A **Reg. No. :** | | | | | | | | | | |

Question Paper Code: 53A02

B.E. / B.Tech. DEGREE EXAMINATION, APRIL 2019

Third Semester

Agricultural Engineering

15UAG302 - UNIT OPERATIONS IN AGRICULTURAL PROCESSING

(Regulation 2015)

Duration: Three hours Maximum: 100 Marks

Answer ALL Questions

PART A - (10 x 1 = 10 Marks)

1. The most effective evaporator type is CO1- R

   (a) Plate (b) Rising film (c) Falling film (d) Shell and tube

2. _____is the formula used for converting temperature from Fahrenheit to CO1- R

   (a) ^{0}C=5/9(F-35) (b) ^{0}C=5/9(f-32) (c) ^{0}C=9/5(f-35) (d) ^{0}C=9/5(f-32)

3. Filtration is a process for separating CO2-U

   (a)Soluble solids from liquids (b) Insoluble solids from liquids

   (c) Immiscible liquids from liquids (d) None of the above

4. Psychrometric chart represents _____ properties of air. CO2- U

   (a) Thermodynamic (b) Aerodynamic

   (c) Physico-chemical (d) Hygroscopic

5. Separation of liquids from solids by the application of pressure is known as: CO3- U

   (a) Extraction (b) Expression (c) Filtration (d) Leaching

6. According to which law, the energy required for size reduction is proportional to the change in surface area CO3- R

   (a) Kick's law (b) Rittinger's law (c) Bond's law (d) All the above

7. A point where solid, liquid and vapour phase of substance exist is called — CO4- R

(a) Melting point (b) Triple point (c) Boiling point (d) Critical point

8. A group of separation operations which are used in food processing can be called _____ separations. — CO4- R

(a)Mechanical (b) Physical (c) Contact equilibrium separation (d) Centrifugal

9. In the terminal velocity equation $V=[\{2W(\rho_{p-}\ \rho_f)\}/\ \rho_p\ \rho_f\ A_pC]^{1/2}$ notation Ap represents _____. — CO5- R

(a) Surface area of particle (b) Projected area of a particle

(c) Total area of a particle (d) Circumferential area of a particle

10. _____is a separation process, separating components in a mixture by making use of the fact that some components vaporize more readily than others. — CO5- R

(a) Crystallization (b) Distillation (c) Evaporation (d) None of these

PART – B (5 x 2= 10Marks)

11. List the basic factors that responsible for enhancing the rate of evaporation — CO1- R

12. Define sedimentation process — CO2- U

13. State the role of attrition in size reduction. — CO3- R

14. List out a few processing equipments with their application. — CO4- U

15. Describe vacuum distillation. — CO5- U

PART – C (5 x 16= 80Marks)

16. (a) Explain in detail about the performance and working principle of falling film, forced circulation and agitated film evaporator. — CO1- U — (16)

Or

(b) Describe the types of evaporators with neat sketches. — CO1- U — (16)

17. (a) Explain the different types of filtration equipment and its application in food processing. — CO2- U — (16)

Or

(b) Explain the different types of evaporators and equipment and its application in food processing — CO2- U — (16)

18.	(a)	Explain in detail about types of grinders with neat sketch	CO3-Ana	(16)
		Or		
	(b)	Explain in detail about size reduction and equipments used for size reduction with relevant diagrams.	CO3- Ana	(16)
19.	(a)	Explain in detail about types of equipment for leaching with neat sketch	CO4- U	(16)
		Or		
	(b)	With a neat sketch explain about explosive forming process. State its advantages and limitations.	CO4- U	(16)
20.	(a)	Discuss about types of crystallization equipment with neat sketch	CO5- U	(16)
		Or		
	(b)	Describe the working principle of batch, steam, vacuum and differential distillation process with neat sketch.	CO5- U	(16)