

18001849



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Reg. No.....

Name.....

M.Sc. DEGREE (C.S.S.) EXAMINATION, NOVEMBER 2018

Third Semester

Faculty of Science

Branch II : Physics–A–Pure Physics

Elective : Bunch C—Material Science

PH3 EC2—CRYSTAL GROWTH TECHNIQUES

(2012 Admission onwards)

Time : Three Hours

Maximum Weight : 30

Part A

*Answer any **six** questions.
Each question carries 1 weight.*

1. Explain heterogeneous nucleation.
2. Briefly explain KSV theory.
3. Explain crystal pulling.
4. What is meant by gel growth ?
5. State the features of high temperature solution growth.
6. Briefly explain the growth of quartz.
7. State the merits of epitaxial growth.
8. What are ternary alloys ? Explain.
9. What are the characteristics of quaternary alloys ?
10. Explain the light emitting process of LED.

(6 × 1 = 6)

Part B

*Answer any **four** questions.
Each question carries 2 weight.*

11. Briefly explain Czocharalski method for crystal growth.
12. Give the chemical physics of crystal growth.

Turn over





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13. Briefly discuss the Verneuil flame fusion technique.
14. Describe the liquid phase epitaxy with modifications.
15. Discuss the chemical beam epitaxy with merits and applications.
16. Give the theory of laser diodes with applications.

(4 × 2 = 8)

Part C

*Answer all questions.
Each question carries 4 weight.*

17. (a) Describe BCF theory for crystal growth in detail.

Or

- (b) Discuss the Muller- Krumbhar model. State its salient features.

18. (a) Describe the Bridgmann technique for crystal growth. State modifications.

Or

- (b) Give an account on low temperature solution for crystallization. Give applications.

19. (a) Discuss the atomic layer epitaxy in detail. Compare it with molecular beam epitaxy.

Or

- (b) Bring out LTVTP and OTP technique. Explain the advantages and limitations.

20. (a) Discuss on binary compounds, ternary alloys and hetroepitaxial ternary alloy structure.

Or

- (b) Give an account on Laser diodes and micro FETS.

(4 × 4 = 16)

