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



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

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| **Code :** | **14PH2008** | **Duration :** | **3hrs** |
| **Sub. Name :** | **ELECTRICITY AND MAGNETISM** | **Max. marks :** | **100** |

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

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| **Q. No.** | **Sub Div.** | **Questions** | **Course**  **Outcome** | **Marks** |
| 1. | a. | State Gauss theorem of electrostatics and write any two applications of Gauss theorem. | CO1 | 15 |
| b. | Find the magnitude of the electric field ͞E at a field point 2.0 m from the point charge q= 4 nC. | CO2 | 5 |
| (OR) | | | | |
| 2. | a. | Find the electric intensity (i) at a point due to charged sphere and (ii) at a point near an infinite plane using Gauss theorem. | CO2 | 20 |
|  |  |  |  |  |
| 3. | a. | Derive an expression for electric potential at a point due to an electric dipole. | CO1 | 15 |
|  | b. | The potential difference between the terminals of an incandescent lamp is 240 V and the current is 0.44 ampere. What is the resistance of the lamp? | CO2 | 5 |
| (OR) | | | | |
| 4. | a. | In the above circuit diagram, apply loop rule and junction rule (kirchhoff’s law) to find the current I1, I2 and I3 in each loops. | CO2 | 20 |
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| 5. | a. | Draw the series circuit, parallel circuit and derive an expression for its resistance. | CO2 | 10 |
|  | b. | Explain kirchhoff’s loop rule and junction rule in detail. | CO1 | 10 |
| (OR) | | | | |
| 6. | a. | State Ampere’s Circuital Law and hence find the magnetic field near the long straight conductor. | CO1 | 20 |

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| 7. | a. | Derive the maxwell’s equation I and maxwell’s equation II in differential form and integral form. | CO2 | 20 |
| (OR) | | | | |
| 8. | a. | Derive Maxwell’s equation of free space using the differential form of Maxwell’s equation. | CO2 | 20 |
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|  | | **Compulsory**: |  |  |
| 9. | a. | Describe the working principle of a dynamo with a neat sketch. | CO1 | 20 |