Unit 2 - Introduction to Materials

ASSIGNMENT 1

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

Due on 2019-09-11, 23:59 IST.

1) Crystal structure of materials is *1 point*

- a combination of points and space
- a combination of point lattice and a motif.
- dependent on motif.
- is determined by arrangement of points in space.

No, the answer is incorrect.
Score: 0
Accepted Answers:
a combination of point lattice and a motif.

2) Which of the following materials generally have highest specific strength? *1 point*

- Metals.
- Ceramics.
- Polymers.
- Composites.

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

3) Which group of elements have largest electron affinities? *1 point*

- Halogens
- Inert gases
- Alkali earth metals
- Alkali Metals

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

4) Which of the following is true for net interatomic force (F) and potential energy (W) at the equilibrium distance of separation (r_o)? *1 point*

- F is not zero W is maximum.
- F is zero and W is maximum.
- F is zero and W is minimum.
- F is not zero W is minimum.

No, the answer is incorrect.
Score: 0
Accepted Answers:
F is zero and W is minimum.

5) The bond energy magnitudes in ascending order can be expressed by *1 point*

- Hydrogen bond —> Vander Waals bond —> Metallic bond —> Ionic bond
- Vander Waals bond —> Hydrogen bond —> Metallic bond —> Ionic bond
- Vander Waals bond —> Hydrogen bond —> Ionic bond —> Metallic bond
- Hydrogen bond —> Vander Waals bond —> Ionic bond —> Metallic bond

No, the answer is incorrect.
Score: 0
Accepted Answers:
Vander Waals bond —> Hydrogen bond —> Metallic bond —> Ionic bond

6) Metallic bonding has following attributes: *1 point*

- Electrons are delocalised
- Free electrons form clouds
- Bonds are non-directional in nature
- Bonds form due to asymmetry in electron clouds

No, the answer is incorrect.
Score: 0
Accepted Answers:
Electrons are delocalised
Free electrons form clouds
Bonds are non-directional in nature

7) High bond energy of a solid results in *1 point*

- high melting point
- high elastic modulus
- low coefficient of thermal expansion
- high dipole moment

No, the answer is incorrect.
Score: 0
Accepted Answers:
high melting point
high elastic modulus
low coefficient of thermal expansion

8) Which of the following is necessary condition for a point lattice? *1 point*

- Symmetrical arrangement of points in space
- Regular arrangement of points in space
- Regular arrangement of points in space with identical neighborhood
- Symmetrical arrangement of points in space with identical neighborhood

No, the answer is incorrect.
Score: 0
Accepted Answers:
Regular arrangement of points in space with identical neighborhood

9) Unit cell in a periodic three-dimensional point lattice will have following attributes: *1 point*

- It will be the smallest repeatable unit
- Choice of its shape is unique
- It must have one lattice point
- Its volume is independent of its shape.

No, the answer is incorrect.
Score: 0
Accepted Answers:
It will be the smallest repeatable unit
It must have one lattice point
Its volume is independent of its shape.

10) *1 point*

Use the following figure to answer Questions

Choose the correct option for given pattern.

- Primitive lattice will contain one of A and one of B
- Non Primitive lattice will contain one of A and one of B
- Primitive lattice will contain two of A and two of B
- Non Primitive lattice will contain two of A and two of B

No, the answer is incorrect.
Score: 0
Accepted Answers:
Primitive lattice will contain one of A and one of B
Non Primitive lattice will contain two of A and two of B

11) Use the following figure to answer Questions *1 point*

What does motif consist of?

- one of A and one of B
- two of A and two of B
- three of A and three of B
- four of A and four of B

No, the answer is incorrect.
Score: 0
Accepted Answers:
one of A and one of B

12) Bond energy of ionic bond increases as *1 point*

- Difference in the electronegativity of cations and anions increases.
- Charges on ions increase.
- Separation between ions becomes larger than equilibrium separation.
- Ions become bigger.

No, the answer is incorrect.
Score: 0
Accepted Answers:
Difference in the electronegativity of cations and anions increases.
Charges on ions increase.

13) A primitive unit cell *1 point*

- always have one formula unit.
- has at least one formula unit.
- has at least one formula unit but never more than two.
- always has more than two formula units.

No, the answer is incorrect.
Score: 0
Accepted Answers:
has at least one formula unit.

14) Polymer materials: *1 point*

- Have high specific strength.
- Have high modulus of elasticity.
- High excellent corrosion resistance.
- High co-efficient of thermal expansion.

No, the answer is incorrect.
Score: 0
Accepted Answers:
High excellent corrosion resistance.
High co-efficient of thermal expansion.

15) Which of the following is a characteristic of crystalline structure? *1 point*

- Lower density
- Lower bond energy as compared to amorphous counterpart
- A sharp melting point
- Fixed lattice constant

No, the answer is incorrect.
Score: 0
Accepted Answers:
A sharp melting point
Fixed lattice constant

16) Which one of the following is the correct bond angle between atoms for tetrahedral bond? *1 point*

- 180°
- 120°
- 109.5°
- 120°

No, the answer is incorrect.
Score: 0
Accepted Answers:
109.5°