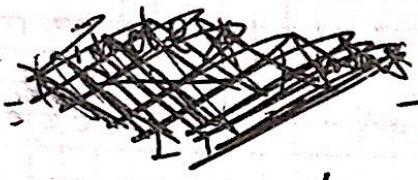
question 7.

a. size of grid is (L_1, L_2).
coordinates is (x_1, x_2).

so. index = $x_2 \times L_1 + x_1$

coordinates: $x_2 =$  $\text{floor}\left(\frac{\text{index}}{L_1}\right)$

$x_1 = \text{mod}\left(\frac{\text{index}}{L_1}\right)$

b. size of grid is $(L_1, L_2, L_3, L_4, L_5, L_6)$.

coordinates is $(x_1, x_2, x_3, x_4, x_5, x_6)$.

index = $(L_1 \times L_2 \times L_3 \times L_4 \times L_5) \times x_6$
$+ (L_1 \times L_2 \times L_3 \times L_4) \times x_5$
$+ (L_1 \times L_2 \times L_3) \times x_4$
$+ (L_1 \times L_2) \times x_3$
$+ (L_1) \times x_2.$
$+ x_1.$

coordinates:

quo1 = floor [index / (L1 × L2 × L3 × L4 × L5)]

mod1 = mod ((L1 × L2 × L3 × L4 × L5), index)

quo2 = floor [mod1 / (L1 × L2 × L3 × L4)]

mod2 = mod ((L1 × L2 × L3 × L4), mod1)

quo3 = floor [mod2 / (L1 × L2 × L3)]

mod3 = mod ((L1 × L2 × L3), mod2)

quo4 = floor [mod3 / (L1 × L2)]

mod4 = mod ((L1 × L2), mod3)

quo5 = floor [mod4 / L1]

mod5 = mod (L1, mod4)

remain = index - quo1 × (L1 × L2 × L3 × L4 × L5)

- quo2 × (L1 × L2 × L3 × L4)
- quo3 × (L1 × L2 × L3)
- quo4 × (L1 × L2)
- quo5 × L1.

Coordinates:

[remain, quo5, quo4, quo3, quo2, quo1]