

**Ph.D. IN DAIRY SCIENCE AND TECHNOLOGY
(PHDDR)**

Term-End Examination

June, 2015

00010

**RDR-005 : DEVELOPMENTS IN DAIRY
PROCESSING**

Time : 3 hours

Maximum Marks : 100

Note : *Attempt any five questions. All questions carry equal marks.*

1. What is water activity ? How is the concept useful in determining the properties of dairy products ? How can one control water activity to increase shelf life of foods ? 2+10+8
2. What are formulated foods ? How do they differ from fortified foods ? Suggest a technical programme with complete list of ingredients and technology for formulating a product as a convenient ready-to-eat breakfast option. 3+3+14
3. Explain the process of extrusion cooking. With the help of a neatly labelled diagram, describe the design and working of an extruder. Enumerate some applications of the process. 7+10+3

4. Enumerate and explain the modern food packaging techniques. How will biodegradable and edible packaging benefit the food industry ? Explain with examples. 13+7

 5. Define D, Z, F and Q_{10} values and explain how they are interrelated. How are these values useful in determining the lethality of thermal processing ? 16+4

 6. What is the importance of cleaning and sanitisation in a dairy ? What are the commonly used detergents and sanitizers ? Outline a line diagram for the sequence of cleaning of dairy equipments by CIP. 5+7+8

 7. What are the latest developments in drying of foods ? How would you compare the quality of milk powders obtained by spray drying and freeze drying ? List the functional properties of milk powders. 5+10+5
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