each computer's memory.

   Trojan Horse- It is a type of malware that disguises itself as legitimate software or appears harmless to trick users into downloading or executing it. Trojan Horse do not replicate. They claim to get rid of your computer from viruses instead of introducing them into your system.

   c. Viruses are spread through:
   1. They can come through emails with attachments or links.
   2. They can move from one device to another through USB drives or external hard drives.
   3. If you download files from untrusted websites or click on pop-ups, you might get a virus.
   4. When computers are connected, viruses can spread.
   5. They come through fake emails or websites that trick you into clicking or downloading something harmful.

   d. Antivirus Software is a type of program designed to detect, prevent and remove malicious software including viruses, worms, Trojans, Spyware, adware and other threats that can harm your computer or compromise data and privacy.

   The antivirus software protects by:
   1. Keeping the antivirus software and operating system up-to-date.
   2. Avoid clicking on suspicious Links or downloading files from untrusted sources.
   3. Always scan pendrive, floppy, disk, or external devices before using them.
   4. Regularly update operating systems, software and applications.

5. Create strong, unique passwords for your accounts to prevent unauthorized access.

4. a. False   b. True   c. False   d. True

Teacher's Point

1. A. The Melissa Virus (1999):

   How it Spread- The Melissa virus as a macro virus that spread through Mircrosoft word documents.

   Impact- The virus caused major disruptions, overwhelming email servers and leading to significant financial losses for businesses.

   B. Wannacry Ransomware (2017):

   How it spread- It spread through a vulnerability in windows operating systems. It exploited a flow in older versions of windows, encrypting files on infected computers.

   Impact- It affected hundreds of thousands of computers across more than 150 countries, disrupting services.

Importance of Antivirus Software

1. Protection Against Malware
2. Regular updates
3. Case Study- Enterprise Security
4. User Education

Chapter - 6 — Introduction to HTML 5

Beginning Drill

1. WEBSITE   2. WEBPAGE   3. HTML
4. MARKUP LANGUAGE   5. TAGS

Mock Time

Extensible Hyper Text Markup Language

Exercise

1. a. (iv)   b. (ii)   c. (ii)   d. (iii)
   e. (iii)   f. (iv)
2. a. < >   b. paragraph   c. break   d. attribute   e. <h1>
3. a. HTML is a basic language for web browsers to show pages on the Internet. It uses animated images and sound. It helps us connect with the others on the Internet.

   The elements of HTML are:

   1. <html> ... </html>

   The <html> element wraps the entire content of the webpage.

2. <head> ... </head> The <head > section contains information about the webpage that isn't directly visible on the page. It includes things like page title, links to style sheets or scripts, meta data and more.

3. <!DOCTYPE html: This the very first line in a HTML document and inform the browser which version of HTML is being used.

b. Its primary purpose is to:

1. Define the structure and organization of web pages content including headings, paragraphs, images, etc.

2. Provide a framework for displaying content in a web browser, using a set of predefined elements and attributes.

3. Create hyperlinks between web pages.

4. Add semantic meaning to web page content, making it easier for search engines, screen readers, and other tools to understand.

c. HTML structures content on a web page using a variety of elements which are represented by tags (<>). These elements are:

1. Headings (h1 - h6) - Define headings and subheadings.

2. Paragraphs (p) - Define paragraphs of text.

3. Links (a) - Create hyperlinks to other web pages.

4. Images (img) - Add images to the web page.

5. Lists (U1, Ol, li) - create unordered or ordered lists.

6. Division (div) - Group elements together for styling or layout purposes.

7. Tables (table, tr, td) - create tables to display data.

d. Tags are special codes used to define and structure content on a web page. Tags are written with angle brackets ("<" and ">") and they come in pairs - an opening tag and a closing tag.

e. To change the font color in an HTML document, you can use the <font> tag or css

Method 1- Using the <font> tag

To change the font colour use the color attribute <font color = "red" > This text will be red < /font > replace "red" with the desired color name or hexadecimal code (eg- #"FFOOOO").

Method 2 - Using CSS

You can use the color properly in a style attribute or a separate CSS file

in line CSS

<p style = "color : blue;>"

This text will be blue </p>

Replace blue with the desired color name.

f. The way to set margin is you can add the style attribute directly to an HTML element to set its margin. For example-

<p style = "margin"

2 opx; "> This paragraph has a margin of 20 px </p>

4. a. True   b. False   c. True   d. False   e. True

NEP-Aligned Questions

A.   Here's how this correlation unfolds:
1. Pre-Internet Era (1960 - 1980) - We saw the development of early networking protocols and languages.
2. The Birth of the web (1990)- It marked the beginning of the web.
3. Early web Development (1991 - 1995)- The first web browsers and editors emerged.
4. The Rise of the Internet (1995-2000) - The Internet became the mainstream.
5. Web 2.0 and social media (2000-2010). It became more interactive with the advent of social media.
6. Mobile- First and Responsive Design (2010 - present) - The proliferation of smartphones led to a focus on mobile friendly.

B.   Learning HTML aligns with mathematical concepts in several ways:
1. Structured sets and Subsets

Tags (<p>, <div>, <span>) represent sets.

Atributes are subsets

2. Nesting and Hierarchy

Tags can be nested creating a hierarichal structure.

3. Patterns and sequences HTML code exhibits patterns and sequences.
4. Logical operators

HTML's conditional comments and logical operators.

D.   HTML provides the foundation for accessible web development by:
1. Providing semantic meaning.
2. Supporting ARIA atributes.
3. Enabling keyboard navigation.
4. Facililating high contrast and font size adjustment.
5. Creating accessible forms.

Activity Time

1.   <html>
      <head>
      <title> my first step to html
      </title>
      <body>

The <br> tag in HTML is a line break tag _ _ _ _ _ _ _ _ _
_ _

    Known as en empty element.

    </body>

  </head>

  </html>

2.   <p>   <h1>

         <header>

    <body>   <div>

3.   a. <p>   b. <b>   c. <i>   d.
   e. <font face>

Teacher's Point

1.   Here are some basic HTML tags and their purposes:

    a.   <html> - root element of HTML document.

    b.   <head> - contains metada

    c.   <title> - sets the title of the page

    d.   <body> - contains the content

    e.   <h1-h6> - heading tags

    f.   <p> - Defines paragraph

    g.   <ing> - embeds an image

    h.   <a> - create a hyperlink

    i.   <up>, <op>, <li> - Defines unordered, ordered, list items.

    j.   <div>- generic centainer element.

2.   The importance as follows:

    a.   Browser rendering

    b.   Accessibility

    c.   Search Engine optimization

    d.   Maintainability

    e.   Validation

    f.   Error Prevention

    g.   Performance

    h.   Future proofing

Chapter - 7 — More on Internet Services

Beginning Drill

    a.   Google Chrome   Microsoft Edge

    b.   Google   Bing

    c.   Amazon   Wikipedia

Time 4 Fun
NETFLIX

Exercise
1. a. (iii)   b. (iii)   c. (iii)   d. (i)   e. (iv)
2. a. Virtual Libraries   b. 360 degree   c. Spam
   d. Malware   e. OneDrive
3. a. Benefits of Internet services are:
   1. Access of Information- Instant access to vast information on diverse topics.
   2. Global connectivity- Connecting with people worldwide effortlessly.
   3. Convenience- Services like online shopping and e-learning makes life easier.
   4. Entertainment- Enjoying movies, music, games, etc.
   b. Information Services Example include:
   1. Search Engines- Google, Bing, Yahoo and others help users to find infomation by indexing web pages, documents, images.
   2. Online Encyclopedia- Websites like wikepedia provide vast knowledge on various subjects.
      Entertainment services example include:
      1. Streaming Platforms-
         Netflix, Youtube, Spotify, where you can watch movies, shows, videos or music.
      2. Online Games-
         Places such as Roblox or mobile app stores have games you can play by yourself or with friends on the Internet.
   c. Google Drive- Its like a big online storage space where you can keep all your files. It is a service provided by Google that lets you store documents, photos, videos, etc. It is handy because it keeps your file safe, allows you to easily share them with others. It provides 15GB of free storage shared across Google services like Gmail, Google Drive and Google Photos.

