

**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***

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**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?**