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



**UNIVERSITY**

(Karunya Institute of Technology & Sciences)

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

**End Semester Examination – April/May – 2017**

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| **Code :** | **14BT2019** | **Duration :** | **3hrs** |
| **Sub. Name :** | **Chemical Reaction Engineering** | **Max. marks :** | **100** |

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

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Q. No.** | **Sub Div.** | **Questions** | **Course**  **Outcome** | **Marks** |
| 1. | a. | Briefly explain the classification of chemical reactions with suitable examples. | CO1 | 20 |
| (OR) | | | | |
| 2. | a. | Explain rate of reaction, molecularity and order of reaction. | CO1 | 10 |
| b. | Distinguish elementary and non-elementary reactions. | CO1 | 10 |
|  |  |  |  |
| 3. | a. | Design the equation for steady state batch reactors. | CO2 | 20 |
| (OR) | | | | |
| 4. | a. | Derive the performance equation for second order reactions. | CO2 | 20 |
|  |  |  |  |  |
| 5. | a. | Discuss about CSTR and plug flow reactor. | CO3 | 20 |
| (OR) | | | | |
| 6. | a. | Derive the performance equation for third order reaction. | CO4 | 20 |
|  |  |  |  |  |
| 7. | a. | Define RTD , explain the exit age distribution E. | CO3 | 20 |
| (OR) | | | | |
| 8. | a. | Briefly explain about the tanks in series model. | CO4 | 20 |
|  | | **Compulsory:** |  |  |
| 9. | a. | A sample of tracer hytane was injected as a pulse into a vessel and the effluent concentraction is measured as a function of time. The following data are obtained   |  |  |  |  |  |  |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | | t (min) | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 12 | 14 | | C (g/m3) | 0 | 1 | 5 | 8 | 10 | 8 | 6 | 4 | 3 | 2 | 1 | 1 | 0 |   a).Construct the C and E curve and determine the fraction of material leaving the vessel that has spent between 3 and 6 min the vessel?  b)the fraction of material leaving that has spent between 7.75 and 8.25min in the vessel? | CO5 | 20 |

ALL THE BEST