      One Drive- Its a cloud storage service provided by Microsoft. It allows you to store all your important files such as your documents, photos and even videos securely in one place. It access your files from any device that's connected to the Internet. It is a handy way to keep the important stuff safe and accessible from anywhere. It offers 5 GB of free storage to start with. You can store files included with Microsoft account.

d. It is like a digital or web map that helps you to find places and navigate around. It is an app and a website created by Google that gives you directions, shows you streets and helps you to explore different locations. To find a location using Google maps follow the steps:

1. Go to the Google maps website on your computer or open the Google Maps app on your mobile.
2. At the top left corner, you will see a search bar. Type in the name of the place you want to find or the address you are looking for.
3. Click on the search button. Google Maps will suggest locations. Click on the correct one from the dropdown list of suggestions.
4. Select either Earth view to view the geographical features of a map or map view to view only street and highways. Once you have selected the location the map will move to that place and the address.

e. Cloud computing is like renting a super-powerful computer on the Internet. It is a revolutionary technology that transforms how we access, store and process data and applications. We can save files, run programs and do lots of other things over the Internet. We can change the size easily of it. It makes cheaper for everyone and can access it from anywhere with the Internet.

4. a. False   b. True   c. False   d. False   e. False

NEP-Aligned Questions

1. The advent of Internet services has revolutionized global connectivity and communication among different cultures, bridging geographical divides and fostering unprecedented levels of international exchange.

   Historically, communication across cultures was hindered by geographical barriers, language difference, and technological limitations. However, with the down of the Internet age, these obstacles have been largely overcome. The widespread adoption of email, social media and video conferencing has enabled people from diverse cultural backgrounds to connect and interact with ease.

Teacher's Point

Here's a prompt to encourage students to explore different Internet services:

Exploring the wider world of Internet services:

You're likely familiar with popular Internet services like Google, Youtube, etc.

Task:

Education: Finding and exploring three new educational platforms or resources.

Communication: Discover three new communication tools that enable unique forms of expression.

Entertainment: Three new services that offer innovating experiences.

Chapter - 8 — Introduction to Python Programming Language

Beginning Drill
1. PROGRAMS   2. PYTHONS   3. SYNTAX
4. CODES   5. PROGRAMMING LANGUAGE

Time 4 Fun
Common Business Oriented Language

Exercise
1. a. (ii)   b. (ii)   c. (i)   d. (ii)
    e. (iii)   f. (ii)
2. a. prompt   b. Python   c. Variable
    d. Float   e. Comma
3. a. Python is a free and an open source programming language that allows us to give instructions to computer. Python is a versatile and user-friendly programming language renowed for its simplicity and readability. Uses of Python are:
    1. It is used for developing the web applications.
    2. It is used for game development.
    3. It helps in programming the Robots.
    b. Interactive Mode- It allows you to execute Python commands directly in the interpreter line by line. You can type a command and the interpreter immediately executes it, displaying the result instantly. It is beneficial for quick experimentation.

    Script Mode- It involves writing Python code in a file with a .py extension and executing the entire script at one using the Python interpreter. The script contains multiple lines of code and when you run the script, the Python interpreter reads the file and executes the code sequentially from top to bottom. It is good for large programs and projects.

c. Simple program:

Type the following command next to the prompt and press the Enter key.

>>> 'Hello there!'

Running the command will show "Hello there!" on the screen.

d. Data types represent the kind of value a variable can hold. Each variable or expression in Python has a data type which determines the operations that can be performed on it and the storage method. The three examples of data types are:

1. Integers: Integers or int are positive or negative whole numbers with no decimal point.

   Eg- 5, 10, 1000

2. Boolean Type: This represents boolean values, True or False. It is often used in conditions and comparisons.

3. Tuple: It is similar to lists but enclosed in parentheses and are immutable. for eg- (1, 'apple', True).

e. Variables are used to store and represent data. They act as named containers that hold values.

   Rules for variable names in Python:

1. Variable names can contain letters (a-z, A-Z), digit (0-9) and underscores (-).

2. They cannot start with a digit.

3. Python is case-sensitive, so variable_name, variable_Name, and VARIABLE_NAME are considered different variable.

4. Avoid using Python reserved keywords like if, else, for, while, etc, as variable names.

4. a. True   b. False   c. True   d. True   e. False

Activity Time

1. Num l = 25

   Num 2 = 15

   Addition = num 1 + num 2

   Print (" Addition of", num 1, "and", num 2, "is :", addition)

   output 40

2. Num l = 50

   Num 2 = 30

   Subtraction = num 1 - num 2

   Print (" Subtraction of", num 1, "and", num 2, "is :", Subtraction)

   output 20

3. Num l = 8

   Num 2 = 7

   Multiplication = num 1 X num 2

   Print (" Multiplication of", num 1, "and", num 2, "is :", Multiplication)

   output 56

4. Num l = 100

   Num 2 = 5

   Division = num 1 / num 2

   Print (" Division of", num 1, "and", num 2, "is :", Division)

   output 20.0

Lab Activity

1. a. 1358   b. 96.0   c. 625   d. 8   e. 48.0

   f. 50625   g. 293   h. 15.0   i. 116   j. 632

NEP-Aligned Questions

A. Python programming can be integrated into mathematics education in various ways:

   1. Mathematical Modeling
   2. Visualization

   Example 1: Calculating and visualizing the Trajectory of a projectile problem: Calculate the Trajectory of a projectile under the influence of gravity.

   Phthon Solution

   Import necessary libraries

   Define initial conditions (Velocity, angle, gravity)

   Use numerical methods (Eg. Euler's method) to calculate the trajectory visualize the trajectory using Matplotlib.

B. Learning HTML aligns with mathematical concepts in several ways:

   1. Structured sets
   2. Subsets
   3. Attributes
   4. Hierarchy
   5. Patterns
   6. Relationships

C. Python's development began in the Late 1980's by Guido Van Rossum with the goal of creating a scripting language that was easy to learn and could be used for a wide range of tasks. Significance in Modern Technology:

   1. Rapid Development
   2. Data Science and Analytics

3. Web Development
4. Automation and Scripting
5. Contributions to Scientific advancements and Research: (a) Data Analysis & Visualization (b) Machine Learning & AI (c) Cross-Disciplinary.

Chapter - 9 — Branches in Artificial Intelligence

Beginning Drill
1. Health and Wellness Campanion
2. Personal Assistant and Scheduler

Mock time
Neural Networks

Exercise
1. a. (i)   b. (ii)   c. (iii)   d. (ii)   e. (iv)
2. a. Machine Learning   b. human
   c. Chatbots   d. brain   e. Facial Recognition
3. a. The core concept of AI include:
   1. Machine Learning-
      AI's ability to learn from data and improve performance.
   2. Natural Language Processing-
      AI's ability to understand, generate and process human language.
   3. Computer Vision-
      AI's ability to interpret and understand visual data from images and videos.
   4. Reasoning and problem- solving-
      AI's ability to make decisions, solve problems and draw conclusions.
   5. Expert Systems- AI's ability to mimic human expertise in specific domains.
   6. Neural Networks- AI's use of neural networks to model complex relationship and learn from data.
   b. Facial recognition is a technology that uses algorithms to identify and verify people's face digitally. It involves scanning and analyzing facial features from an image or video and comparing them with a database of known faces to find a match. It is used for security purposes, like unlocking phones or controlling access to secure areas, as well as in social media apps for tagging friends in photos.

c. It benefits AI applications in many ways:

1. Language Translator

   NLP facilitates language translation, allowing AI applications to communication with users in multiple language.

