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Question Paper Code: U3A02

B.E./B.Tech. DEGREE EXAMINATION, APRIL 2024

Third Semester

Agriculture Engineering

21UAG302– UNIT OPERATIONS IN AGRICULTURAL PROCESSING

(Regulations 2021)

Duration: Three hours

Maximum: 100 Marks

Answer ALL Questions

PART A - (10 x 1 = 10 Marks)

- _____ is the methods to protect food from unwanted microbial growth. CO1- U
(a) Food preservation (b) Food processing (c) Sterilization (d) Pasteurization
- _____ is used to separate a solid that has not dissolved in a liquid. CO1- U
(a) Filtration (b) Distillation (c) Evaporation (d) Crystallization
- Solid particles are retained on septum as a layer of solids called as _____. CO1- U
(a) Slurry (b) Filter medium (c) Cake (d) All the above
- In sedimentation, the particles fall from rest due to..... CO1- U
(a) Drag force (b) Force of gravity (c) Stokes law (d) None of the above
- Size reduction is also called as..... CO1- U
(a) Comminution (b) Pulverization (c) Diminution (d) All of the above
- What are the size reduction laws? CO1- U
(a) Rittingers law (b) Kicks law (c) Bonds law (d) All of the above
- Convective mixing is also called..... CO1- U
(a) Macro mixing (b) Micro mixing (c) Shear Mixing (d) All of the above
- What are the factors affecting mixing? CO4- U
(a) Particle size (b) Particle shape (c) Particle attraction (d) All the above

9. How to extract oil from cinnamon CO1- U
- (a) Fractional distillation (b) Destructive distillation
- (c) Simple distillation (d) Steam distillation
10. Which of the following is crystallization CO1- U
- (a) Solid-solid separation (b) Solid-liquid separation
- (c) Solid-gas separation (d) Liquid- gas separation

PART – B (5 x 2= 10 Marks)

11. Describe law of conservation of mass with suitable example. CO1- U
12. Explain about filter aid CO1- U
13. Write importance and negative features of size reduction. CO1- U
14. List out the mechanism of solid mixing and explain any of them CO1- U
15. What are all the factors affect the crystallization process? CO1- U

PART – C (5 x 16= 80 Marks)

16. (a) Explain about different unit operations are involved in food processing? CO1-U (16)
- Or
- (b) Explain multiple effect evaporators with suitable diagram? CO1-U (16)
17. (a) Give detail about pressure leaf filter. CO1-U (16)
- Or
- (b) Explain constant rate of filtration, constant pressure filtration and types of filter. CO1-U (16)
18. (a) Enumerate the size reduction equipment with suitable diagram. CO2-App (16)
- Or
- (b) Discuss about liquid food size reduction equipment. CO1-U (16)
19. (a) Discuss about solid mixing and explain equipment used in solid mixing. CO1-U (16)
- Or
- (b) Discuss about liquid mixing and explain equipment used in liquid mixing. CO1-U (16)

20. (a) Explain about process and uses of crystallization, and define its types. CO1-U (16)
- Or
- (b) Demonstrate the operation and process of batch distillation with its advantages and limitations. CO2-App (16)

