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 – Nov/Dec– 2017**

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| **Code :** | **14FP2031** | **Duration :** | **3hrs** |
| **Sub. Name :** | **DRYING TECHNOLOGY** | **Max. marks :** | **100** |

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

|  |  |  |  |  |  |  |
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| **Q. No.** | **Sub Div.** | **Questions** | **Course**  **Outcome** | | **Marks** | |
| 1. |  | A wet solid is to be dried from 35% to 10% moisture under constant drying conditions in five hours. If the equilibrium moisture content is 4% and the critical moisture content is 14%, how long it will take to dry solids to 6% moisture under the same conditions. | | CO2 | 20 |
| (OR) | | | | | |
| 2. |  | Define Psychrometry and state the significance of various lines in the psychrometry chart in detail. | | CO1 | 20 |
|  |  |  | |  |  |
| 3. | a. | Two and a half cubic meters of lumber is being dried at 60°C dry bulb temperature and 52°C wet bulb temperature. The drying rate of the lumber is 12.5 kg of water per hour. If outside air is at 27°C dry bulb temperature and 80% relative humidity, how much outside air is needed per minute to carry away the evaporated moisture? | | CO2 | 14 |
|  | b. | Differentiate humidifier and dehumidifier in terms of energy and material balance. | | CO2 | 6 |
| (OR) | | | | | |
| 4. |  | Discuss about the principle and operation of cabinet dryers with neat sketch and state its merits and demerits. | | CO1 | 20 |
|  |  |  | |  |  |
| 5. |  | Write short notes on i. Spray dryer and ii. Methods of atomization. | | CO1 | 20 |
| (OR) | | | | | |
| 6. |  | Recommend a suitable dryer for drying the feed material which is in the form of slurry and describe its construction and operation. | | CO1 | 20 |
|  |  |  | |  |  |
| 7. |  | Moist air at 50°C dry bulb temperature and 32% relative humidity enters the cooling coil of a dehumidification kiln heat pump system and is cooled to a temperature of 18°C. If the drying rate of 6 m3 of red oak lumber is 4 kg/hour, determine the kW of refrigeration required. | | CO2 | 20 |
| (OR) | | | | | |
| 8. |  | Compare Industrial dryers based on i. type of feed material used  ii. Energy consumption iii. Cost and ease of operation. | | CO1 | 20 |
|  | |  | |  |  |
|  | | **Compulsory**: | |  |  |
| 9. |  | Describe batch drying test and derive the relation between total time required and moisture content for drying in batch mode. | | CO1 | 20 |

ALL THE BEST