2. Sentiment Analysis- NLP helps AI applications understand user emotions and opinions, enabling sentiment analysis and emotional intelligence.

3. Text Analysis- NLP enables AI to extract insights, sentiment, and meaning from text data, such as customer reviews.

4. Speech Recongnition- NLP enables speech-to-text capabilities, allowing AI applications to transcribe and analyze spoken language.

5. Chatbots and virtual Assistants NLP powers conversational interfaces, enabling chatbots and virtual assistants to understand and respond to user queries.

d. An application where Machine Learning plays a significant role is: Virtual Personal Assistants (VPAs)

   VPAs- like Amazon's Alexa, Apple's Siri, Google Assistant, Microsoft's Cortana

1. Speech Recognition- Transcribe spoken language into text.

2. Entity Recognitioin- Extract relevant information

3. Personalization- Learn user preferences and tailor responses accordingly.

4. Intent Identification- Determine the user's intent behind a request.

5. NLP- Understand the meaning and context of user requests

e. Two applications of deep learning are:

1. Virtual Assistants- It is like Siri and Alexa use deep learning for understanding and responding to human language queries.

2. Self-driving Car- A self-driving car is a vehicle that drives itself without needing a person to control it. It uses special sensors like cameras and radars to see the road, and smart computer system to make decisions on how to drive.

4. a. False   b. True   c. False   d. True   e. True

NEP-Aligned Questions

A. AI is transforming the field of geography. Here are some key impacts: Wether Forecasting

- Improved accuracy
- Predictive modeling
- Real-time monitoring

Graphical Data Analysis:
- Data processing
- Pattern recognition
- Mapping and Visualization

Additional impacts:
- Climate change research
- Urban planning
- Natural resource management

C   The role of AI in medical science is as follows:

Applications:
- Image Analysis
- Disease Detection
- Image Segmentation

Benefits:
- Improved Accuracy
- Enhanced speed
- Personalized Medicine

Techniques Used:
- Deep Learning
- Machine Learning

Challenges:
- Data Quality
- Regulatory
- Clinical validation Approval

Activity Time

1. Natural Language Processing   Machine Learning
    ALEXA, SIRI   Recommendation System (Netflix, Amazon)
2. It has both positive and negative consequences:

(A) Economic Impacts:

1. Productivity and efficiency	2. Job Displacement
3. Job creation and transformation	4. Economic Inequality

(B) Social Imapcts:

1. Work-life Balance	3. Social Unrest
3. Skill Development	4. Ethical and Privacy concerns

Fun with Coding

1. b   2. d   3. a   4. b   5. d

WORKSHEET-1

1. a. Worm   b. Pen   c. relative   d. data   e. router
2. a. (iv)   b. (iii)   c. (iv)   d. (i)   e. (ii)
3. a. T   b. F   c. F   d. T   e. F
4. a. In client-server network, devices are divided into two categories clients and servers. Servers are powerful computers or systems that provide services or resources to clients. Clients are devices that request and consume these resources or services from the servers. The server is like the shop that has all the important stuff and your computer asks for what it needs.

   b. A formula is defined as mathematical equation that represents the relationship between various quantities. It is an expression that defines how one cell relates to another cell, such as you might define cell A4 with the formula. The rules are:

   1. It must begin with an '=' sign.
   2. Some arithmetic operators must be there to operate on numerals or data.
   3. The data can be a cell address also.

   c. Sparklines in Excel are small, simple and compact charts embedded in a single cell, providing a visual representation of data trends or variations. There are three types of sparklines in Excel:

   1. Line Sparklines- It shows trends over a period using a line graph. It displays continuous data.
   2. Column Sparklines- It represents variation in data using columns within a single cell. They are effective for showing data changes or fluctuations.
   3. Win/loss Sparklines- It indicates positive, negative or neutral travels with a simple visual representation. They are used for binary data.

   d. Keyframes are special frames where changes like colour, position or shape can be made. Animate CC animations are created with the help of little rectangular keyframes.

   Frame involves creating a sequence of individual frames to stimulate motion or action. Each frame contains a slightly modified image or drawing from the previous one, creating the illusion of movement when played in sequence.

   e. Worm- It is a self-replicating malware program that spread across computer networks and systems, leaving copies of itself in each computer's memory.

   Trojan Horse- It is a type of malware that disguises itself as

legitimate software or appears harmless to trick users into downloading or executing it. Trojan Horse do not replicate. They claim to get rid of your computer from viruses instead of introducing them into your system.

5. a. Antivirus- It is a type of program designed to detect, prevent and remove malicious software, including viruses, worms, Trojans, Spyware, adware and other threats than can harm your computer or compromise your data or privacy.

b. Combo Chart- It is a type of chart that combines two or more different chart types within a single chart.

c. Timeline- It displays the sequence of frames or keyframes that make as animation.

d. Virus- Viruses are the programs that can damage our computer's data and make system process slow.

e. Network- A network is a collection of interconnected devices or nodes such as computers, servers, smartphones, printers, etc. that can communicate and share resources with each other.

6. a. Network Interface card   b. Router
   c. Modem   d. Switch   e. Gateway

WORKSHEET-2

1. a. paragraph   b. One Drive   c. 360 degree
   d. Python   e. Chatbots

2. a. (iii)   b. (iii)   c. (i)   d. (iv)   e. (iii)

3. a. T   b. F   c. F   d. F   e. F

4. a. HTML is a basic language for web browsers to show pages on the Internet. It uses animated images and sound. It helps us connect with the others on the Internet. The elements of HTML are:

   1. <html> ... </html>
    The <html> element wraps the entire content of the web page.

   2. <head> ... </head>
    The <head> section contains information about the web page that isn't directly visible on the page. It includes things like page title, scripts, metadata, etc.

   3. </DOCTYPE html : This is the very first line in an html document and informs the browser which version of html is being used.

b. Google map is like a digital or web map that helps you to find places and navigate around. It is an app and a website created by Google that give you direction, show you streets and helps you

explore different locations. To find a location using Google maps follow the steps:

Step 1: Go to the Google maps website on your computer or open the Google maps app on your mobile.

Step 2: At the top left corner, you will see a search bar. Type in the name of the place you want to find or the address you are looking for.

Step 3: Click on the search buttons Google maps will suggest locations. Click on the correct one from the drop-down list of suggestions.

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c. Variables are used to store and represent data. They act as named container that hold values. Rules for variable names in Python:

1. Variable names can contain letters (a-z, A-Z), digit (0-9) and underscores (_).

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e. Interactive Mode- It allows you to execute Python commands directly in the interpreter line by line. You can type a command and the interpreter it immediately executes it, displaying the result instantly. It is beneficial for quick experimentation.

Script Mode- It involves writing Python code in a file with a .py extention and executing the entire script at once using the python interpreter. The script contains multiple lines of code and when you run the script the Python interpreter reads the file and executes the code sequentially from top to bottom. It is good for large programs and projects.

5. a. Tags- Tags are special codes used to define and structure content on a web page.
    b. Cloud Computing- It is like renting a super-powerful computer on the Internet. It is a revolutionary technology that transforms how we access, store and process data and applications.
    c. Data Type- Data types represent the kind of a value a variable can hold.
    d. Narrow AI- These systems are designed for a specific task or a set of tasks and excel within that domain.
    e. Machine Learning- It is a subset of AI. Where machine learn from data without explicit programming.

6. a. <p>   b. <b>   c. <i>   d.
    e. <font face>

National Cyber Olympiad

1. — (d)   2. — (c)   3. — (d)   4. — (d)   5. — (d)
6. — (d)   7. — (c)   8. — (c)   9. — (a)   10. — (a)
11. — (d)

PICK TOOL - 8

Chapter - 1 — Computer Number System

Beginning Drill

a. Roman Numerals: I, II, III, IV, V, VI, VII, VIII, IX, X

b. Lines or Strokes: –1:–   –3:–   –5:–   –7:–   –9:–

   –2:–   –4:–   –6:–   –8:–   –10:–

Time 4 Fun

A single binary digit (0 or 1)

Exercise

1. a. (ii)   b. (iii)   c. (iii)   d. (i)

    e. (iv)   f. (iii)

2. a. 2   b. least   c. nibble   d. A, F   e. 8

3. a. Number system is a writing system for expressing numbers. It defines a set of symbols and rules for how their position and combination determine the value we express.

