Reg. No. \_\_\_\_\_\_\_\_\_\_\_\_



**End Semester Examination – Nov / Dec – 2019**

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| **Code :** | **14PH2019** | **Duration :** | **3hrs** |
| **Sub. Name :** | **CONDENSED MATTER PHYSICS** | **Max. Marks :** | **100** |

**ANSWER ALL QUESTIONS (5 x 20 = 100 Marks)**

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| **Q. No.** | **Sub Div.** | **Questions** | **Course**  **Outcome** | **Marks** |
| 1. |  | Compare and contrast different polarization in solids. Explain electronic polarization in detail. | CO1 | 20 |
| **(OR)** | | | | |
| 2 |  | Describe phonon – phonon interaction and effects of phonons in nanostructured materials in detail. | CO2 | 20 |
|  |  |  |  |  |
| 3. | a. | Briefly discuss the advantages and applications of ferromagnetic materials. | CO1 | 4 |
| b. | What is Hall effect? Obtain an expression for Hall coefficient. | CO2 | 16 |
| **(OR)** | | | | |
| 4. | a. | Discuss the applications of various insulating materials in solids. | CO1 | 4 |
| b. | Derive the equation of Clausius-Mossotti relation for the molecular polarizability and dielectric constant. | CO3 | 16 |
|  |  |  |  |  |
| 5. |  | Illustrate the B-H curve in detail with required diagram and its importance in ferromagnetism. | CO2 | 20 |
| **(OR)** | | | | |
| 6. |  | What are ferromagnetic domains? Describe domain theory of ferromagnetism and domain structures in detail. | CO2 | 20 |
|  |  |  |  |  |
| 7. | a. | Discuss the uses and applications of crystal defects in color centres. | CO2 | 4 |
| b. | Compare and contrast one, two and three dimensional crystal defects. Explain point defect in detail with necessary diagram. | CO3 | 16 |
| **(OR)** | | | | |
| 8. | a. | Describe different types of luminescence in detail with examples. | CO2 | 4 |
| b. | Discuss the concept of Photoconductors. Explain its working in detail and mention the areas of applications. | CO3 | 16 |
|  | | **Compulsory**: |  |  |
| 9. |  | Discuss in detail the Bardeen–Cooper–Schrieffer theory to explain the phenomenon of electron pairs at low temperatures in certain materials. | CO3 | 20 |