

M.Sc.(Phy.) Semester - 3 (CBCS) Examination

OCT/NOV-2024

Synthesis of Materials (Elective (New))

Time: 2:30 Hours

Marks: 70

Instructions:

1. All questions are compulsory.
2. Figures to the right indicate marks.

Que-1 Answer in brief any SEVEN. (14)

- (1) Name the basic techniques of crystal growth.
- (2) What is the difference between techniques of crystal from melt?
- (3) What is CDS method?
- (4) What are the limitations of hydrothermal method of crystal growth?
- (5) Give advantages of Bridgman technique.
- (6) What is vacuum evaporation?
- (7) List out the different techniques of growth of crystal from melt.
- (8) Explain Zone melting technique.
- (9) What is epitaxy? Give examples of different types of epitaxies.
- (10) What do you mean by grain and grain-boundary in multi crystalline material?

Que-2 Answer the following questions: Any TWO out of THREE (14)

- (1) Explain microwave synthesis method by taking a suitable example of high T_c superconducting compound.
- (2) What is 'Solid State Reaction'? Explain Solid State Reaction in detail.
- (3) Discuss the synthesis of doped Tin Dioxide using sol-gel method.

Que-3 Answer the following questions: ALL ARE COMPULSORY (14)

- (1) Discuss the molten flux method of crystal growth with figure.
- (2) Explain synthesis of LiNbO_3 using sol-gel method.

OR

Que-3 Answer the following questions: ALL ARE COMPULSORY (14)

- (1) Write a short note on Czochralski method of crystal growth.
- (2) Explain Bridgeman method of crystal growth with necessary figure.

Que-4 Answer the following questions: Any TWO out of THREE (14)

- (1) What is Epitaxy? Discuss Molecular Beam Epitaxy with necessary figure.
- (2) What is vapor method of crystal growth? Discuss sublimation in detail.
- (3) Discuss: Flame Fusion Method of crystal growth with necessary figure.

Que-5 Write any TWO short-notes: (14)

- (1) Sputtering Method
- (2) Spin Coating Method
- (3) Pulsed Laser Deposition Method
- (4) Chemical Vapor Deposition