    The most common number systems include:

    1. Decimal Number system (Base 10)

    2. Binary Number system (Base 2)

    3. Octal Number system (Base 8)

    4. Hexadecimal Number system (Base 16)

    b. The binary number system is a way to represent numbers using only two digits: 0 and 1. It is called base-2 number system. In the binary system, each digit is known as a bit and each bit's position represents a power of 2. The rightmost bit represents $2°$, the next bit to the left represents 2^1, the next represents 2^2, and so on. Binary numbers are the foundation of all computer operations because computers use electrical circuits that have two states : on (1) and off (0).

    c. Decimal Number System is called base - 10 system which is the most common number system we use in everyday life. It uses 10 digits to represent numbers.

    The key concept in decimal is the positional value of each digit.

    Binary Number System is called the base-2 number system and it represent numbers using only two digits 0 and 1. In binary system, each digit is known as a bit and each bit position represents a power of 2.

Octal Number System is called a base-8 system, which uses digits from 0 to 7 to represent numbers.

Hexadecimal Number System is called a base-16. System, which uses 16 digits to represent numbers. These digits include the numbers 0 to 9 and the letters A to F.

d. The significace is:

1. Rounding numbers: MSD determines the rounding direction, while LSD determines the precision.

2. Numerical Computations: MSD affects the overall calculation, while LSD affects the accuracy.

3. Data representation: MSD and LSD infulence the choice of data type and storage requirements.

4. Error analysis: LSD helps estimate errors in calculations.

e. Example 1011 to decimal:

$1011 = 1 \times 2^3 + 0 \times 2^2 + 1 \times 2^1 + 1 \times 2^0$

$1011 = 1 \times 8 + 0 \times 4 + 1 \times 2 + 1 \times 1$

$1011 = 8 + 0 + 2 + 1 = 11$

$1011_2 = 11_{10}$

f. The working is as follows:

1. Each digit is multiplied by its corresponding positional value.

2. The results are added together to get the total value.

4. a. True   b. False   c. False   d. True   e. True

NEP-Aligned Questions

3. **Binary Number : 10101**

(a) Write down the binary number with its positional values:

Binary : 1   0   1   0   1

Position: 4   3   2   1   0

(b) Calculating the decimal value by summing the producs of each bit and its corresponding power of 2:

- Bit 1 (Position 4) : $1 \times 2^4 = 16$
- Bit 0 (Position 3) : $0 \times 2^3 = 0$
- Bit 1 (Position 2) : $1 \times 2^2 = 4$
- Bit 0 (Position 1) : $0 \times 2^1 = 0$
- Bit 1 (Position 0) : $1 \times 2^0 = 1$

(c) Sum these values:

$16 + 0 + 4 + 0 + 1 = 21$

Decimal value = 21

Binary Number : 11001

(a) Write down the binary number with its positional values:

Binary : 1　1　0　0　1

Position: 4　3　2　1　0

(b) Calculating the decimal value by summing the producs of each bit and its corresponding power of 2:

- Bit 1 (Position 4) : $1 \times 2^4 = 16$
- Bit 1 (Position 3) : $1 \times 2^3 = 8$
- Bit 0 (Position 2) : $0 \times 2^2 = 0$
- Bit 0 (Position 1) : $0 \times 2^1 = 0$
- Bit 1 (Position 0) : $1 \times 2^0 = 1$

(c) Sum these values:

$16 + 8 + 0 + 0 + 1 = 25$

Decimal value = 25

Binary Number : 11110

(a) Write down the binary number with its positional values:

Binary : 1　1　1　1　0

Position: 4　3　2　1　0

(b) Calculating the decimal value by summing the products of each bit and its corresponding power of 2:

- Bit 1 (Position 4) : $1 \times 2^4 = 16$
- Bit 1 (Position 3) : $1 \times 2^3 = 8$
- Bit 1 (Position 2) : $1 \times 2^2 = 4$
- Bit 1 (Position 1) : $1 \times 2^1 = 2$
- Bit 0 (Position 0) : $0 \times 2^0 = 0$

(c) Sum these values:

$16 + 8 + 4 + 2 + 0 = 30$

Decimal value = 30

TEACHER'S POINT

1. Conversion Principles:

(a) Division Method

(b) Multiplication Method

Conversion Steps:

Decimal to Binary:

(a) Divide the decimal number by 2

(b) Record the remainder (0 or 1)

(c) Repeat step 1-2 until the quotient is 0.

(d) Read the remainders in reverse order.

Hexadecimal to Decimal:
(a) Multiply each hexadecimal digit by 16 raised to its position (from right to left)
(b) Sum the results.
2. Examples are:
Binary to Decimal
Example:
Binary 1010
Decimal ?
Solution:
(a) Multiply each binary digit by 2 raised to its position (from right to left):
$(1 \times 2^3) + (0 \times 2^2) + (1 \times 2^1) + (0 \times 2^0)$
(b) Calculate:
$8 + 0 + 2 + 0 = 10$
Decimal to Binary
Example
Decimal : 12
Binary : ?
Solution:
(a) Divide 12 by 2 :
$12 \div 2 = 6$ remainder 0
(b) Divide 6 by 2 :
$6 \div 2 = 3$ remainder 0
(c) Divide 3 by 2 :
$3 \div 2 = 1$ remainder 1
(d) Divide 1 by 2 :
$1 \div 2 = 0$ remainder 1
(e) Read remainders in reverse order:
1100
Octal to Decimal
Example:
Octal : 14
Decimal : ?
Solution
A. Multiply each octal digit by 8 raised to its position (from right to left):
$(1 \times 8^1) + (4 \times 8^0)$

B. Calculate :

 8 + 4 = 12

 Hexadecimal to Decimal

 Example

 Hexadecimal : C

 Decimal : ?

 Solution:

A. Multiply each hexadecimal digit by 16 raised to its position (from right to left):

 $(c \times 16 \char`\^ 0)$

B. Calculate (c = 12) :

 12

Chapter - 2 — Introduction to Access 2019

Beginning Drill

1. Bank Account stores account information
2. Hospital stores patient medical records
3. Customer relationship stores customer data management

Mock Time

A query in MS Access is a request for specific data from one or more tables.

Exercise

1. a. (iv)   b. (ii)   c. (iii)   d. (i)   e. (iii)
2. a. Data   b. Datasheet   c. Database Management system
    d. Relational   e. Relationship
3. a. Data is the collection of information or facts related to an object or subject under consideration. Some examples of data include names, ages, heights, dates of birth and weights, etc.

   b. Advantages of DBMS:

    1. It offers enhanced data privacy and security.

    2. It stores all data in a single database file, reducing redundancy.

    3. It includes subsystems for automatic data backup and recovery.

    4. It reduces the chance of inconsistent data by centralizing data management.

   c. The main purpose of a relational database is to store, organize and manage data efficiently. It provides a scalable and secure data

management system. It defines relationships between different data entities.

d. Datasheet view- It displays data in rows and columns. In this view data is presented in a table format. Fields are displayed as columns with their names displayed as headers at the top and records are arranged in rows, with each other row containing a complete record.

Design View- It allows creating or changing the table structure, showing field names and data types without displaying records. The field names and their data types are visible, while the records are not.

e. Steps to create a blank database:

Step 1: Click on blank database from the access page.

Step 2: Type the name of the database in the file name box.

Step 3: Click on the create button. By default, an empty database will be opened to enter data.

