Code No: R1631353   **R16**   SET - 1

III B. Tech I Semester Regular Examinations, October/November - 2018
AGRICULTURAL PROCESS ENGINEERING
(Agricultural Engineering)

Time: 3 hours   Max. Marks: 70

Note: 1. Question Paper consists of two parts (**Part-A** and **Part-B**)
2. Answer **ALL** the question in **Part-A**
3. Answer any **FOUR** Questions from **Part-B**
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PART –A

1. a) Define work index. [2M]
   b) Explain the working of paddle agitator. [3M]
   c) Define terminal velocity. [2M]
   d) What is equilibrium moisture content (EMC)? [2M]
   e) What is parboiling of paddy? [3M]
   f) Explain the working principle of a belt conveyor. [2M]

PART -B

2. a) In a wheat milling experiment it was found that to grind 4.33 mm sized grain to IS sieve 35 (0.351 mm opening), the power requirement was 8 KW. Calculate the power requirement for milling of wheat by the same mill to IS sieve 15 (0.157 mm opening) using (1) Rittinger's law and (2) Kick's law. Feed rate of mill is 200 kg/h [7M]
   b) Explain the process for determination of average particle size by sieve analysis. [7M]

3. a) Derive an expression for mixing index. [7M]
   b) Explain different mixers for dry powders and particulate solids. [7M]

4. a) Derive an expression for effectiveness of a screen. [7M]
   b) Explain the working of disk separator and indented cylinder separator. [7M]

5. a) Explain the working of fluidized bed dryer with a neat sketch. [7M]
   b) A fruit is dried from 85% to 40% moisture (wet basis). Express the moisture on a dry basis and calculate the amount of water that is removed from 1000 kg of product. [7M]

6. a) Derive an expression for pressure drop in constant pressure filtration. [7M]
   b) Explain the processes involved in wheat milling with a detailed flow chart. [7M]

7. a) Explain the operation of Pneumatic conveying system with a neat sketch [7M]
   b) Explain the working of bucket elevator and discharge methods bucket elevators with a neat sketch. [7M]

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