

# Zonal Informatics Olympiad, 2025

## Solutions

1. Minimum number of operations to obtain a number greater than  $X$ .

(a)  $N = 2, X = 77$

**Answer:** 3

(b)  $N = 10, X = 0000942274$

**Answer:** 1

(c)  $N = 15, X = 127932412749752$

**Answer:** 1

2. Number of passcodes you can create of length  $N$

(a)  $N = 3$

**Answer:** 570

(b)  $N = 6$

**Answer:** 73

(c)  $N = 11$

**Answer:** 47

3. Minimum number of operations to make the row of towers special

(a)  $N = 5, H = [3, 1, 3, 4, 1]$

**Answer:** 2

(b)  $N = 12, H = [12, 9, 10, 7, 11, 9, 4, 6, 15, 5, 9, 12]$

**Answer:** 34

(c)  $N = 25, H = [22, 26, 7, 25, 26, 14, 22, 26, 8, 20, 2, 22, 24, 6, 6, 10, 11, 22, 20, 22, 3, 10, 28, 25, 15]$

**Answer:** 262

4. Number of arrays of pairs

(a)  $N = 30, P = [-1, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29]$

**Answer:** 185

(b)  $N = 15, P = [-1, 1, 1, 2, 3, 1, 2, 2, 3, 3, 5, 5, 4, 11, 12]$

**Answer:** 836

(c)  $N = 30, P = [-1, 1, 1, 2, 2, 3, 1, 1, 2, 2, 2, 3, 4, 1, 1, 1, 2, 3, 3, 1, 4, 4, 5, 6, 5, 6, 6, 3, 3, 10]$

**Answer:** 451

## Marking

The question paper carries 80 marks, broken up into four questions of 20 marks each. Each question has three parts. *If you solve all three parts correctly, you get 20 marks for that question.* Otherwise, you get 5 marks for each part that you solve correctly.

## Qualifying cutoff

### Male students

- Std 12: 40
- Std 11: 40
- Std 10: 35
- Std 9: 30
- Std 8: 25
- Std 7 and below: 20

### Female students

- Std 12: 25
- Std 11: 25
- Std 10: 25
- Std 9: 20
- Std 8: 20
- Std 7 and below: 20

## Score distribution

Score	80	75	70	65	60	55	50	45	40	35	30	25	20	15	10	5	0
Number at or above this score	0	0	0	0	0	3	17	27	50	88	145	238	299	325	362	385	421