Assignment 8

The due date for submitting this assignment has passed. As per our records you have not submitted this assignment.

Due on 2018-10-03, 23:59 IST.

1) Which of the following statement is not true for decoration method used for observation of dislocation?
   - P: Doping KCl by AgCl during the melt stage
   - Q: Annealing is done to precipitate out the Ag particle preferentially at the dislocation
   - R: It cannot be observed by the optical micrograph

   P is false
   Q is false
   R is false
   Both Q and R are false

   No, the answer is incorrect.
   Score: 0
   Accepted Answers:
   R is false

2) Which of the following method of observing dislocation is suitable irrespective of whether the dislocation density is low or high?
   - P: Decoration method
   - Q: X-Ray Diffraction method
   - R: Surface method
   - S: Transmission electron tomography

   Only S
   Only P and Q
   Only Q
   Only P and R

   No, the answer is incorrect.
4) If edge dislocation with burger vector \( b_0 \) splits into two partial dislocations with burger vector as shown below, then find the force acting between edge component of partial dislocation where \( b_{1x} \) and \( b_{2x} \) are resolve burger vector for edge components while \( b_{1y} \) and \( b_{2y} \) are resolve burger vector for screw components.

\[
F = \frac{(-G.b_{1y} b_{2y})}{4\pi d}
\]

No, the answer is incorrect.

Score: 0

Accepted Answers:
\[
F = \frac{(-G.b_{1y} b_{2y})}{4\pi d}
\]
5) Which of the following statements are true regarding the information provided by the Thompson's tetrahedron?

- P: It tells about the possible slip planes and directions
- Q: It tells about the possible burger vector for a given slip plane
- R: It cannot tells about the line vector for a pure edge and pure screw dislocations
- S: It tells about the partial dislocation burger vectors
- T: It cannot tells about the partial dissociation reactions

- No, the answer is incorrect.
- Score: 0
- Accepted Answers:

6) Which of the following option will represent the dislocation reaction (partial dislocation) for \( (\overline{1}1) \)?

- \( \frac{1}{2}[\overline{1}10] = \frac{1}{6}[\overline{1}2\overline{1}] + \frac{1}{6}[2\overline{1}\overline{1}] \)
- \( \frac{1}{2}[\overline{1}10] = \frac{1}{6}[\overline{1}11] + \frac{1}{6}[2\overline{1}\overline{1}] \)
- \( \frac{1}{2}[\overline{1}10] = \frac{1}{6}[\overline{1}22] - \frac{1}{6}[2\overline{1}\overline{1}] \)
- \( \frac{1}{2}[\overline{1}10] = \frac{1}{6}[\overline{1}21] + \frac{1}{6}[2\overline{1}\overline{0}] \)

- No, the answer is incorrect.
- Score: 0
- Accepted Answers:

7) If 'd' is the width of extended dislocation, then which of the following is true for energy of the stacking fault, and the net force acting on partials?

- \( E \propto (d) \) and \( F_{\text{net}} \propto (1/d) \)
- \( E \propto (d) \) and \( F_{\text{net}} \propto (1/d) \)
- \( E \propto (1/d) \) and \( F_{\text{net}} \propto (1/d) \)
- \( E \propto (1/d) \) and \( F_{\text{net}} \propto (d) \)

- No, the answer is incorrect.
- Score: 0
- Accepted Answers:

8) Active slip planes for a BCC system is dependent upon which of the following factors?

- A. Composition of materials
- B. Crystal orientation
- C. Temperature
- D. Strain-rate

- 1 point

- Accepted Answers:
9) What are the consequence of the fact that <111> plane in BCC has inherent 3-fold symmetry?
   A. Motion of screw dislocation is not symmetric
   B. Screw dislocations have planar cores
   C. Motion of screw dislocation will not be as easy as in edge dislocation

   No, the answer is incorrect.
   Score: 0
   Accepted Answers: 
   All A, B, C and D

10) Select the correct option based on statement 1 and statement 2.

Statement 1: Edge dislocation with burger vector \( b_0 = (a/2)[0 \ 1 \ 1] \) can cross-slip from \((1 \ 1 \ 0)\) plane to \((1 \ 1 \ 0)\)

Statement 2: Screw dislocation with burger vector \( b_0 = (a/2)[0 \ 1 \ 1] \) can cross-slip from \((1 \ 1 \ 0)\) plane to \((1 \ 1 \ 0)\)

   A. Both statement 1 and 2 is false
   B. Statement 1 correct and statement 2 is false
   C. Both statement 1 and 2 is correct
   D. Statement 1 false and statement 2 is correct

No, the answer is incorrect.
Score: 0
Accepted Answers:
Statement 1 false and statement 2 is correct