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BF—106—2016

FACULTY OF SCIENCE

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

NOVEMBER/DECEMBER, 2016

(New Course)

PHYSICS

Paper-XIII

(Solid State Physics)

(Friday, 9-12-2016)

Time : 10.00 a.m. to 12.00 noon

Time—2 Hours

Maximum Marks—40

N.B. :— (i) All questions are compulsory.

(ii) All questions carry equal marks.

1. Attempt any *four* : 8
 - (a) Define unit cell.
 - (b) Define ionic bond.
 - (c) Define symmetry operations.
 - (d) State Dulong-Petit's law of specific heat.
 - (e) Write the Wiedemann-Franz's relation.
 - (f) What are polar molecules ?
2. Attempt any *two* : 8
 - (a) What are Bravais lattices ? Explain Bravais lattices in two dimensions.
 - (b) Explain in brief hydrogen bond.
 - (c) What are the limitations of the Debye's model.
3. Attempt any *two* : 8
 - (a) Explain translation and rotation symmetry operation.
 - (b) Discuss classical model and obtain its expression for specific heat at constant volume.
 - (c) Describe an expression for electrical conductivity of metals.

P.T.O.

4. Attempt any *one* : 8
- (a) Discuss formation of covalent bond with suitable example.
 - (b) Assuming the expression for average energy, derive an expression for Einstein's specific heat capacity of solids.
5. Write short notes on any *two* : 8
- (a) Drude Lorentz theory
 - (b) Bragg's law
 - (c) Crystalline solids
 - (d) BCC lattice.