Multiple Choice Questions:

1. Theoretical strength is about _____ times to average real strength of a material.
(a) 1   (b) 10   (c) 100   (d) 1000

2. Hooke's law
   (a) Elastic range, strain is proportional to stress
   (b) Plastic range, strain is proportional to stress
   (c) In both elastic and plastic range, strain is proportional to stress
   (d) None

3. Following is not the 2-dimensional imperfection
(a) Twin boundary   (b) Dislocation   (c) Surface   (d) Grain boundary

4. Figure out the odd one in the following
(a) Frenkel defect   (b) Tilt boundary   (c) Twist boundary   (d) Stacking fault

5. Thermodynamically stable defects
(a) Point defects   (b) Line defects   (c) Surface defects   (d) Volume defects

6. Taylor dislocation can not move by the following way
(a) Slip   (b) Climb   (c) Cross-slip   (d) All

7. Conservative movement of dislocations
(a) Slip   (b) Climb   (c) Both slip and climb   (d) None

8. Typical density of dislocations in a solid
(a) 10^8-10^{10} μm^{-2} (b) 10^8-10^{10} mm^{-2} (c) 10^8-10^{10} cm^{-2} (d) 10^8-10^{10} m^{-2}

9. Burger's vector changes with
(a) Kind of dislocation   (b) Length of dislocation
(c) Both kind and length of dislocation   (d) None

10. Which of the following is false?
(a) Line defects are thermodynamically stable
(b) Dislocation can end inside a crystal without forming loop
(c) ABC ABC ABC…is stacking sequence for HCP crystal
(d) All

11. Negative screw dislocation is represented by
(a) ⊥   (b) ↺   (c) ↻   (d) ⊤

12. Average frequency of atomic vibrations in a solid (in Hz)
(a) 10^{-12} (b) 10^{-13} (c) 10^{12} (d) 10^{13}

13. Requirement for cross-slip movement of dislocation
(a) Preferred slip plane   (b) Preferred slip direction
(c) No preferred slip plane   (d) No preferred slip direction

14. Beneficial property of foreign particles
(a) Reduces density   (b) Act as stress raisers
(c) Obstructs dislocation motion   (d) None

15. Stacking fault energies are in the range of
(a) 0.01-0.1 J/m^2 (b) 0.01-0.1 J/cm^2 (c) 0.1-10 J/m^2 (d) 0.1-10 J/m^2

Answers:

1. c
2. a
3. b
4. a
5. a
6. b
7. a
8. d
9. d
10. d
11. b
12. d
13. c
14. c
15. a