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**GIET UNIVERSITY, GUNUPUR - 765022**

Ph.D. (Second Semester) Examinations, April - 2024

**PPECH2017 - Nano Materials and Catalyst for Renewable Energy
(Chemistry)**

Time: 3 hrs

Maximum: 70 Marks

The figures in the right-hand margin indicate marks.**Answer ANY FIVE Questions****(14 x 5 = 70 Marks)**

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| 1. Write the general properties of Nano particles. Elaborate the factor affecting the properties of Nano-particles. | 14 |
| 2. What do you mean by Renewable energy? Give examples of renewable energy. Write the importance of renewable energies. | 14 |
| 3. What is the Photo-voltaic cell? Elaborate the working principle of it and its salient features. What are the use of Photo-voltaic cells? | 14 |
| 4. Derive the kinetics of catalysed reactions. Draw the energy profile diagram of the catalysed reactions. | 14 |
| 5. Discuss salient features of the Photo-catalyst. Write the mechanism of Adsorption and desorption processes. | 14 |
| 6. Explain the Importance of Nano chemistry. Explain any two methods of nano particle synthesis. | 14 |
| 7. Define nanomaterials. What is the size range of nanomaterials? Write about the significance of specific surface area of nanomaterials. | 14 |
| 8. Define adsorption. Explain adsorption isotherm. Differentiate between Chemisorption and physisorption. | 14 |

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