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 :** | **14BT2020** | **Duration :** | **3hrs** |
| **Sub. Name :** | **DOWNSTREAM PROCESSING** | **Max. marks :** | **100** |

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

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| Q. No. | | Questions | Course  Outcome | Marks |
| 1. | | Write a detailed account on ultrasonication, detergent solubilisation, enzyme digestion and osmotic shock. | CO1 | 20 |
| (OR) | | | | |
| 2. | | Write notes on the necessity of pretreatment of fermentation broths, the methods involved for pretreatment and explain in detail on batch filtration involving compressible cakes. | CO1 | 20 |
| 3. | | Explain in detail on membrane separation unit and different types of membrane modules with a neat labeled diagram. | CO1 | 20 |
| (OR) | | | | |
| 4. | | Express the adsorption isotherms and explain in detail about the fixed bed adsorption process. | CO2 | 20 |
| 5. | | Explain HPLC in detail. | CO2 | 20 |
| (OR) | | | | |
| 6. | | Describe the column chromatography process. | CO2 | 20 |
| 7. | | Discuss the theory of crystallization. | CO3 | 20 |
| (OR) | | | | |
| 8. | | What are the theoretical consideration for dryring of products? Also explain the different types with a neat labeled diagram. | CO3 | 20 |
|  | **Compulsory:** | |  |  |
| 9. | | Discuss the steps involved in product isolation and purification of biological products. | CO1 | 20 |

ALL THE BEST