

Bits to Bots

Class VII

Lesson 1 : Number System

Define the following : LSD and Byte

LSD – *Least Significant Digit*; the rightmost digit in a number.

Byte – A group of **8 bits**.

Differentiate between non-positional and positional number system

- **Non-positional**: Digit position has no value (e.g., Roman numerals).
- **Positional**: Digit value depends on its position (e.g., decimal, binary).

Define the term bit.

Bit – *Binary Digit*; smallest unit of data (0 or 1).

Explain hexadecimal number system.

Base 16 system using digits **0–9** and letters **A–F**.

What do you mean by number system? Mention its types.

A way to represent numbers; types are **Binary, Decimal, Octal, Hexadecimal**.

Write the steps to convert from binary to decimal.

Binary → Decimal Conversion Steps –

- Write binary number.
- Multiply each digit by 2^n (n = position from right, starting at 0).
- Add all results.

Lesson 2 : GIMP

1. Clone tool

Copies pixels from one part of the image to another.

2. difference between foreground and background color

- **Foreground:** Main color for painting/filling.
- **Background:** Color used for erasing or filling background areas.

3. What is GIMP? Write down its features.

GIMP is *GNU Image Manipulation Program*, used for editing images. Features: open-source, supports layers, various file formats, and many tools for image enhancement.

4. Explain the purpose of Paintbrush tool.

Used to draw soft strokes with the selected brush.

5. How does GIMP handle digital images in terms of pixels?

Handles images as a grid of tiny colored squares called *pixels*.

6. Explain the color modes in GIMP

RGB mode for full-color images, Grayscale for shades of gray, and Indexed for limited colors.

7. Explain the steps involved in saving an image in GIMP with different formats.

Saving in Different Formats –

- Go to **File** → **Export As**.
- Choose desired format (e.g., PNG, JPEG).
- Click **Export** and adjust settings if needed.

Lesson 3 : GIMP – Working with Layers

1. Define Dissolve and soft light.

- **Dissolve:** Creates a speckled effect by randomly showing pixels from lower layers.
- **Soft Light:** Adds light or dark effect for soft contrast.

2. Differentiate between Merge layer and Flatten Layer.

- **Merge Layer:** Combines selected layer with the one below.
- **Flatten Layer:** Merges all layers into one single background layer.

3. What is the purpose of layers in GIMP?

To work on parts of an image independently without affecting others.

4. What is the use of Lock Pixels feature?

Prevents changes to the layer's pixel data.

5. How do you reorder layers in GIMP?

Drag the layer up or down in the Layers panel.

6. Write the steps to duplicate a layer.

Select layer → Right-click → **Duplicate Layer**.

7. What do you mean by blending mode in GIMP?

Determines how a layer's pixels interact with layers beneath it.

Lesson 4 : Internet-Ethics and Safeguard

1. Difference between spyware and adware.

- **Spyware:** Secretly collects user information.
- **Adware:** Displays unwanted advertisements.

2. Difference between Hacker and Cracker

- **Hacker:** Gains access to systems, often for testing/security.
- **Cracker:** Breaks into systems with malicious intent.

3. What is Digital footprint?

The trail of data you leave online.

4. Write any two precautions of phishing.

- Don't click unknown links.
- Verify sender's email before responding.

5. Write any two precautions of digital footprint.

- Post thoughtfully online.
- Use strong privacy settings.

6. Define social engineering and write any two precautions.

Definition: Manipulating people to reveal confidential info.

Precautions: Verify requests; don't share personal info easily.

7. Explain the term cyberbullying.

Bullying or harassing someone using digital platforms.