



K25P 1864

Reg. No. :

Name :

**II Semester M.Sc. Degree (C.B.C.S.S. – O.B.E. – Reg./Supple./Imp.)
Examination, April 2025
(2023 and 2024 Admissions)
CHEMISTRY/CHEMISTRY WITH DRUG CHEMISTRY SPECIALIZATION
PROGRAMME
MSCHE02C11/MSCHD02C11 : Physical Chemistry – II**

Time : 3 Hours

Max. Marks : 60

SECTION – A

Short answer questions. Answer **any five** questions. **Each** question carries **3** marks.

1. Distinguish between microstate and macrostate.
2. What is thermionic emission ?
3. Explain isomorphism and polymorphism with example.
4. What are Brillouin zones ?
5. What is Hall effect ? State its significance.
6. Discuss the differences between ortho and para-hydrogen. (5×3=15)

SECTION – B

Paragraph questions. Answer **any three** questions. **Each** question carries **6** marks.

7. Explain phase space and ensembles in detail, giving suitable examples.
8. Briefly explain Fermi-Dirac statistics.
9. Discuss the principle and procedure of powder X-ray diffraction studies. What are the merits and demerits of this method ?
10. Explain the anatase and rutile structures of TiO_2 .
11. What are quasicrystals ? Discuss their structure and applications. (3×6=18)

P.T.O.



SECTION – C

Essay type questions. Answer **any three** questions. **Each** question carries **9** marks.

12. Discuss the relation between Maxwell-Boltzmann and Bose-Einstein statistics.
 13. Explain and Derive Maxwell-Boltzmann distribution law.
 14. Explain the thermodynamics of Schottky and Frenkel defect in detail.
 15. On the basis of band theory, explain the classification of solids into insulators, conductors and semiconductors.
 16. Explain the structure of spinels, inverse-spinels and perovskites. Discuss their application in solar cells. (3×9=27)
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