



MANIPAL

ACADEMY of HIGHER EDUCATION
(Deemed to be University under Section 3 of the UGC Act, 1956)

Reg. No.

DEPARTMENT OF SCIENCES, IV SEMESTER M. Sc. (CHEMISTRY)
END SEMESTER EXAMINATIONS, JULY 2020

**MATERIALS CHEMISTRY [CHM 5001]
(REVISED CREDIT SYSTEM-2017)**

Time: 2 Hours

Date:08-07-2020

MAX. MARKS: 25

Note: (i) Answer **ALL** questions
(ii) Draw diagrams, and write equations wherever necessary

1. A. What is meant by self-assembly process? List out the classes of self-assembly and discuss the characteristics of self-assembled systems.
1. B. Explain the different types of Alloys with suitable examples. (3+2)
2. A. Discuss the characteristic features of various liquid crystalline phase structures.
2. B. Explain the heat treatment process of steel and its effect on the material. (3+2)
3. A. Describe the applications of thin films prepared by Chemical Vapor Deposition methods.
3. B. Explain the different types of Nanotubes and the characteristics of Nanowires. (3+2)
4. A. Describe the preparation of nanomaterials by sol gel process and discuss the applications of nanomaterials in medicine and biotechnology.
4. B. Explain the working of LC numeric display pixel. (3+2)
5. A. List out the different types ceramics. Discuss the engineering applications of ceramics.
5. B. Explain, why the Oxygen is paramagnetic whereas Hydrogen is diamagnetic? (3+2)

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