4. a. False   b. True   c. False   d. True
    e. True   f. False

NEP-Aligned Questions

A. Height Data Table

Student	Height (inches)	Student	Height (inches)
1	66	11	69
2	70	12	61
3	58	13	74
4	68	14	63
5	72	15	62
6	60	16	70
7	65	17	66
8	71	18	58
9	59	19	71
10	67	20	64

calculating Average Height

1. Add all heights:
    $66 + 70 + ... + 64 = 1292$

2. Count the number of students : 20

3. Calculate overage height:

Average = Total height/ Number of students

= 1292 / 20

= 64.6 inches

D. Sample Timeline Database

Event ID	Event Name	Date	Description	Significance
1.	Battle of Gaugamela	331 BCE	Alexander the Great defeats Darius III, expanding Greek empire.	Spread of Greek culture and philosophy
2.	Roman Republic Founded	509 BCE	Last Roman King, Lucius Tarquinius Superbus, overthrown.	Establishment of repress entative government.
3.	Magna Carta signed	June 15 1215	English nobles limit king John's power, establishing constitutional monarchy.	Protection of individual rights and rule of law.
4.	Black Death Pandemic	1346-1353	Widespread Disease devastates European population.	Social, economic and cultural changes in Europe.
5.	American Declaration of Independence	July 4, 1776	13 American Colonies declare independence from Britain.	Birth of the United States of America.

Activity Time

1. i. (c)   ii. (a)   iii. (b)   iv. (f)   v. (d)
   vi. (e)   vii. (g)
2. i. Start Menu
   ii. Blank Database, Recent files, File Templates, Open, New, Account, etc.
   iii. Table view in "Datasheet" mode

Chapter - 3 — Queries, Forms and Reports in Access

Beginning Drill
1. Primary Key   2. Table   3. Query   4. Field value or cell

Time 4 Fun
Design View

Exercise
1. a. (iii)   b. (ii)   c. (i)   d. (iii)   e. (ii)
2. a. query   b. OR   c. form
   d. report   e. Design Grid
3. a. A query is a database object used to extract specific information from one or more related tables that match the criteria defined by the user.
   b. The steps to create a simple query in Design view are:
      1. Click on Create tab.
      2. Click on Query Design in the Queries group.
      3. In the Show Table dialog box, select and add the required tables by clicking on Add button.
      4. Click on the close button.
   c. Table Display Area is the upper section where tables and their fields are displayed. As you select tables, they will be added to this section and displayed in separate lists called "Column Section Lists".

      Design Grid is the lower section where you define the fields, criteria, sorting, and other instructions for your query. We can also use the Design Grid to sort your results or add other instructions for how the query should be run.
   d. Reports can be used for various purpose, including:
      1. Creating labels
      2. Displaying summaries of data
      3. Presenting data in a structured, printable format.
      4. Providing details about individual records.
   e. The steps to create multiple criteria in a query are:
      1. Double-click on the fields you want to include in your query.
      2. In the Design Grid, go to the sort-row under the Name field and select Ascending to sort the student names in alphabetical order.

3. In the Address field, type "New Delhi" in the OR row.
4. In the subject field, type "Maths" in the OR row.
5. Click on the Run button in the Results group on the Design tab to view the results of the query.

F. Access forms have three primary views:
1. Form view- This view is used to view data, design modifications are not allowed. It displays data of one record at a time, providing a use-friendy interface.
2. Layout view- It is used to make design changes while viewing live data. It closely resembles what the form will actually look like to the user.
3. Design view- This view displays the structure of the form for modification and customizaton.
   It provides a detailed view of the form structure.

Access reports have four primary views:
1. Report view- This view is used to view data, design modifications are not allowed.
2. Print Preview- It is used to see how the report will look when printed. It is essential for making adjustments to ensure the report prints correctly.
3. Layout view- It is used to make design changes while viewing live data. It closely resembles what the report will look like to the user.
4. Design view- This view is used to design the structure of the report. It provides a detailed view of the report's design elements.

4. a. False   b. True   c. False   d. False   e. True

NEP-Aligned Questions

1. Data Management skills:
   a. Data Modeling- Understand entity- relationship diagrams.
   b. Data Validation- Ensure data accuracy and consistency using validation rules.
   c. Table Design- Create tables with proper field names, data types, and relationship.
      Query Design Skills:
   a. Query types: Create select, action and aggregate queries.
   b. Filtering Data: Use criteria to filter data (e.g. dates, text, numbers).
      Access- Specific skills:
   a. Creating forms: Design user-friendly forms for data entry.
   b. Macros: Automate tasks using Access macros.

Teacher's Point

1. a. Query Creation Process
   - Specify the criteria
   - Construct the query

   Running Queries
   - Execute the query - click Run
   - Review results - Analyze the output for accuracy

   Common Query Errors
   - Syntax Error
   - Incorrect criteria
   - Data type mismatches

   Real World Applications
   - Sales resporting
   - Customer segmentation
   - Inventory management

Chapter - 4 — Animation in Animate CC

Mock Time

To display and arrange the visual elements of the animation.

Exercise

1. a. (iv)   b. (ii)   c. (ii)   d. (i)   e. (ii)
2. a. layer   b. Tweening   c. motion guide
   d. tint   e. Masking
3. a. To rotate an object place the pointer over any of the four corner handles. When it changes to a curved arrow, click and drag to rotate.

   To move an object place the pointer on the selected object. When a plus sign with an arrow appears, drag the object to a new position.

   To scale an object place the pointer on any side handle. When a two-sided arrow appears, drag to resize.

   b. In Adobe Animate CC, layers play a vital role in organizing and managing content, enabling creaters to:
   1. Separate and organize elements.
   2. Control visibility and accessibility.
   3. Apply effects and transformations.
   4. Manage depth and stacking order.
   5. Enhance collaboration and workflow.

c. Motion Tweening is more efficient method where you define the starting and ending points, and Animate CC calculates the intermediate frames. It is commonly used for moving, scaling and changing the colour of objects.

Classic Tweening is the original tweening method that provides more control over specific properties and is often used for more complex animations.

d. To create an animation where text disappears gradually using filters in Adobe Animate CC

Method 1 : Using the fade filter

Step 1 : Create a new text layer.

Step 2: Select the text layer.

Step 3: Go to the 'Properties' Panel.

Step 4: Click on the 'Filters' tab.

Step 5: Select 'Fade' from the filter options.

Step 6 : Adjust the 'opacity' slider to control the fade effect.

Step 7 : Set the 'fade Type' to 'Out' to make the text disappear.

Step 8 : Adjust the 'Duration' to control the fade-out speed.

Step 9 : Preview the animation.

Method 2 : Using Masking

Step 1 : Create a new text layer.

Step 2: Create a rectangle or shape to use a mask.

Step 3: Place the mask layer above the text layer.

Step 4: Select the mask layer.

Step 5: Go to the 'Properties' panel.

Step 6 : Click on the 'Mask' tab.

Step 7 : Select 'Invert Alpha' to make the mask hide the text.

Step 8 : Animate the mask's size or position to reveal/ cancel the text.

4. a. False   b. True   c. False   d. False   e. True

NEP-Aligned Questions

1. a. Animation concept: "Every Drop Counts"

Message- Conserve water, protect the future.

Key points- a. Water scarcity affects everyone.

b. Simple actions can make a big difference.

c. Every drop saved contributes to a sustainable future.

3   c. Layer Structure
        • Background Layer
        • Moon layer
        • Earth Layer
        • Text Layer
        • Animation Layer
    Layer Organization Tips:
    • Use descriptive layer names
    • Use layer folders to keep elements organized.
    Animate CC features
    • Layer Presenting
    • Layer Marging
    • Layer Transformation
    Animation Timeline
    • Create keyframes for each phase transition
    • Use easing and motion tweening

Chapter - 5 — Introduction to Adobe Photoshop CC

Beginning Drill
   Chart, Smartboard, Blackboard

Time 4 Fun
   To dulplicate a part of an image and paint it over another area.

