SUB.CODE: 18UPH6C13

REG.NO:

DHANALAKSHMI SRINIVASAN COLLEGE

OF ARTS & SCIENCE FOR WOMEN

(AUTONOMOUS)

(For Candidates admitted from 2018-2019 onwards)

UG DEGREE EXAMINATIONS APRIL – 2021

B.SC - PHYSICS

MATERIAL SCIENCE

Time: 3 Hrs **Max.Marks: 75**

PART – A

CHOOSE THE CORRECT ANSWER **(10X1=10)**

1. Which of the following is/are considered as a primary type of bond ?
   a) Covalent b) Ionic c) Metallic d) All of these
2. The strength of the polymer increases with in molecular weight.
   a) Increase b) Decrease c) No change d) Slightly decrease
3. The smallest portion of the lattice is known as
   a) Lattice structure b) Lattice point c) Bravais crystal d) Unit cell
4. In screw dislocation, the Burger's vector lies
   a) Perpendicular b) Parallel c) At an angle d) Sideways to the dislocation line.
5. The property by which a body returns to its original shape after removal of the force is called
   a) Plasticity b) Elasticity c) Ductility d) Malleability
6. Poisson's ratio is expressed as _____
   a) Lateral strain/Longitudinal strain b) Shear strain/lateral strain
   c) Lateral strain/volumetric strain d) Longitudinal strain/lateral strain
7. Which of the following types of rays is used in radiography for the inspection of castings?
   a) X- rays b) Infrared rays c) Ultraviolet rays d) Visible rays
8. Which of the following is used in electron microscope?
   a) electron beams b) magnetic fields c) light waves d) both a and b
9. At high temperature a Ferro magnet becomes _____
   a) Diamagnetic b) Paramagnetic c) Hard Ferro magnet d) Soft Ferro Magnet
10. The hysteresis loss in soft magnetic materials must be kept _____
    a) High b) zero c) minimum d) Unaltered

PART - B

ANSWER ALL THE QUESTIONS **(5×7=35)**

11. a) How engineering materials can be classified ?

(OR)

b) Explain the structure – property relationships in materials.

12. a) Give an account of Bragg's law of X-ray diffraction.

(OR)

b) Explain the point imperfection occurs in the crystal.

13. a) How plastic deformation occurs ? Explain it with suitable tensile stress-strain curve.

(OR)

b) How the modulus can be a parameter in designing ?

14. a) Explain the Ultrasonic method used in Non-destructive testing and give it's advantages.

(OR)

b) Write short notes on Magnetic and Electrical methods of testing.

15. a) Give the differences between soft and hard magnetic materials.

(OR)

b) Give a detailed note on Ferroelectric materials with suitable examples.

PART - C

ANSWER ANY THREE QUESTIONS **(3×10=30)**

16. Give the formation and properties of Ionic bonding in detail.
17. Explain the powder method to determine the Crystal structure.
18. What is meant by elastomers? How these materials exhibit rubber-like elasticity?
19. Give the principle, construction and working operation of SEM with a neat sketch.
20. Give an account on Polarization and explain the various polarization process occurs when an account of electric field.