# Coding decoding problems

## Introduction to coding-decoding problems

A code is 'a system of signals'. Coding is, therefore, a method of transmitting a message between sender and receiver which cannot be understood or comprehended by a third person. The Coding and Decoding test is mainly to judge the test-taker's ability to decipher a particular word/message by breaking the code or decoding the same.

## Codes based on English alphabets

| Alphabets | Code |
|-----------|------|
| A | 1 |
| B | 2 |
| C | 3 |
| D | 4 |
| . | . |
| . | . |
| . | . |
| Z | 26 |

## Series of opposite alphabets

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

# Types of coding decoding problems

1. **Letter coding**
   **Case - I:** To form the code for another word (Coding)

   > **Example**: In a certain code, TEACHER is written as VGCEJGT. How is CHILDREN written in that code?
   > (a) EJKNEGTP
   > (b) EGKNFITP
   > (c) EJKNFGTO
   > (d) EJKNFTGP
   > **Answer**: d) EJKNFTGP
   > **Solution**: Each alphabet in the word "TEACHER " is moved two steps forward to obtain the corresponding alphabet of the code.
   > T E A C H E R=V G C E J G T (Each alphabet is increasing by 2)
   > Similarly, we have
   > C H I L D R E N=E J K N F T G D

   **Case - II:** To find the word by analyzing the given code (Decoding)

   > **Example**: In a certain code language, the word ROAD is written as WTFI. Following the same rule of coding, what should be the word for the code GJFY?
   > (a) REAP
   > (b) TAKE
   > (c) BEAT
   > (d) LATE
   > **Answer**: c) BEAT
   > **Solution**: Each alphabet of the word is five steps behind the corresponding alphabet of the given code word.
   > Hence, BEAT is coded as GJFY.

2. **Substitution**

   > **Example:** If 'sky' is called as 'star', 'star' is called as 'cloud', 'cloud' is called as 'earth', 'earth' is called as 'tree', and 'tree' is called as 'book', then where do the birds fly?

(a) Cloud
(b) Sky
(c) Star
(d) Data Inadequate
**Answer: c)** star
**Solution:** Birds fly in the sky. The code for sky is star. Therefore, birds fly in the 'star'.

3. **Deciphering message word code**

**Example:** In a certain language, 'sun shines brightly' is written as 'ba lo sul', 'houses are brightly lit' as 'kado ula ari ba' and 'light comes from sun' as 'dopi kup lo nro'. What is the code for sun and brightly?
(a) ba sul
(b) sul lo
(c) lo ba
(d) ba nro
**Answer**: c)lo ba
**Solution**: In the first and third statements, the common word is 'sun' and the common codeword is 'lo'. So, 'lo' is the code for 'sun'. In the first and second statements, the common word is 'brightly' and the common code word is 'ba'. So, 'ba' is the code for 'brightly'. Hence, the answer is (c).

4. **Numerical code values assigned to words**

**Example**: If ROSE is coded as 6821, CHAIR is coded as 73456 and PREACH is coded as 961473, then what will be the code for SEARCH?
(a) 246173
(b) 214673
(c) 214763
(d) 216473
**Answer**: b) 214673
**Solution**: The alphabets are coded as shown:
ROSECHAIR=682173456
Therefore, in SEARCH, S is coded as 2, E is coded as 1, A is coded as 4, R is coded as 6, C is coded as 7, H is coded as 3. Thus, the code for SEARCH is 214673.