

Reg. No. :

--	--	--	--	--	--	--	--	--	--

**Question Paper Code: 53A02**

B.E. / B.Tech. DEGREE EXAMINATION, DEC 2020

Third Semester

Agricultural Engineering

15UAG302 - UNIT OPERATIONS IN AGRICULTURAL PROCESSING

(Regulation 2015)

Duration: One hour

Maximum: 30 Marks

PART A - (6 x 1 = 6 Marks)

**(Answer any six of the following questions)**

1. Energy balances are often complicated because forms of energy can be \_\_\_\_ CO1-R  
(a) Inter connected (b) Inconvenient (c) Inter converted (d) Incorporated
2. A linear relationship exists between the \_\_\_\_\_ at which two solutions CO1-R  
exert the same vapour pressure.  
(a) Volumes (b) Pressure difference (c) No. of moles (d) Temperatures
3. A shape factor is defined as \_\_\_\_\_. CO1-R  
(a)  $q/p$  (b)  $D/p$  (c)  $Dq$  (d)  $QP$
4. Rate of filtration is defined as \_\_\_\_\_. CO2 -R  
(a) Resistance / Driving force (b) Driving force / Resistance  
(c) Driving force / conductance (d) Conductance / Driving force
5. Which of the following law reported the power requirement for crushing CO3 -R  
operation?  
(a) Classius (b) Bond (c) Kick (d) Rittinger
6. Roller mills have \_\_\_\_\_. CO3 -R  
(a) Pins (b) Rolled sheets  
(c) Finely fluted rolls (d) Rolled balls of different Sizes

7. The solvent rich phase is called as \_\_\_\_\_ CO4 -R  
 (a) Raffinate (b) Solute (c) Solvent (d) Extract
8. The simple \_\_\_\_\_ process includes separation of two immiscible liquids. CO4 -R  
 (a) Leaching (b) Expression (c) Extraction (d) Sedimentation
9. Concentrations can be expressed in \_\_\_\_\_. CO5- U  
 (a) Mole fraction (b) Distillation (c) Filtration (d) Crystallisation
10. The simple distillation is effective only when the liquid boiling points differ greatly by \_\_\_\_\_. CO5- U  
 (a) 15°C (b) 25°C (c) 35°C (d) 45°C

PART – B (3 x 8= 24 Marks)

**(Answer any three of the following questions)**

11. Explain the process involved in engineering unit operations such as CO1-U (8)  
 (i) Evaporation  
 (ii) Filtration
12. Define filtration. Explain the factors affecting filtration with an expression. CO2-U (8)
13. Explain the laws regarding the crushing efficiency of agricultural product with an illustration. CO3-U (8)
14. Skim milk is prepared by the removal of some of the fat from whole milk. This skim milk is found to contain 90.5% water, 3.5% protein, 5.1% carbohydrate, 0.1% fat and 0.8% ash. If the original milk contained 4.5% fat, Calculate its composition assuming that fat only was removed to make the skim milk and that there are no losses in processing. CO4-App (8)
15. Explain crystallization and stage equilibrium CO5-U (8)

