PAPER CODE 52001

University Institute of Engineering & Technology

(Recognised Under Section 2(f) and 12B of UGC)

Kurukshetra University, Kurukshetra

Roll No. -

THEORY EXAMINATION – MAY 2019	
B.TECH	SEMESTER -II

TIME – 3 Hrs.

M.M. - 75

COURSE NO. AS-102

COURSE TITLE –APPLIED PHYSICS-II (REAPPEAR)

Note: All questions in Part-A and Part-B are compulsory. Attempt any four questions from Part-C selecting at least one from each unit.

PART-A (15 Marks)

Q. No. – 1 Answer the following questions. **15x1=15**

(i)	Define Miller indices.
(ii)	What is the difference between unit cell and primitive cell?
(iii)	What are the lattice parameters of hexagonal lattice cell?
(iv)	Name the nature of bond in NaCl and water.
(v)	Define phase velocity.
(vi)	Name the phenomenon which proves particle nature of light.
(vii)	Define Uncertainty principle.
(viii)	Define Wiedemann-Franz law.
(ix)	Write Fermi-Dirac distribution function.
(x)	What do you mean by Fermi energy?
(xi)	Define Bloch theorem for periodic potential.
(xii)	Define critical transition temperature.
(xiii)	What are Type-I and Type-II superconductors.
(xiv)	Give any two properties of nanomaterial.
(xv)	Name two methods for synthesis of nanomaterials.

PART-B (20 Marks)

	UNIT-I	
2	Explain diamond structure.	5
	UNIT-II	
3	Explain why protons and neutrons can exist insidethe nucleus.	5
	UNIT-III	
4	Explain the following (i) Density of states. (ii)Brillouin zone	2.5x2
	UNIT-IV	
5	Explain Meissner effect in superconductivity.	5

PART-C (40 Marks)

	UNIT-I	
6	Explain two and three dimensional Bravais lattices.	10
7	What do you mean by point defects in solids? Derive an expression for Concentration of Schottky defects in a crystal.	10
	UNIT-II	
8	What do you mean by wave packet? Show that the De-Broglie group velocity associated with the wave packet is equal to the velocity of the particle.	10
9	Derive Schrodinger time independent equation for matter waves. Give physical significance of the wave function.	10
	UNIT-III	
10	Based on band theory of solids, distinguish between conductors, semiconductors and insulators.	10
11	What is Hall Effect? Mention applications of Hall Effect.	10
	UNIT-IV	
12	Discuss London equation in superconductivity.	10
13	What are nanomaterial? Explain various applications of nanomaterial.	10