Exercise
1. a. (iii)   b. (iii)   c. (ii)   d. (iii)   e. (ii)
2. a. Photoshop CC   b. Layers   c. Lasso
    d. Spot Healing Brush   e. Move
3. a. The features of Adobe Photoshop are"
        1. Retouch and repair image.
        2. Enhance images for print.
        3. Rotate, Resize and Crop images.
        4. Provide tools for image analysis.
        5. Save photos in various formats.
    b. The Layers panel is one of the most frequently used panel. It allows you to manage the layers of your image. Layers can be added, deleted, organized into groups and manipulated with various blending modes and effects.

c. A selection tools allows you to choose a specific area of your image to edit or manipulate. It is like a digital spotlight to focus on a particular part of your photo. There are several types of selection tool:

1. Marquee Tool- It is the most basic selection tool, allowing you to choose rectangular or oval-shaped areas of your image for editing.

2. Quick Selection Tool- It is a powerful tool that helps you select objects in your image based on colour and contrast.

3. Lasso Tool- It is used to create freeform selections around objects or areas within an image.

4. Magic Wand Tool- It is used for selecting areas of an image based on colour and tone similarity.

5. Move Tool- It is used to move selections, layers, and guides within an image.

6. Brush Tool- It is one of the most versatile and commonly used tools for painting and drawing on your canvas.

7. Eraser Tool- It lets you erase unwanted pixels, fix mistakes, or isolate objects by removing surrounding areas.

8. Color Replacements Tool- It lets you change the colour of something in a picture without changing how it looks in terms of light and shadows.

9. Paint Bucket Tool- It is used to fill an area of an image with a single color or pattern.

10. Crop Tool- It is used to select and remove unwanted parts of an image to make it look better or focus on just one part.

d. Healing Brush Tool allows you to manually select a source area to use for fixing imperfections, providing more control over the repair process.

Clone stamp tool is used to copy pixels from one part of an image and apply them to another part. It is useful for duplicating object, removing unwanted elements, or repairing damaged areas in an image.

e. A new layer is created automatically when we paste any picture or object into our image. Follow the steps to create a new layer:

Step 1: Go to the Layer menu.

Step 2: Select New > Layer.

Step 3: Give the suitable name in the Name text box and click on Ok. A new Layer will be added.

4. a. False   b. True   c. True   d. False   e. True

NEP-Aligned Questions

1. a. Visual Elements
   - Planetary Images
   - Infographics
   - Icons
   - Textures
   - Effects

   Photoshop CC Techniques
   - Image Adjustment
   - Layer Blending
   - Masking
   - Retouching
   - Typography

Step-by-step Tutorial-
1. Create a Solar System Digram
2. Enhance Planetary Image
3. Design a 3D Solar System Model.
4. Presentation Layout

2. b. Digital Paining
   - Brushes
   - Canvas
   - Layers
   - Blending Modes
   - Textures

   Graphic Design
   - Vector Shapes
   - Typography
   - Composition
   - Color Theory
   - Effects

   Illustration
   - Custom Brushes
   - Layer Styles
   - Paths
   - 3D

Mixed Media
1. Combine painting and photography
2. Integrate vector graphics
3. Use scanned or hand-drawn elements.

Chapter - 6 — More on HTML 5

Beginning Drill

List	Images	Tables
1. Amazon	1. Pinterest	1. Yahoo
2. Wikipedia	2. Instagram	2. Trip Advisor
3. TripAdvisor	3. Flickr	3. AccuWeather

Mock Time

href (hypertext reference)

Exercise

1. a. (ii)　　b. (i)　　c. (i)　　d. (i)　　e. (iii)
2. a. ordered　b. alt　　c. <html>　　d. href
   e. cellspacing
3. a. The three basic tools are:
   1. Text Editor- It is used to write the HTML code.
   2. Web Browser- It is used to view the HTML document.
   3. Web Server- It is used to host the HTML files online.
   b. Container Tags- They have both an opening and a closing tag. The closing tag is indicated by a slash (/). For example- <title> HTML is fun </title>.

   Empty Tags- They do not have a closing tag. They are self-contained. For example-
, <hr>, etc.
   c. <td>: This tag defines a rectangular table data cells, containing the actual information you want to display.

   <th>: This tag defines a table header cell. Header cells are typically displayed in bold and centered default, highlighting the category of data in that column.
   d. Attribute of Image Tag are:
   1. Alignment- It helps you to specify the alignment of the image such as left, right, middle, top, bottom.
   2. Border- It helps you to specify the thickness of the border that surrounds the image.
   3. Height and Width- It helps you to specify the height and width of your image.
   e. To customize the bullet appearance, we can add a type attribute to the opening <ul> tag of our unordered list. This attribute allows us to specify different bullet styles like squares or circles.
4. a. True　　b. True　　c. True　　d. False
   e. True　　f. False

NEP-Aligned Questions

1. a. Lesson Title: Building a basic website with HTML
        Grade Level : 9-12
        Objectives
    a. Apply logical thinking and problem-solving skills.
    b. Create a simple website.
    c. Understand basic HTML structure and syntax.
        Materials
    1. Computers with the Internet access.
    2. Text editor or IDE
    3. HTML reference materials
    Lesson Plan
    Part - I Introduction
    • Introduce HTML and its importance
    • Discus basic website structure
    • Explain HTML syntax
    Part - II HTML Basics
    • Have Students create a basic HTML document
    • Introduce HTML elements
    • Demonstrate how to add attributes and styles
    Part - III Structuring Content
    • Have students creates a simple layout.
    • Discuss semantic HTML
    • Emphasize logical thinking and problem solving
    Part - IV
    • Create a simple webpage with text and images.
    • Add links and navigation
    • Identify and fix errors

Assessment
*   Quiz
*   Completed HTML document

Chapter - 7 — Cyber Ethics and Safety Measures in Computing

Beginning Drill

1. Password   2. Netiquette   3. Antivirus   4. Hacking

Time 4 Fun

Domain Name System

Exercise

1. a. (iii)   b. (i)   c. (ii)   d. (ii)   e. (i)
2. a. plagiarism   b. Cyberbullying   c.   Phishing
    d. Spamming   e. Footprint
3. a. The benefits of the Internet are:
    1. Entertainment- You can stream movies, TV shows, and videos for entertainment.
    2. Convenient Shopping- Online shopping allows you to buy products without visiting physical stores, offering convenience and variety.
    3. Staying Connected- It enables you to stay connected with friends and family across the globe through messaging, video calls, and sharing media.
    4. Education Resource-The Internet is a valuable educational tool, providing access to resources, tutorials, and online courses for skill enhancement.

    The Challenges of the Internet are:
    1. Security Risks: Risks such as hacking , unnecessary online shopping, and the spread of misinformation are prevalent on the Internet.
    2. Health Issues: Prolonged use of devices like phones and laptops can cause health problems such as eye strain, back pain and neck pain.
    3. Misinformation: Not all information on the Internet is accurate, false information, rumours and fake news are common.
    4. Time Consumption: The abundance of information can lead to excessive time spent online, sometimes without a productive purpose.

    b. Computer Ethics is a set of moral principles that guide the use of computers and related technologies. The key areas of computer ethics include:
    1. Plagiarism- It is the act of copying someone else's work, like their writing or ideas, and pretend it's your own without giving them credit.
    2. Cyberbullying- It happens online, like sending mean messages, spreading rumors, or posting embarrasing photos of someone on social media.
    3. Hacking- It is the act of gaining unauthorized access to a computer system, network or data.

    4. Phishing- It is a trick used by scammers to steal your personal information like passwords or credit card numbers.

    5. Spamming- When someone sends a lot of unwanted messages, usually advertisements.

c. Phishing- It is a trick used by scammers to steal your personal information, like passwords or credit card numbers. They often do this by sending fake email or messages that look real, asking you to enter your details on a fake website. It is important to be careful and not share your information unless you're sure it's safe.

