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**SB—60—2022**

**FACULTY OF SCIENCE**

**B.Sc. (Third Year) (Fifth Semester) EXAMINATION**

**JUNE/JULY, 2022**

**(CBCS/Old)**

**PHYSICS**

**Paper XIII**

**(Solid State Physics)**

**(Monday, 13-6-2022)**

**Time : 10.00 a.m. to 12.30 p.m.**

*Time—2½ Hours*

*Maximum Marks—40*

*N.B. :— All questions are compulsory.*

1. What is meant by amorphous and crystalline form of solid ? Explain in detail Translation, Rotation, Reflection and Inversion symmetry operations. 15

*Or*

(a) What are the types of bonding ? Explain formation of covalent bond. 8

(b) Derive an expression for thermal conductivity of solids and state Wiedemann-Franz relation. 7

2. Obtain an equation for Einstein's specific heat of solids. Discuss its variations at low and high temperature. 15

*Or*

(a) Describe Drude-Lorentz theory of free electron. 8

(b) What are the types of bonding ? Explain formation of Hydrogen bonding in solids. 7

3. Write on the following (any two) : 10

(a) X-ray diffraction.

(b) Simple Cubic (SC) crystal structure.

(c) Dulong and Petit's Law (Classical theory of specific heat of solids).

(d) Electrical conductivity.

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