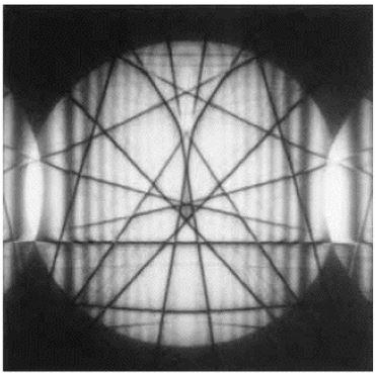
Assignment – 06 (Solution)

1. The dark lines crossing across the disc of CBED pattern is called,



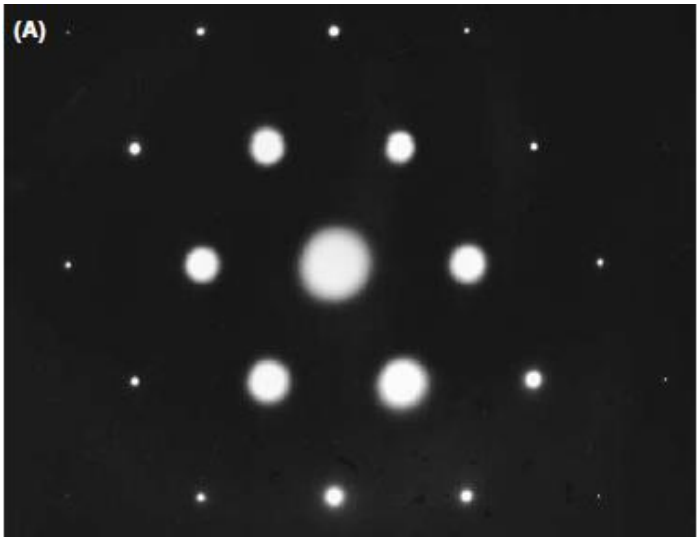
   a. Deficient Kikuchi lines
   b. Deficient HOLZ lines
   c. Excess Kikuchi lines
   d. Excess HOLZ lines

2. Select the correct statements
   a. HOLZ lines originate due to inelastic scattering
   b. HOLZ lines must lie inside the disks in the CBED pattern
   c. Pairs of HOLZ lines are normal to the projection of their g onto the viewing screen
   d. Pairs of Kikuchi lines are normal to the projection of their g onto the viewing screen

3. The extinction distance decreases with(s)
   a. increase in structure factor of the unit cell
   b. Increase in volume of the unit cell
   c. Increase in wavelength of the incident electron
   d. All the above

4. The probable zone axis of the diffraction pattern of a simple cubic crystal,

   a. [111]
   b. [100]
   c. [110]
   d. [120]



5. What changes can occur in a diffraction pattern if the specimen is continuously tilted?
   a. Intensity of the diffraction spot does not change
   b. Zone axis of the diffraction pattern changes
   c. Intensity of the diffraction spot change
   d. All the above

6. In a diffraction pattern, distance between two spots gives
   a. the distance between two planes in real space
   b. the distance between two planes in reciprocal space
   c. a value to find the distance between two planes in real space
   d. a value to find the distance between two planes in reciprocal space

7. For a fixed distance between sample and lens, the size of each CBED disc depends on
   a. angle of convergence of beam
   b. Bragg angle
   c. Focal length of the lens
   d. Sample size

8. Deficient HOLZ lines within the central disc can be used to determine
   a. Lattice parameter
   b. Point group symmetry
   c. Strain in the lattice
   d. Space group symmetry

9. For HOLZ lines to appear in central disc, the angle of convergence of beam has to be
   a. Greater than Bragg angle
   b. Angle of convergence can to be less than Bragg angle
   c. Does not depend on angle of convergence
   d. None of these

10. The fringes appear in the diffraction discs in CBED pattern because of
   a. Varying deviation from exact Bragg angle in the illuminated area
   b. Varying thickness of sample in the illuminated area
   c. Varying extinction distance
   d. Order of reflection

11. Unit cell lattice parameters are determined using
   a. Size of the discs in the CBED pattern
   b. Separation between discs in the CBED pattern
   c. Angle of convergence of the beam
   d. Separation between discs in ZOLZ as well as diameters of HOLZ rings

12. Double diffraction spots appear because of
    a. Multiple scattering of incident beam
    b. Single scattering of incident beam
    c. Only in non-primitive lattices
    d. None of these reasons

13. Choose the correct statement
    a. In precession electron diffraction incident beam is precessed around optic axis at an angle
    b. In precession electron diffraction, sample is rotated around a common direction
    c. In precession electron diffraction, sample is continuously tilted.
    d. In precession electron diffraction, diffraction pattern is rotated around optic axis

14. Different variants of a phase can be identified
    a. Morphology of the particles
    b. Analysis of strong spots in the diffraction pattern
    c. Chemical composition of the phases
    d. Analysis of superlattice spots in the diffraction pattern

15. When the angle of convergence of beam is twice the Bragg angle,
    a. Diffraction discs overlap
    b. Diffraction discs do not touch each other
    c. Excess lines appear in diffraction discs
    d. Diffraction discs just touch each other

NOTE: If you need any explanation for any of the question, you are welcome to write us on the forum. ---- NPTEL Team.