Spamming- It is when someone sends a lot of unwanted messages, usually advertisements, to many people at once. These messages can fill up your email or text messages with junk. Some spam messages can also be dangerous because they might contain viruses or links to harmful websites.

d. Cybersecurity is the practice of protecting computers, networks, and data from unauthorized access, attacks and damage. It is all about keeping computers, phones, and the information on them safe from people who might try to steal, damage or misuse it. Think of it like a digital lock that protects your personal information, such as your passwords, pictures and messages, from hackers or viruses.

e. Importance of Internet safety and responsible online behaviour:

Internet Safety

1. Protects personal data and privacy.
2. Prevents cyberbullying and online harassment.
3. Reduces risk of online scams and financial fraud.
4. Safeguards against malware and viruses.
5. Promotes healthy online relationships.

Responsible Online Behaviour

1. Use strong, unique passwords.
2. Enable two-factor authentication.
3. Be cautious with online transactions.
4. Verify online sources and information.
5. Respect others' online boundaries.

f. Digital footprint is the record of all your online activities including everything you post, the websites you visit, and any information you share. It's the trail of data that's left behind whenever you use the Internet.

4. a. False   b. False   c. False   d. True   e. True

Activity Time

1. a. Hacking   b. Phishing   c. Spamming d. Cyber security

NEP-Aligned Questions

A 1. Install a reputable antivirus software.
   2. Disable unnecessary hardware components
   3. Enable firewell
   4. Configure user account setting
   5. Disable unnecessary services
   6. Update antivirus regularly
   7. Enable real-time protection
   8. Configure network settings
   9. Use encryption
   10. Configure email settings
   11. Avoid suspicious downloads and attachments
   12. Keep software and OS up-to-date.

Teacher Point

Phishing

Phishing is a trick used by scammers to steal your personal information, like passwords or credit card numbers. They often do this by sending fake emails or messages that look real, asking you to enter your details on a fake website. It is important to be careful and not share your information unless you're sure it's safe.

Hacking

Hacking is the act of gaining unauthorized access to a computer system, network, or data. Hacking is when someone breaks into a computer or a network without permission. Hackers can steal information, change how things work, or cause problems for the computer owner. It is illegal and can cause a lot of trouble for people and companies.

Cyberbullying

Cyberbullying is bullying that happens online, like sending mean messages, spreading rumors, or posting embarrassing photos of someone on social media. It can happen through texting, social media, or any other digital platform. Cyberbullying can hurt people's feelings and make them feel very upset, just like bullying in real life.

Chapter - 8 — Iteration and Lists in Python

Beginning Drill

```
# Define the grading scale
grading_scake = {
'A' : (90, 100)
'B' : (80, 89)
'C' : (70, 79)
'D' : (60, 69)
'F' : (0, 59)
}
def calculate_grade (score):
# Iterate thrugh the grading scale
for grade, (lower, upper) in grading_scale .items ( ) :
If Lower ∠ = Score ∠ = Upper :
return grade
def main ( ) :
# Get the student's score
while True:
try:
Score = float (input ("enter the student's score (o-100) :"))
if 0 ∠ = score ∠ = 100 :
break
else:
print ("score must be between 0 and 100.)
except value error:
print ("invalid input. Please enter a number.")
# Calculate and print the grade
grade = calculate_grade (score)
print (f "Grade : {grade}")
if_name_ == "_main_":
main ( )
" "
```

Mock Time

    % Symbol

Exercise

1. a. (iii)   b. (iii)   c. (i)   d. (ii)   e. (i)
2. a. while loop   b. list   c. for loop
    d. Square, commas   e. extend()

3. a. **For Loop-** It is used to iterate over a sequence (like a list, tuple, string, or range) and perform a set of operations for each item in that sequence. The loop continues until it has gone through every item in the sequence.

    While Loop- It repeats a block of code as long as a condition is true. The condition is checked before the loop starts, and if it's true, the loop continues running. The loop stops when the condition becomes false.

    b. Using a for Loop with a Range:

    The range () function generates a sequence of numbers, which is often used with for loops. For example,

    for i in range (5):

    print ("Iteration number"(9) i)

    c. A list in Python is bulit-in data type that allows you to store multiple items in a single variable. They can hold items of different data types, including numbers, string and even other lists.

    Features of lists in Python are:

    1. You can extract a portion of a list using slicing, creating a new list.
    2. Each element in a list has a unique index, which you can use to access or modify it.
    3. The size of a list can change dynamically. You can add or remove elements as needed.
    4. Lists can contain elements of different data types.

    d. Accessing Elements:

    1. Indexing: Use square bracket [ ] with the index number.
    2. Negative indexing: Use- to start from the end.
    3. Slicing: Use [ ] with a range (start:stop)

    Modifying Elements:

    1. Assignment: Assign a new value to an indexed element.
    2. Insertion: Use insert ( ) or append ( ) methods.
    3. Deletion: Use remove ( ) or pop ( ) methods.

    Accessing List Hems:

    for example:

    Colors = ["red', "green", "blue"]

    print (colors [0]

    print (colors [2])

    Output : red

            blue

Modifying List items:

for example:

Colors = ["red', "green", "blue"]

Colors [1] = "yellow"

print (colors)

Output : ["red', "yellow", "blue"]

e. Append ( ) Method- This method is used to add an item to the end of the list.

for example - Fruits = ["apple', "banana"]

fruits. append ("Cherry")

print (fruits) output

["apple', "blueberry", "banana"]'

pop ( ) Method-

This method is used to remove and return the element at a specified index. for example-

Colors = ["red', "blue", "orange", "yellow", "purple"]

Colors.pop (2)

print (colors)

Output: ["red', "blue", "yellow", "purple"]

4. a. False   b. True   c. False   d. True   e. False

NEP-Aligned Questions

A. Import math

```
def circle _ area (radius):
return math.pi * (radius **2)
def rectangle_ area (length, width):
return length * width
def square_area (side):
return side **2
def triangle_area (base, height):
return 0.5 * base * height
def trapezoid_area (base 1, base 2 height)
def main ( ) :
print ("shape Area Calculator")
print ("1, circle")
print ("2, rectangle")
print ("3, square")
print ("4, triangle")
print ("5, trapezoid")
```

```
choice = int (input ("Enter Your Choice (1-8):")
If choice = = 1:
radius = float (input ("Enter Circle radius:"))
area = Circle _ area (radius)
print (if" circle area : (area : 2 & 3)"
else :
print ("invalid choice")
if _name_ = = "_main_":
main ( )
```

Mathematical formula used

Circle A = πr^2

Rectangle A = lw

Square A = S^2

Triangle A = (1/2) bh

Trapezoid A = (1/2) (b1 + b2) h

Chapter - 9 — Artificial Intelligence and Data Science

Beginning Drill
    a. Video Recommendation System
    b. Natural Language Processing

Time 4 Fun
    T

Exercise
1. a. (i)   b. (i)   c. (iv)   d. (iii)
2. a. Narrow AI b. Structured   c. Data Cleaning
    d. Deep Learning   e. education
3. a. The relationship is as follows:
        1. Data science feeds AI : Quality data is essential for training AI models.
        2. AI enhances Data Science: AI algorithms improve data analysis and modeling.
        3. Shared goals : Both aim to extract insights, predict outcomes, and inform decisions.
    b. Types of Data in Data Science:
        1. Structured Data : It refers to information that is organized in a clear and predefined format, such as rowand columns in a spreadsheet or a database.

2. Unstructured Data: It does not follow a specific format or structure, making it harder to analyze.

3. Quantative Data : It is all about numbers. It represents measurable quantities and can be expressed in numerical form.

