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**CC-283**

**M. Sc. EXAMINATION, May 2017**

(Third Semester)

(Re-appear Only)

PHYSICS

PHY-605-B

Crystallography and Imperfections in Crystals

*Time : 3 Hours]*

*[Maximum Marks : 100*

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Before answering the question-paper candidates should ensure that they have been supplied to correct and complete question-paper. No complaint, in this regard, will be entertained after the examination.

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**Note :** Attempt *Five* questions in all, selecting at least *one* question from each Unit.

1. (a) Discuss the accurate determination of lattice parameter. **10**

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**P.T.O.**

(b) Write notes on the following : **10**

(i) Quasi crystals and applications

(ii) Lyquid crystals and applications.

2. Discuss the interpretation of powder photograph using analytical method when :

(a) Unit cell is known

(b) Crystal system is unknown. **20**

### **Unit I**

3. Explain Lorentz and polarization factors in determination of relative structure amplitude from measured density. **20**

4. (a) Discuss the Burger's precession method. **10**

(b) How will you determine the unit cell in oscillation photography ? **10**

### **Unit III**

5. (a) Explain the Frankel defect and its thermodynamics using diagram. **10**

(b) What do you mean by screw dislocation ?

Explain with the help of diagram. **10**

6. (a) Discuss the forces between dislocations. **10**

(b) Explain the mechanism of plastic deformation. **10**

### **Unit IV**

7. Explain the following techniques :

(a) FTIR

(b) Photoluminiscence (PL). **10+10=20**

8. Discuss the theory of kinematic of diffraction contrast and line imaging. **20**