

Enrollment No: \_\_\_\_\_ Exam Seat No: \_\_\_\_\_

# C.U.SHAH UNIVERSITY

## Summer Examination-2018

Subject Name: Advances in Materials Science

Subject Code: 5SC04AMS1

Branch: M.Sc. (Physics)

Semester: 4

Date: 01/05/2018

Time: 10:30 To 01:30

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.

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### SECTION – I

- Q-1 Attempt the Following questions (07)**
- a. Write the Gibbs Phase Rule expression
  - b. Define Sintering
  - c. Write two properties shown by Glass Ceramics
  - d. What are the Ceramics?
  - e. Give two importance of Phase Diagrams
  - f. State Tie Line
  - g. Define Phase of a system
- Q-2 Attempt all questions (14)**
- a Explain in detail the Eutectic Phase Diagram **07**
  - b Give an account on Polymer Composite fabrication methods **07**
- OR**
- Q-2 Attempt all questions (14)**
- a Describe the tape casting method used for Ceramic Material fabrications **07**
  - b Write a note on Phase diagram and its importance **07**
- Q-3 Attempt all questions (14)**
- a Compare between thermoplastic and thermosetting polymers **06**
  - b Enumerate on Quasi Crystals **08**
- OR**
- Q-3 a Explain in detail Polymers and its types (07)**
- b Describe 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. What are the Quasi crystals?
  - c. Define Golden Ratio
  - d. What do you mean by Domain Walls in magnetism?
  - e. Give the main difference between Soft and Hard magnets?
  - f. Explain Spintronics
  - g. What do you mean by Magnetoresistance?
- Q-5**      **Attempt all questions**      **(14)**
- a Describe the importance of Ferromagnetism and Ferrimagnetism in material science.      **07**
  - b Explain in detail Ceramic Magnets or Magnetic Ferrites      **07**
- OR**
- Q-5**      a State the importance of Spintronics in shaping the modern world      **07**
- b Explain the working and principle of LEDs      **07**
- Q-6**      **Attempt all questions**      **(14)**
- a Explain in detail Giant Magneto Resistance in detail      **07**
  - b Elucidate the shape memory alloys and also state its applications      **07**
- OR**
- Q-6**      **Attempt all Questions**
- a Write an account on Nanostructured Materials      **08**
  - b Give the significance of Flip-Chip Technology in device fabrication      **06**

