53 (FPT 402) FPTC-II

2017

CEREALS & LEGUMES PROCESSING TECH.

Paper : FPT-402

Full Marks : 100

Time : Three hours

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

Answer ***any five*** *questions.*

Instructions :

* Preferably, write the answer in sequential order.
* Make suitable assumption(s), wherever applicable.
* Illustrate your answer with suitable sketches and examples.

1. *(a)* In a wheat milling experiment it was found that to grind 4·33*mm* sized grains 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

(i) Rittinger's law

(ii) Kick's law.

Feed rate of milling is 200 *kg/hr.* 10

(b) Air carrying particles of density 1200 kg/m^3 and an average diameter of 25 micron enters a cyclone of 600*mm* diameter of linear velocity of 20*m/sec.* Calculate the centrifugal force acting radially in the cyclone and the separation factor of the cyclone. 10

2. *(a)* A sand mixture was screened through a standard 12 *mesh* screen. The mass fraction of the oversize material in Feed, overflow and underflow were found to be 0·4, 0·8 and 0·2 respectively. Calculate the screen effectiveness based on the oversize materials. 10

(b) Explain in detail, the construction and working of vertical whitening cone with neat sketches. 10

3. (a) What do you mean by Parboiling ? Narrate different steps of parboiling. Write down 2-advantages and 2-disadvantages of parboiling. 10

(b) Briefly discuss post-harvest quantity and quality losses of cereals and pulses. 10

4. (a) Name the properties of solids affecting the size-reduction operation. Give *four* examples of Coarse-Crusher equipment. 10

(b) Draw line diagram of CFTRI Process of pulse milling. 10

5. Write short notes on : 4×5=20

(i) Malting of barley

(ii) Cyclone separator

(iii) Bond's law for size reduction

(iv) Trommel

6. Differentiate the following : 4×5=20

(i) Jaw crusher and Gyratory Crusher.

(ii) Hand wheat and soft wheat.

(iii) Actual screen and Ideal screen.

(iv) Drying and Dehydration.

7. (a) Draw a basic flow chart of rice processing in a modern mill. 10

(b) Discuss comparative cost-analysis of raw and parboiled rice. 10