

Enrollment No: _____

Exam Seat No: _____

C.U.SHAH UNIVERSITY

Winter Examination-2018

Subject Name: Solid State Physics

Subject Code: 4SC05SSP1

Branch: B.Sc. (Physics)

Semester: 5

Date: 30 /11/2018

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)	What is DC Josephson effect?	1
b)	Define superconductivity.	1
c)	Define penetration depth.	1
d)	Define reciprocal lattice.	1
e)	Define Unit cell.	1
f)	What is Meissner effect?	1
g)	Define Hall effect.	1
h)	Define polarization of dielectric materials.	1
i)	What are Miller indices?	1
j)	Define crystalline solid.	1
k)	Define extrinsic semiconductors.	1
l)	Define type-II 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)	Explain in details flux- exclusion Meissner effect.	5
b)	Explain in details classification of solids on the basis of band theory.	6
c)	Give application of superconductivity.	3
Q-3	Attempt all questions	(14)
a)	Explain in details thermodynamics of superconducting transition.	6
b)	Explain in details construction of reciprocal lattice.	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 Debye's theory of specific heat.	7
Q-5	Attempt all questions	(14)
a)	Explain the London's theory in details.	7
b)	Explain in details Clausius- Mosotti equation.	5
c)	Define depolarization field.	2
Q-6	Attempt all questions	(14)
a)	Explain Hall effect with diagram in details.	7
b)	Explain Josephson effect in details with diagram.	7
Q-7	Attempt all questions	(14)
a)	Explain in details classical theory of electric polarizability.	6
b)	Explain in details type-I and Type-II superconductors.	5
c)	Explain in short conduction band, valance band and forbidden energy gap.	3
Q-8	Attempt all questions	(14)
a)	Explain in details Local electric field at an atom.	7
b)	Explain in details Einstein's theory of specific heat.	7

