

**A. From slit to crystal****A.1** (0.3 pt)

$$I(q) =$$

**A.2** (0.2 pt)

$$q =$$

**A.3** (0.2 pt)

$$q(q_1) =$$

Expression for  $q_1$  and  $a$ :**A.4** (1.0 pt)

Formulas, schemes and pictures for explanation:

DG1:  $q_1 =$   $a =$

DG2:  $q_1 =$   $a =$

DG3:  $q_1 =$   $a =$

DG4:  $q_1 =$   $a =$

DG5:  $q_1 =$   $a =$

**A.5** (1.5 pt)

Formulas, schemes and pictures for explanation:

DG3:  $a/b =$

DG4:  $a/b =$

DG5:  $a/b =$

**A.6** (0.7 pt)

$$\rho(x) =$$

$$F_A(h) =$$

$$h =$$

**A.7** (0.7 pt)

$$F_B(h) =$$

$$h =$$

**A.8** (0.4 pt)

$$\frac{I_{A,h=0}}{I_{B,h=0}} =$$

$$\frac{I_{A,h=1}}{I_{B,h=1}} =$$

**B. 2D crystal**

**B.1** (1 pt)

$q_1 =$

$q_2 =$

$\beta =$

**B.2** (1.0 pt)

Crystal A  $|F(h, k)| =$

Crystal D  $|F(h, k)| =$

**B.3** (0.6 pt)

$a_{UC1} =$

$a_{UC2} =$

$a_{UC3} =$

$a_{UC4} =$

**B.4** (0.4 pt)

$UC1 -$

$UC2 -$

$UC3 -$

$UC4 -$

**B.5** (0.8 pt)

$b =$

**B.6** (1.2 pt)

UC5

$a_1 =$

$a_2 =$

$\alpha =$

UC6

$a_1 =$

$a_2 =$

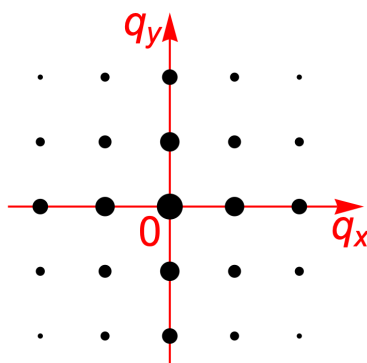
$\alpha =$

UC7

$a_1 =$

$a_2 =$

$\alpha =$

**C. Symmetries of crystals****C.1** (0.3 pt)

$h =$        $k =$

$m =$

**C.2** (0.2 pt)

Equations for all possible axis symmetry:

**C.3** (0.4 pt)

designation ( $C_m$  for rotational and equations for axis symmetry) and equation on intensities  $I(q_x, q_y)$

$C$	$I(q_x, q_y) =$
$C$	$I(q_x, q_y) =$
$C$	$I(q_x, q_y) =$
	$I(q_x, q_y) =$
	$I(q_x, q_y) =$
	$I(q_x, q_y) =$
	$I(q_x, q_y) =$

**C.4** (0.2 pt)

$$I(-h, -k) =$$

Which symmetry corresponds?

**C.5** (0.4 pt)

$$f_2(q_x, q_y) =$$

$$f_3(q_x, q_y) =$$

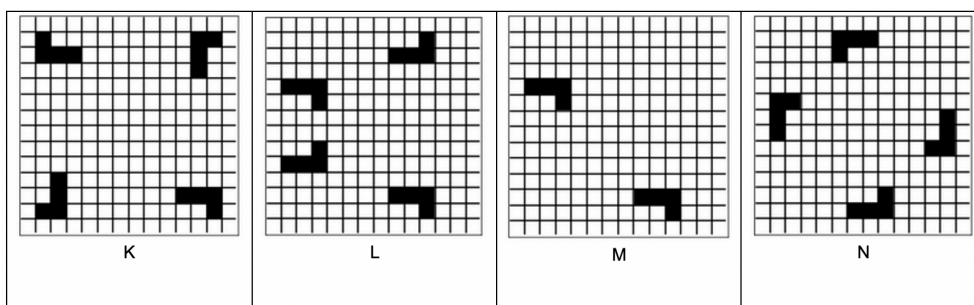
$$f_4(q_x, q_y) =$$

**C.6** (0.5 pt)

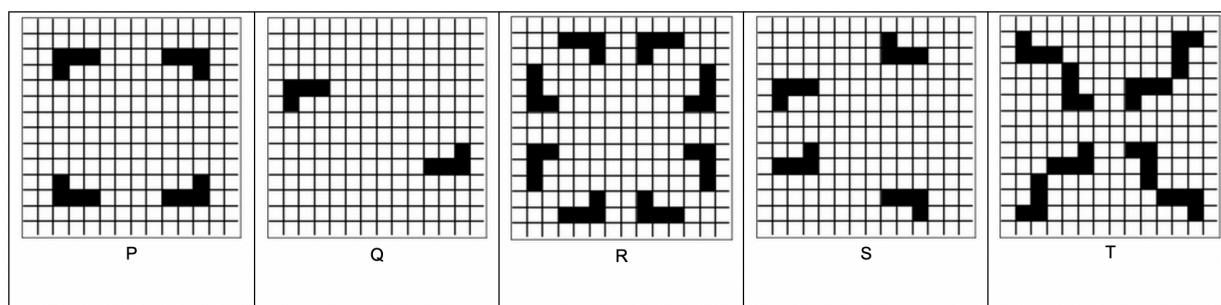
List all possible rotational symmetries:

$$m =$$

## C.7 (0.9 pt)



## C.7 (cont.)



## C.8 (0.8 pt)

Use this table if you need to note any information about samples.

PG									
1									
2									
5									
8									

PG1 –

PG2 –

PG5 –

PG8 –

**C.9** (1.0 pt)

Use this table if you need to note any information about samples.

PG									
3									
4									
6									
7									
9									

PG3 –

PG4 –

PG6 –

PG7 –

PG9 –

**C.10** (0.3 pt)

Could it be crystal? Circle your option: Yes / No

**D. You'll need the phases. . .****D.1** (1 pt)

$$I_{MR0} =$$

$$I_{MR2} =$$

**D.2** (2.0 pt)

MR1:

**D.3** (2.0 pt)

MR2: