# SNS COLLEGE OF TECHNOLOGY

*(An Autonomous Institution)*
*Approved by AICTE, New Delhi, Affiliated to Anna University, Chennai*
*Accredited by NAAC-UGC with 'A++' Grade (Cycle III) &amp;*
*Accredited by NBA (B.E - CSE, EEE, ECE, Mech &amp; B.Tech.IT)*

## Puzzle: The Secret Code

A password consists of **4 different letters** selected from the **English alphabet (A-Z)**. However, the password **must start with a vowel** and **no letter can repeat**.

**Question:**
How many such 4-letter passwords are possible?

## Answer:

**Step 1: Choose the first letter (must be a vowel)**

- There are 5 vowels in English: A, E, I, O, U
- So, 5 choices for the **first** letter

**Step 2: Choose the remaining 3 letters**

- After choosing 1 vowel, 25 letters are left (26 - 1)
- We need to choose **3 more letters** from the remaining 25 **without repetition**

So, number of ways to choose and arrange 3 remaining letters =

$$P(25,3) = 25 \times 24 \times 23$$

**Step 3: Total number of passwords =**

$$5 \times 25 \times 24 \times 23 = 69,000$$

# SNS COLLEGE OF TECHNOLOGY

*(An Autonomous Institution)*
*Approved by AICTE, New Delhi, Affiliated to Anna University, Chennai*
*Accredited by NAAC-UGC with 'A++' Grade (Cycle III) &amp;*
*Accredited by NBA (B.E - CSE, EEE, ECE, Mech &amp; B.Tech.IT)*

## Puzzle: Committee Formation

A company has **8 men** and **6 women**. A team of **5 people** is to be formed such that **at least 2 women** must be in the team.

**Question:**
In how many ways can this team be formed?

✅ **Answer:**

We are to form a team of 5 people with at least 2 women, from 8 men and 6 women.

We'll break it into cases:

---

**Case 1: 2 women, 3 men**

Choose 2 women from 6: $\binom{6}{2} = 15$
Choose 3 men from 8: $\binom{8}{3} = 56$
Total ways: $15 \times 56 = 840$

---

**Case 2: 3 women, 2 men**

$\binom{6}{3} = 20$, $\binom{8}{2} = 28$
Total: $20 \times 28 = 560$

Done ↓

**Case 3: 4 women, 1 man**

$\binom{6}{4} = 15$, $\binom{8}{1} = 8$
Total: $15 \times 8 = 120$

---

**Case 4: 5 women, 0 men**

$\binom{6}{5} = 6$
Total: 6

---

✅ **Total number of ways:**

$$840 + 560 + 120 + 6 = \boxed{1,526 \text{ ways}}$$