4. Qualitative Data : It is descriptive and non-numerical.

c. The Data Science process involves several steps:

1. Problem Definition
- Define the problem or opportunity.
- Develop a clear question or hypothesis.

2. Data Collection
- Identify relevant data sources.
- Gather and integrate data from various sources.

3. Data Cleaning
- Handle outliers and anomalies.
- Transform and normalize data.

4. Exploratory Data Analysis
- Perform statistical analysis.
- Identify patterns and relationships.

5. Feature Engineering
- Select relevant features.
- Remove irrelevant or redundant features.

6. Model Selection
- Evaluate model performance metrics.
- Choose suitable algorithms.

7. Model Training
- Train the model using training data.
- Split data into training and testing sets.

8. Model Evaluation
- Compare models using cross-validation.
- Access model performance using metrics.

d. Applicatons are:

1. Retail- They use AI to recommend products based on your past purchase, and Data science helps them understand computer preferences and manage inventory efficienctly.

2. Healthcare- It helps doctors diagnose disease through medical images and suggests treatment plans, while Data Science analyzed patient records to find trends and predict outbreaks.

3. Finance- AI detects fraud and offers personalized investment advice while Data Science predicts stock market trends and optimizes investments by analyzing data.

4. Entertainment- AI creates intelligent characters in video games and realistic effects in movies while Data Science recommends personalized content on platforms like Netflix and Spotify.

5. Education- AI provides personlized tutoring and grades assignments automatically, while Data science helps schools analyze student performance and identify where help is needed.

4. a. False   b. True   c. False   d. True   e. False

Activity Time

1. Studying — 5 hours
   Playing — 2 hours
   Eating — 4 hours
2. a. English   b. Maths
    c. Positive correlation, key findings, optimal study time, individual variability

Fun with Coding

1. Wolf and goat are never left together, and neither are the goat and cabbage. So farmer can easily cross the river.
2. Carrot   3. Echo   4. 20 years old now   5. R, U
6. 16, 17, 18   7. Fire   8. 20 years old
9. 7.5 hours to travel 150 km
10. $3x + 5 - 5 = 20 - 5$
    $3x = 15$
    $3x/3 = 15/5$
    $x = 5$

NEP-Aligned Questions

A. Data collection
   • Sensory measurements
   • Plant characteristis
   • Environmental factors
   • Feature engineering
   Exploratory Data Analysis
   • Visualizations
   • Bar charts
   • Statistical Analysis
   Predective Modeling

- Regression Analysis
- Decision tree
- Cross validation

Model Evaluation
- Metrics
- Model comparison

Optimization
- Grid Search
- Bayesian optimization

B. The Flood Forecast

Dr. Rachel Kim stared at the satellite images on her screen, her heart racing heavy rainfall had been pounding the city for hours, and the river was swelling. The mayor was counting on her team to predict whether the leaves would hold.

Rachel smiled and impressed by all this. So he thanked to Aqua robot for everything. He saved the life of Rachel. So he was a lifesaver.

WORKSHEET-1

1. a. A to F   b. Database Management System
   c. query   d. layer   e. Lasso
2. a. (ii)   b. (iii)   c. (ii)   d. (iii)   e. (iii)
3. a. T   b. T   c. T   d. T   e. T
4. a. The steps to create multiple criteria in a querry are:
   1. Double-click in the field you want to include in your query.
   2. In the Design Grid, go to the sort row under the Name field and select Ascending to sort the student names in alphabetical order.
   3. In the Address field, type "New Delhi" in the OR row.
   4. In the subject field, type "Maths" in the OR row.
   5. Click on the Run button in the Results group on the Design tab to view the results of the query.

   b. Number System is a writing system for expressing numbers. It defines set of symbols and rules for how their position and combinations determine the value we express.

   The most common number systems include:
   1. Decimal Number System (Base 10)
   2. Binary Number System (Base2)
   3. Octal Number System (Base 8)
   4. Hexadecimal Number System (Base 16)

c. Datasheet View- It displays data in rows and columns. In this view data is presented in a table format. Field are displayed columns with their names displayed as headers at the top and records are arranged in rows, with each other row containing a complete record.

Design View- It allow creating or changing the table structure, showing field names and data types without displaying records. The field names and their data types are visible, while the records are not.

d. Motion Tweening is more efficient method where you define the starting and ending points, and Animate CC calculates the intermedia frames. It is commonly used for moving, scaling and changing the colour of objects.

Classic Tweening is the original tweening method that provides more control over specific properties and is often used for more complex animations.

e. A selection tool allows you to choose a specific area of your image to edit or manipulate. It is like a digital spotlight to focus on a particular part of your photo. They are several type of selection tools:

1. Marque Tool- Most basic selection tool.
2. Quick Selection Tool- powerful tool that helps you select object.
3. Lasso Tool- Creates a freeform selections around objects.
4. Magic Wand Tool- Used for selecting areas of an image.
5. Move Tool- Used to move selections, layers and guides within an image.
6. Brush Tool- most versatile and commonly used tool.

5. a. Binary Number System is called the base-2 number system and it represent numbers using only two digits 0 and 1. Each digit is known as a bit and each bit position represents a power of 2.

b. A query is a database object used to extract specific information from one or more related tables that match the criteria defined by the user.

c. A layer is a container that holds specific elements, such as graphics, text, images, audio, video, animations and shapes, etc.

d. It specifies the condition for filtering records.

e. The leftmost digit has the highest significance, and its value contributes the most to the overall number. This digit is called the most significant digit (MSD).

6. a. Database　　b. User Data　c. Primary key
   d. Table　　　　e. Currency

WORKSHEET-2

1. a. alt　　　b. cell spacing　　　c. plagiarism
   d. for loop　　e. Structured
2. a. (i)　　b. (ii)　　c. (ii)　　d. (i)　　e. (iii)
3. a. F　　b. T　　c. F　　d. F　　e. F
4. a. <td>: This tag defines rectangular table data cells, containing the actual information you want to display.

   <th>: This tag defines a table header cell. Header cells are typically displayed in bold and centered default, highlighting the category of data in that column.

   b. Phishing- It is a trick used by scammers to steal your personal information, like passwords or credit card numbers. They often do this by sending fake emails or message that look real, asking you to enter your details on a fake website. It is important to be careful and not share your information unless you're sure it's safe.

   Spamming- It is when someone sends a lot of unwanted messages, usually advertisements, to many people at once. These messages can also be dangerous because they might contain viruses or links to harmful websites.

   c. Using a for loop with a Range:

   The range ( ) function generates a sequence of numbers, which is often used with for loops.

   For example:

   for i in range (5)

   print ("Iteration number," i)

   d. A list in Python is a built-in data type that allows you to store multiple items in a single variable. They can hold items of different data types, including numbers, string and even other lists. Features of lists are:
   1. Lists can contain elements of different data types.
   2. You can extract a portion of a list using sliding, creating a new list.

   e. Types of Data in Data Science:
   1. Structured Data- It refers to information that is organized in a clear and predefined format.
   2. Unstructured Data- It does not follow a specific format or structure, making it harder to analyze.

3. Quantative Data- It is all about numbers.

4. Qualitative Data- It is descriptive and non-numerical.

5.
a. Digital footprint is the record of all our online activities including everything we post, the websites we visit, and any information we share. It's the trail of data that's left behind whenever we use the Internet.

b. <table>: This tag defines the beginning of the table itself.

c. Hyperlink is called a link that are created using the <a> anchor tag. They act as a clickable connections that, when clicked by a user, navigate them to a different web page, section of the current web page, or even perform an action like opening an email or downloading a file.

d. It is a bullying that happens online, like sending mean message, spreading rumours, or posting embarrasing photos of someone on social media.

e. Data Science is a field that involves collecting, analysing and using data to solve problems and make decisions.

6.

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

National Cyber Olympiad

1. — (b)	2. — (c)	3. — (c)	4. — (b)	5. — (a)
6. — (d)	7. — (b)	8. — (b)	9. — (b)	10. — (c)
11. — (a)	12. — (a)			