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

**UNIVERSITY**



(Karunya Institute of Technology & Sciences)

(Declared as Deemed-to-be University under Sec.3 of the UGC Act, 1956)

**Supplementary Examination – June – 2017**

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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. |  | Questions | Course  Outcome | Marks |
| 1. |  | What makes biomass energy so different from other energy resources? Elaborate on the current and future feedstocks for bioenergy harvesting. | CO2 | 20 |
| (OR) | | | | |
| 2. |  | Describe the steps involved in Biochemical and Thermochemical conversion of Biomass. What could the possible products in each of these conversion process? | CO1 | 20 |
| 3. |  | How would you improve Bio-oil yield in pyrolysis process? What are the typical properties of Bio-oil, and how would you upgrade its quality? | CO1 | 20 |
| (OR) | | | | |
| 4. |  | What are the advantages of torrefaction process? Describe the changes in mass/energy content after torrefaction. | CO2 | 20 |
| 5. |  | Detail the steps along with the microorganism involved in anaerobic digestion of biomass. | CO2 | 20 |
| (OR) | | | | |
| 6. |  | Under what conditions anaerobic digestion can be inhibited? Explain with example of ammonia inhibition. | CO2 | 20 |
| 7. |  | Elaborate the processes involved in atmospheric-terrestrial and atmospheric-ocean Carbon exchange. | CO2 | 20 |
| (OR) | | | | |
| 8. |  | Elaborate the different aerobic and aerobic processes involved in Nitrogen cycle. | CO3 | 20 |
|  | | **Compulsory:** |  |  |
| 9. |  | Classify the different phytoremediation technologies. What could be the desirable properties of the plant species selected for heavy metal phytoextraction? | CO3 | 20 |

ALL THE BEST