3. Coding-Decoding

- **Types of Coding-Decoding:**

1. Letter Coding

Letters in a word *are* replaced with other letters according to a fixed rule.

Example:
If **BALL** is coded as **DBNN**, how is **DOLL** coded?

Solution:

- B → D (+2), A → B (+1), L → N (+2), L → N (+2)
- Apply same rule:
  - D → F (+2)
  - O → P (+1)
  - L → N (+2)
  - L → N (+2)
    ⇒ **Answer: FPNN**

---

2. Number Coding

Words are coded into numbers.

Example:
If **CAT** is coded as **3120**, how is **DOG** coded?

Solution:

- C(3), A(1), T(20) → 3120
- D(4), O(15), G(7) ⇒ **Answer: 4157**

---

3. Substitution Coding

Words are replaced with codes indirectly.

Example:
If **'white is black', 'black is red', 'red is blue'**, then what is the color of snow?

Answer:
Snow is **white** → white is **black**

⇒ **Answer: Black**

---

4. Symbol Coding

Symbols or letters represent words or phrases.

Example:
If * is +, + is /, - is *, and / is -, then find the value of:
6 * 3 + 2

Solution:
Replace symbols:

-
    - is + → 6 + 3
-
    - is / → / 2
      So, 6 + 3 = 9 → 9 / 2 = **4.5**

---

5. Matrix Coding

A matrix of letters is used, and a code is given by using row-column combinations.

Example:
(Usually appears in advanced reasoning questions)

- **Practice Questions (Unsolved)**
    1. If **KING** is coded as **MJOH**, then how is **QUEEN** coded?
    2. If **ROAD** is 18-15-1-4, then how is **CAR** coded?
    3. In a certain code, **APPLE = EQQPI**, what is the code for **MANGO**?
    4. If **PEN = 35**, and **INK = 29**, what is **BOOK**?
    5. If **BOY** is 25, and **GIRL** is 52, what is **MAN**?