

Total No. of printed pages = 6

FPT-601/FEO-II/6th Sem/2017/N

FOOD ENGINEERING OPERATIONS – II

Full Marks – 70

Time – Three hours

The figures in the margin indicate full marks
for the questions.

GENERAL INSTRUCTIONS

1. Answer all question from PART – A and any *five* questions from PART – B.
2. Illustrate your answers with suitable sketches and examples wherever necessary.
3. Make suitable assumption(s) wherever, whenever applicable.
4. Preferably, write the answers with sequential order.

[Turn over

PART - A

1. Match the column :

5

Column - A	Column - B
(a) Harkin-Zura Equation	(i) Screening and cleaning
(b) Falling rate period	(ii) Infra-red moisture meter
(c) Bond's Law	(iii) Size reduction
(d) Tromel	(iv) Equilibrium moisture content
(e) Moisture content	(v) Drying

2. Multi-choice questions :

1×10=10

(i) Drying of fruit pulp can be accomplished by a

- (a) Tray dryer
- (b) Fluidized bed dryer
- (c) Drum dryer
- (d) Spray dryer

(ii) Psychometric chart is used to determine the following property of air :

- (a) Relative humidity
- (b) Humidity ratio
- (c) Both (a) and (b)
- (d) None of the above

(iii) Psychometric chart is made for

- (a) Any pressure
- (b) One atmospheric pressure
- (c) Below 1 atmosphere
- (d) Above 1 atmosphere

(iv) Pascal is a unit of

- (a) Displacement
- (b) Temperature
- (c) Pressure
- (d) Viscosity

- (v) Microwave oven as dryer is best example of
- (a) Radiation drying
 - (b) Di-electric drying
 - (c) Pneumatic drying
 - (d) Vacuum drying
- (vi) Law of grinding which is more applicable for fine grinding is
- (a) Bond's Law
 - (b) Kick's Law
 - (c) Ratzinger's law
 - (d) None of the above
- (vii) One of the following is not a physical property of food materials
- (a) Porosity
 - (b) Specific gravity
 - (c) Specific heat
 - (d) Frontal area

(viii) Preheating temperature ($^{\circ}\text{C}$) of milk before pasteurization is

- (a) 30-35 (b) 35-40
(c) 40-45 (d) 45-50

(ix) Belt conveyor is used in

- (a) Material transportation over long distance
(b) Material transportation within the premises
(c) Both (a) and (b)
(d) Lifting of materials

(x) In twin screw extruder, screw extruders run at speed of

- (a) 100-400 rpm (b) 20-60 rpm
(c) 10-20 rpm (d) None of the above

3. Define the following :

$2 \times 5 = 10$

- (a) Dew point temperature
(b) Henderson's law of EMC
(c) Hysteresis effect
(d) Sensible cooling
(e) Baking.

PART - B

Answer any *five* questions from the following :
9×5=45

1. What do you mean by moisture content ? Discuss different types of moisture content determination methods.
2. Differentiate the following :
 - I. Dry bulb-temperature and Wet-bulb temperature
 - II. Constant rate period and falling rate period.
3. How do you classify various evaporation equipment ? Describe forward feeding method (with diagram) in a multiple effect evaporator.
4. What do you mean by EMC ? Write down the different models associated with EMC of food materials.
5. Describe principles of drying. Discuss different factors which effect drying characteristics.
6. Write down the effect of freezing and frozen storage on product quality.
7. With neat labelled diagram draw spray dryer.