

Enrollment No: _____

Exam Seat No: _____

C.U.SHAH UNIVERSITY

Summer Examination-2020

Subject Name: Solid State Physics

Subject Code: 4SC05SSP1

Branch: B.Sc. (Physics)

Semester : 5

Date : 28/02/2020

Time : 10:30 To 01:30

Marks : 70

Instructions:

- (1) Use of Programmable calculator & any other electronic instrument is prohibited.
 - (2) Instructions written on main answer book are strictly to be obeyed.
 - (3) Draw neat diagrams and figures (if necessary) at right places.
 - (4) Assume suitable data if needed.
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Q-1	Attempt the following questions:	(14)
	a) Give the formula of reduced electric field.	1
	b) What is the phenomenon of Superconductivity?	1
	c) How to define penetration depth in superconductor?	1
	d) Define DC Josephson effect.	1
	e) What is Unit cell?	1
	f) What is Meissner effect?	1
	g) Define Hall effect.	1
	h) What is polarization?	1
	i) What are Miller indices?	1
	j) Define crystalline solid.	1
	k) Define Intrinsic semiconductors.	1
	l) Define type-I superconductors.	1
	m) Give full form of SQUID.	1
	n) Define electric susceptibility.	1

Attempt any four questions from Q-2 to Q-8

Q-2	Attempt all questions	(14)
	a) What is flux- exclusion Meissner effect? Explain in details with diagram.	5
	b) Derive Clausius- Mosotti relation for dielectric material.	5
	c) Give application of superconductivity.	4
Q-3	Attempt all questions	(14)
	a) Explain in details thermodynamics of superconducting transition.	6
	b) Explain in details classification of solids on the basis of band theory.	6
	c) Explain normal and anomalous dispersion.	2
Q-4	Attempt all questions	(14)
	a) Explain in details linear mono atomic chain.	7
	b) Explain in details Einstein's theory of specific heat.	7



Q-5	Attempt all questions	(14)
	a) Explain the London's theory of superconductor in details.	6
	b) Explain in details type-I and Type-II superconductors with diagram.	5
	c) Explain any three factors which effects on superconductivity.	3
Q-6	Attempt all questions	(14)
	a) Explain Hall effect with diagram in details.	7
	b) Explain in details classical theory of electric polarizability.	7
Q-7	Attempt all questions	(14)
	a) Explain Josephson effect in details with diagram.	7
	b) Explain Debye's theory of specific heat.	7
Q-8	Attempt all questions	(14)
	a) Explain in details Local electric field at an atom.	7
	b) Explain extrinsic semiconductor in details.	7

