Unit 2 - Introduction to Materials

ASSIGNMENT 1

Due on BPP 09-18, 22:59 IST

1. Describe the structure of aluminum, steel, and brass.

2. What is the difference between hexagonal close-packed (HCP) and cubic close-packed (CCP) structures?

3. Which of the following materials have highest thermal conductivity?

4. Which of the following materials have highest electrical conductivity?

5. Write a paragraph on the impact of grain size on material properties.

6. Which of the following is true for an anisotropic material? (Select the correct option)
   a. Has uniform properties in all directions
   b. Has non-uniform properties in different directions
   c. Does not have any properties

7. Write a short note on the importance of surface finish in materials science.

8. Which of the following is true for a ductile material?
   a. Cannot absorb energy when deformed
   b. Can absorb energy when deformed
   c. Does not have any deformation

9. Write a short note on the importance of intermetallic compounds in materials science.

10. Which of the following is not a factor affecting the strength of a material?
    a. grain size
    b. temperature
    c. color

11. Which of the following is a characteristic of amorphous materials?
    a. high thermal conductivity
    b. high electrical conductivity
    c. high mechanical strength

12. Which of the following is true for a ceramic material?
    a. high thermal conductivity
    b. low electrical conductivity
    c. high mechanical strength

13. Which of the following is not a characteristic of a ceramic material?
    a. high thermal expansion
    b. high mechanical strength
    c. high electrical conductivity

14. Which of the following is true for a composite material?
    a. lower weight
    b. higher cost
    c. lower mechanical strength

15. Which of the following is not a characteristic of a composite material?
    a. high mechanical strength
    b. high thermal conductivity
    c. low electrical conductivity

16. Which of the following is true for a polymer material?
    a. high thermal conductivity
    b. high electrical conductivity
    c. high mechanical strength

17. Which of the following is not a characteristic of a polymer material?
    a. high electrical conductivity
    b. low density
    c. low mechanical strength

18. Which of the following is true for a biological material?
    a. high mechanical strength
    b. low cost
    c. high electrical conductivity

19. Which of the following is not a characteristic of a biological material?
    a. high mechanical strength
    b. high electrical conductivity
    c. low density