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

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**End Semester Examination – Nov/Dec – 2018**

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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. | Describe batch drying test and explain various parts of the drying curve with neat sketch. | CO2 | 10 |
| b. | Derive the expression for total drying time for batch drying process. | CO1 | 10 |
| (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? | CO3 | 11 |
| b. | Define Relative humidity, humidity ratio and moisture content on dry basis. | CO3 | 9 |
|  | | | | |
| 3. | a. | 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. | CO3 | 10 |
| b. | With neat sketch explain the construction and operation of cabinet dryer with its limitations. | CO2 | 10 |
| (OR) | | | | |
| 4. | a. | What type of feed material can be dried with drum dryer?. Explain the significance of various accessories used in drum dryer. | CO2 | 10 |
| b. | Explain the operation of tunnel dryer with neat sketch. | CO2 | 10 |
|  | | | | |
| 5. | a. | What is foam mat drying? Explain various factors that affects foam mat drying. | CO3 | 10 |
| b. | Differentiate isotonic, hypertonic hypotonic solutions. | CO1 | 10 |
| (OR) | | | | |
| 6. | a. | Explain with neat sketch the principle and operation of spray dryer | CO2 | 12 |
| b. | What are the factors that will affect osmotic dehydration? | CO1 | 8 |
|  | | | | |
| 7. | a. | Write short notes on i. Microwave drying and ii. Dielectric drying. | CO2 | 12 |
| b. | What is minimum fluidization velocity in fluidized bed drying. How drying is carried out in fluidized bed drying. | CO1 | 8 |
| (OR) | | | | |
| 8. | a. | Which dryer will be suitable for drying curry and coriander leaves explain with neat sketch? | CO2 | 10 |
| b. | What is the merits and demerits of flash drying over spray drying. | CO2 | 10 |
|  | | | | |
|  | | **Compulsory**: | | |
| 9. |  | A batch of solids is to be dried from 28% to 6% moisture, on wet basis. The initial weight of the solid is 380 kg and the drying surface is 0.15m2/40 kg of dry weight. The critical moisture content is 18% dry basis and the constant drying rate is 0.32 kg/m2h. For the falling rate period, the following data are available.   |  |  |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | | Moisture content, % dry basis | 25 | 21.9 | 19 | 16 | 13.6 | 11 | 8.2 | 7.5 | 6.4 | | Rate of drying kg/m2.h | 0.3 | 0.27 | 0.24 | 0.21 | 0.18 | 0.15 | 0.07 | 0.044 | 0.025 | | CO3 | 20 |