KERALA AGRICULTURAL UNIVERSITY
B.Tech.(Food Engg) 2017 Admission
IV Semester Final Examination-June 2019

Fden.2207 **Unit Operations in Food Engineering (2+1)**

Marks: 50
Time: 2 hours

I **Fill up the blanks** **(10x1=10)**

1 Dimensions are measured in terms of --------.
2 The overall mass balance for a single effect evaporator is given by m_f = ---------.
3 The critical speed of ball mill is given by $\mathbf{n_c}$ = -------.
4 The liquid phase remaining after the formation of the crystals is called as ---------.
5 Fractional distillation is carried out in ----------unit.

State True or False

6 McCabe – Thiele plot is used in Contact Equilibrium separation.
7 Liquid CO_2 is otherwise known as dry ice.
8 Washing is almost identical to extraction.
9 Filtration rate depends on the pressure drop across the filter medium.
10 The simple distillation works in a continuous mode.

II **Write short notes on ANY FIVE** **(5x2=10)**

1 Unit operation.
2 Comminution.
3 Working of cyclone separator.
4 Principle of constant pressure filtration.
5 Differentiate distillation and evaporation.
6 Nucleation.
7 Extrusion cooking.

III **Answer any FIVE of the following.** **(5x4=20)**

1 The mass and energy balance for a multiple effect evaporator.
2 The power required to grind wheat having initial grain size of 4.33 mm to final flour particle size of 0.351 mm is 8 kW. The feed rate is 200 kg/h. Calculate the power required to grind the same wheat to 0.157 mm by the same mill using Rittinger's Law.
3 Ultra filtration and mention its application in food industry.
4 Explain the leaching process with a diagram.
5 Flash distillation process.
6 Construction and working of an evaporative crystallizer.
7 Application of food irradiation process.

IV **Answer any ONE of the following** **(1x10=10)**

1 Various evaporators used in food industry.
2 Various particle mixing and liquid mixing equipments.

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