Sanjay Ghodawat University, Kolhapur

2020-21

Established as State Private University under Govt. of Maharashtra. Act No XL, 2017

EXM/P/09/00

Year and Program: UG, B.Sc III	**School of Science**	**Department: Physics**
Course Code: PHS303	**Course Title: Solid State Physics**	**Semester :V**
Day : Thursday **Date: 17.12.2020**	**End Semester Examination**	**Time:2 Hrs.** **Max Marks:50**

Instructions: 1) All Questions are compulsory.
2) Use of non-programmable calculator is allowed.

			Marks	Bloom's Level	CO
Q.1		**Answer the following (Any Two)**–			
	a)	Define atomic radius. Obtain atomic radius for SC, BCC and FCC.	8	L2	CO1
	b)	Which symmetry elements provide symmetry to the crystal? Discuss using diagrams.	8	L3	CO1
	c)	State and derive Bragg's law.	8	L3	CO2
Q.2		**Answer the following (Any two)** –			
	a)	To overcome which drawbacks of the Bragg's X-ray spectrometer the powder method is developed? Describe powder method for X-ray diffraction using diagram.	8	L2	CO2
	b)	Differentiate between Type I and Type II superconductors. Explain Meissner effect in detail.	8	L2	CO3
	c)	Explain Hall Effect in detail. Deduce the expression for Hall Coefficient.	8	L4	CO3
Q.3		**Answer the following (Any two)** –			
	a)	What are the various polarization processes in dielectric materials? Derive an expression for electronic polarisabilityin dielectric materials.	9	L3	CO4
	b)	Explain diamagnetic, paramagnetic, ferromagnetic and ferrimagnetic materials in detail with examples.	9	L3	CO4

Differentiatebetween hard and soft magnetic materials.

c)	Define unit cell and describe its types. What is the relation between atomic density and the lattice constant (a) of the unit cell? Derive the relation.	9	L2	CO1

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