

ATAL BIHARI VAJPAYEE VISHWAVIDYALAYA BILASPUR (C.G.)

Pre Ph. D. Course work Examination 2019-20

PHYSICS

PAPER II: CW – 02 (Synthesis and Characterization of Materials)

Model question paper

[Set – III]

Duration - 3.00 Hrs

Max. Marks - 80

Note: Section - A is Compulsory. Answer one question from each unit of Section - 'B' carrying equal marks

Section - A

1. Answer the following questions in brief.

2 X 10 = 20

- i. Name the different steps involved in the process of crystallization.
- ii. Explain in brief the term Sublimation.
- iii. Give the advantages and disadvantages of Spin Coating technique.
- iv. Classify various Chemical Vapour Deposition (CVD) techniques.
- v. What is STM?
- vi. What is meant by Photoluminescence?
- vii. What do you mean by dosimeter?
- viii. Differentiate ionizing and Non-ionizing radiation.
- ix. State the various key factors responsible for selecting a grinding media in a ball mill.
- x. What is a Quantum dot? In how many dimensions it is confined?

Section - B

12 X 5 = 60

UNIT – I

2. What do you mean by Chromatography? Explain its types in details.

3. How the crystal is grown by Czochralski Method? Explain.

UNIT – II

4. What is molecular beam epitaxy (MBE)? Describe its working principle by giving its advantages. What are the drawbacks of this technique?

5. Discuss thermal evaporation method of depositing thin film.

UNIT – III

6. Discuss the working principle of TEM. Also mention its advantages and disadvantages.

7. Define Photoluminescence. Explain its principle and state several of photoluminescence process.

UNIT – IV

8. Explain the basic dosimetric quantities and their measurement techniques.

9. Explain the effect of radiation on human health.

UNIT – V

10. What is ball mill? What are the various types of ball mill? State the advantage and some of its application.

11. Explain Inert gas condensation method?

===*===**