Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER–VI • EXAMINATION – SUMMER 2014

Subject Code: 161404 **Date: 28-05-2014**

Subject Name: Food Drying & Dehydration

Time: 10.30 am - 01.00 pm

Total Marks: 70

Instructions:

1. **Attempt all questions.**
2. **Make suitable assumptions wherever necessary.**
3. **Figures to the right indicate full marks.**

Q.1 **(a)** What is drying? Give its advantages? List various dryers and discuss continuous types of dryer? **07**

(b) 10kg of food at a moisture content of 450% d.b. dried to 12% w.b. calculate the amount of water to be removed. **05**

(c) Explain natural sun drying. **02**

Q.2 **(a)** Determine the value of C and N from Henderson's equation for the following data. **07**

Relative Humidity	Temp(°C)	EMC (%) wet basis
40	50	6
80	60	12

Also define absorption and desorption isotherms.

(b) Discuss quality changes during drying? **07**

OR

(b) Explain theory of drying along with classification of dryers? **07**

Q.3 **(a)** What is selection of dryers? Explain selection of dryers. **07**

(b) Explain any two dryers. **07**

(i) Spray dryer
(ii) Vacuum dryer
(iii) Tunnel dryer

OR

Q.3 **(a)** (i) Explain constant rate and falling rate period. **03**

(ii) Define following terms. **04**

-Deep bed drying
-Specific energy consumption
-Thermal efficiency
-Dryer performance

(b) Answer the following.(any seven) **07**

(1) Give classification of food based on nutrition.
(2) List function of protein.
(3) Give importance of foods and vegetables.
(4) Give importance of heat exchanging.
(5) What is decortications?
(6) What is extraction?
(7) List various milk product.
(8) What is soft drink?
(9) Give importance of spices.

Q.4 **(a)** Convert moisture content from **04**

(i) Dry basis to wet basis
450% db

(ii) Wet basis to dry basis
72% wb

(b) Explain factors affecting drying. **03**

(c) Explain PHTC OR LSU grain dryer in detail. **07**

OR

Q.4 **(a)** What are novel dryers? Explain need of novel dryers and its approach for development. **07**

(b) (i) Explain testing of dryers. **04**

(ii) Discuss thermal properties related to drying. **03**

Q.5 **(a)** Write short notes. (any two) **06**

(i) Unheated dryers

(ii) Tray dryer

(iii) Flat bed type dryer

(b) Answer the following. (any four) **08**

(1) What are heated dryers?

(2) Give working of drum dryer.

(3) Explain role of moisture content in grain storage.

(4) Explain hysteresis phenomenon.

(5) What is design of dryer?

OR

Q.5 **(a)** Give effect of condition on structural properties. **04**

(b) List widely used dryers with their drying conditions. **04**

(c) What is equilibrium moisture content? Give its importance and explain EMC determination. **06**

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