62126

Reg. No. ☐☐☐☐☐☐☐☐

III Semester M.Sc. Degree Examination, April / May - 2022
PHYSICS
Material Science and Its Application
Paper : 305b
(CBCS Scheme 2012, 2019-20) (Elective)

Time : 3 Hours   Maximum Marks : 70

Instructions to Candidates:

Answer ALL the questions.

(3×15=45)

1.   a.   Discuss the structure - property relationship in material science.

     b.   Explain different types of primary bonding in materials.   **(5+10)**

(OR)

2.   a.   Write a note on Lennard - Jones potential.

     b.   What is Viscoelastic behavior? Explain Voigt - Kelvin experiment.   **(5+10)**

3.   a.   Define metals, ceramics, polymers and composite materials.

     b.   Explain the classification of composite materials based on matrix phase and reinforcement.   **(5+10)**

(OR)

4.   a.   Write a note on particle reinforced composites.

     b.   Explain the fabrication, structure and applications of polymer - concrete composites.   **(5+10)**

5.   a.   What are polymers? Explain the classification of polymers with an example.

     b.   Define polymerization. Explain any two industrial polymerization methods. **(5+10)**

(OR)

6.   a.   Discuss phase transistion in polymers.

     b.   Explain compression and injection moulding in polymers with the labeled sketch.   **(5+10)**

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7. Answer any **FIVE** of the following : (5×5=25)

    a. What is Madelung constant? Discuss on cohesive energy.

    b. Distinguish between ductile and brittle fracture.

    c. Write a note on concrete structure and composition.

    d. Discuss the influence of orientation in fiber reinforced composites.

    e. Describe the synthesis of polymers and step polymerization.

    f. Explain stereo isomerism.