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



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

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| **Code :** | **14BT2054** | **Duration :** | **3hrs** |
| **Sub. Name :** | **BIOENERGY AND BIOMATERIALS** | **Max. Marks :** | **100** |

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

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| **Q. No.** | **Sub Div.** | **Questions** | **Course**  **Outcome** | **Marks** |
| 1. |  | Discuss the opportunities and challenges (social, technological, or environmental) associated with the use of lingo cellulosic biomass in energy harvesting processes. | CO1 | 20 |
| **(OR)** | | | | |
| 2. |  | Elaborate on different available thermochemical biomass energy harvesting technologies. How the biotechnological interventions can be adopted for improvising the cost-efficiency? | CO1 | 20 |
|  |  |  |  |  |
| 3. |  | Explain the importance of biomass upgradation technologies and briefly discuss those technologies in a comparative manner. | CO2 | 20 |
| **(OR)** | | | | |
| 4. | a. | Discuss the influence of biomass properties and pyrolytic conditions on bio-oil quality and productivity. | CO2 | 10 |
| b. | List out the physio-chemical procedures that can be adopted to bio-oil quality improvement. | CO2 | 10 |
|  |  |  |  |  |
| 5. |  | Discuss how the anaerobic digestion process can successfully be implemented on an organic fraction of municipal waste/food waste. | CO2 | 20 |
| **(OR)** | | | | |
| 6. |  | Illustrate inter-dependency among acidogenic, acetogenic and methanogenic processes in anaerobic digestion. Highlight the key process parameter in each stage. | CO2 | 20 |
|  |  |  |  |  |
| 7. |  | Explain the role of nitrification, denitrification steps in the interconversion of organic and inorganic nitrogen pool in soil. | CO3 | 20 |
| **(OR)** | | | | |
| 8. |  | Illustrate the dynamics of ocean-atmosphere carbon exchange with appropriate diagram. | CO3 | 20 |
|  | | **Compulsory**: |  |  |
| 9. |  | Discuss different phytoremediation technologies based on a contaminant removal mechanism. Highlight the major advantage and disadvantages of phytoremediation program. | CO3 | 20 |