Enrollment No: _____ Exam Seat No: _____

C.U.SHAH UNIVERSITY

Summer Examination-2019

Subject Name: Advances in Materials Science

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

Semester: 4 Date: 22/04/2019 Time: 02:30 To 05:30 Marks: 70

Instructions:

(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

Q-1 **Attempt the Following questions** **(07)**

a. Define Phase of a system
b. What do you mean by Sintering?
c. List two methods used for fabricating glass products
d. Give the Gibbs Phase Rule expression
e. State Tie line.
f. Give the Lever Rule used in Phase diagrams
g. What are Ceramics?

Q-2 **Attempt all questions** **(14)**

a Explain a Binary Phase diagram using an appropriate example **06**
b Give an account on Polymer Composite fabrication methods **08**

OR

Q-2 **Attempt all questions** **(14)**

a Discuss the different methods used for Ceramic Material fabrications **07**
b Explain in detail the classification of Polymers. **07**

Q-3 **Attempt all questions** **(14)**

a Write a note on Phase diagram and its importance **06**
b Explain in detail the Eutectic Phase Diagram **08**

OR

Q-3 **a** Explain the Doctor Blade method used in ceramic industry **07**
b Explain injection molding method used for ceramic shaping. **07**

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. Give two applications of Nanomaterials.
d. List at least two different types of Spinels.
e. Give the main difference between Soft and Hard magnets?
f. State two advantages of thermosetting polymers.
g. What do you mean by Magnetoresistance?

Q-5 **Attempt all questions** **(14)**

a Enumerate on Ferromagnetism and Paramagnetism in material science. **07**
b Explain in detail Magnetic Ferrites. **07**

OR

Q-5 **a** Discuss in detail shape memory alloys and also state its applications **07**
b Explain in detail applications of ceramic magnets. **07**

Q-6 **Attempt all questions** **(14)**

a Describe in detail Colossal Magneto Resistance in detail **07**
b Discuss in detail Garnets and their structure **07**

OR

Q-6 **Attempt all Questions**

a Give an account on Nanostructured Materials **08**
b Explain the significance of Flip-Chip Technology in device fabrication **06**