Enrollment No:	Exam Seat No:
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C.U.SHAH UNIVERSITY

Winter Examination-2021

Subject Name: Advances in Materials Science

Subject Code: 5SC04AMS1 Branch: M.Sc. (Physics)

Semester: 4 Date: 20/10/2021 Time: 11:00 To 02:00 Marks: 70

Instructions:

Q-1

- (1) Use of Programmable calculator and 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.

SECTION – I Attempt the Following questions

- **a.** What is a Solvus line in Phase diagram?
- **b.** Define Phase of a system
- c. Give the expression for Lever Rule used in Phase diagrams
- **d.** What is a Tie Line?
- e. What do you mean by triple point in phase diagram?
- f. List two properties of Ceramics
- g. Give the Gibbs Phase Rule expression

Q-2		Attempt all questions	(14)
	a	Explain a Eutectic Phase diagram using an appropriate example	07
	b	Give the detailed classification of ceramics on the basis of composition	07
		OR	

Q-2		Attempt all questions	(14)
	a	Discuss the different methods used for Ceramic Material fabrications	07
	b	Write a note on the thermosetting, thermoplastic and elastomer polymer composites	07

Q-3		Attempt all questions	(14)
	a	Write a note on Phase diagram and its importance	07
	b	Compare: Resin Transfer Molding and Injection Molding	07
		OR	

Q-3	a	Explain the Doctor Blade method used in ceramic industry	07
	b	Explain in detail: Natural Fibre Composites	07



(07)

$\boldsymbol{SECTION-II}$

Q-4		Attempt the Following questions	(07)
	a.	Give the classification of polymers based on structure.	
	b.	State the major reasons for magnetic losses.	
	c.	Write the different types of Copolymers	
	d.	Name at least two different types of Spinels.	
	e.	List the main difference between Natural and Synthetic Polymer	
	f.	What are Condensation Polymers?	
	g.	What do you mean by Magnetoresistance?	
Q-5		Attempt all questions	(14)
	a	Explain in detail applications of ceramic magnets.	07
	b	Explain how Addition polymers are synthesized?	07
		OR	
Q-5	a	Discuss in detail shape memory alloys and its applications	07
	b	Enumerate on Paramagnetism in material science.	07
Q-6		Attempt all questions	(14)
	a	Describe in detail Magneto Resistance in detail	07
	b	Give an account on Nanostructured Materials	07
		OR	
Q-6		Attempt all Questions	
	a	Discuss in detail Garnets and Hexagonal Ferrites	07
	b	Explain the significance of Flip-Chip Technology in device fabrication	07

