

# KERALA AGRICULTURAL UNIVERSITY

B.Tech (Food.Engg) 2012 Admission

VI<sup>th</sup> Semester Final Examination- June/July -2015

Cat. No: Fden.3209

Title: Food Process Equipment Design and Layout (1+1)

Marks: 80

Time: 3 hours

**A Fill in the blanks**

(1×10=10.0)

1. Disc type atomizer is used for..... material
2. Mechanical re-compression is used for.....evaporator
3. To determine the freezing time .....law is used
4. Oily material can be extruded using .....type of extruder
5. ....is the product of cold extruding
6. Reduction roll is used in .....processing
7. The steam economy is higher in ..... evaporator
8. The falling film evaporator is used for ..... liquid food
9. Plenum chamber is used for.....
10. Exhausting is used in .....processing

**B Answer any eight**

(3×10=30.0)

1. Write the principles used to design storage tanks
2. Write the types of homogenizers and it uses
3. Mention the principles of a water cooler design
4. Describe the spray dryers and its design principles
5. Write the design consideration of freezers.
6. Define extrusion, differentiate single and twine screw extruders
7. Write the objectives of plant layout
8. How to estimate the peak load
9. Concepts of single and multiple effect evaporators
10. Write five steps involved in the scaling up food processing equipments

11. Enumerate the size reduction machinery layout
12. Mention the types of machinery used for separation of products by shape and color write their principles

**C Answer any six**

**(6×5=30.0)**

1. Discuss the construction and design of pressure vessels
2. Explain the design and selection of food processing equipments.
3. Explain the design and working operation of a ball mill.
4. Give in detail about preparation of machinery layout for fruit and meat processing
5. What are the steps involved in the design of a shell and tube heat exchanger?
6. Write about organization and trends in plant layout. Also, draw a sample layout for meat processing.
7. Describe the factors to be considered for optimization of design of various processing equipments
8. Discuss different types of driers and selection of driers for processing.

**D Answer any one question**

**(10×1=10.0)**

1. Derive the design parameters for a double effect evaporator using standard assumptions with a neat sketch

OR

2. Explain about baking oven and frying plant types and their concepts. Also, draw a layout for frying plant and explain the processes.