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**

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

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

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Q. No. | Sub Div. | Questions | Course  Outcome | Marks |
| 1. | a. | What are the applications of drying operation in food industries. | CO1 | 7 |
| b. | What is bound, unbound and free moisture content explain. | CO1 | 6 |
| c. | Discuss about the equilibrium curve for drying. | COI | 7 |
| (OR) | | | | |
| 2. | 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 | 15 |
| b. | Discuss about the Psychrometric chart and significance of various lines. | CO2 | 5 |
| 3. | a. | Explain with neat sketch the construction and operation of cabinet drying. | CO1 | 12 |
| b. | What is the principle behind osmotic dehydration and explain with one example. | CO1 | 8 |
| (OR) | | | | |
| 4. | a. | What is foam mat drying and explain the factors affecting foam mat drying. | CO1 | 12 |
| b. | Which dryer is suitable for drying coriander or curry leaf ? Substantiate your answer. | CO1 | 8 |
| 5. |  | 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) | | | | |
| 6. | a. | For drying milk, which dryer will be suitable and what are the factors that will control the drying of milk? Explain with neat sketch. | CO1 | 15 |
| b. | Write short notes on wheel atomizers and the droplet size. | CO1 | 5 |
| 7. | a. | What type of material can be dried in fluidized bed dryer? Explain with neat sketch and state the advantage and disadvantages. | CO1 | 15 |
| b. | What is the effect of operating parameters in fludized bed drying. | CO1 | 5 |
| (OR) | | | | |
| 8. |  | It is desired to dry sheet material from 55% to 4% moisture content. The sheets are 125cm x 140cm x 5cm. The drying rate during constant rate period is 1.5 g/cm2. h. The critical moisture content is 26% and the equilibrium moisture content is negligible. If the material is dried from both sides and has a bone-dry density of 4000 kg/m3, estimate the time required for drying assuming the falling rate to be linear. | CO2 | 20 |
|  | | **Compulsory**: |  |  |
| 9. |  | Slabs of paper pulp 100cm x 100cm x 1.5cm is to be dried under constant drying conditions from 67% to 30% moisture. The value of equilibrium moisture for the material is 0.5%. If the critical moisture content is 60% and the rate of drying at the critical point is 1.5 kg / (m2.h), calculate the drying time. The dry weight of each slab is 2.5 kg. All moisture contents are on wet basis. The falling rate may be assumed to be linear. | CO2 | 20 |

ALL THE BEST