



End Semester Examination – Nov/Dec – 2016

Code : **14FP2013**
Sub. Name : **Storage Engineering**

Semester : **2016-17 ODD**
Duration : **3hrs**
Max. marks : **100**

ANSWER ALL QUESTIONS (5 x 20 = 100 Marks)

| Q. No. | Sub Div. | Questions | Course Outcome | Marks |
|--------|----------|--|----------------|-------------|
| 1. | a. | Deduce the need of a weir or sprout mechanism in a fluidized bed dryer? | CO2 | 5 |
| | b. | Interpret the action of fluidization in a dryer? | CO2 | 5 |
| | c. | Paraphrase the different possible configurations or arrangements that can be given within a thin layer drying system with respect to the Air Flow Vs Grain Flow. | CO1 | 10 |
| (OR) | | | | |
| 2. | a. | Illustrate the 3 different systems that are an important part of the “natural-air-drying system”? | CO2 | 5 |
| | b. | Visualize an energy balance for an open-air sun drying of grain. | CO1 | 5 |
| | c. | Briefly, summarize the functioning of the Spouted Bed Drying? What can be the solutions in terms of design to have better drying rates while operating a Sprouted Bed Drying System? | CO2 | 10 |
| 3. | a. | Summarize the different Traditional storage structures. | CO3 | 10 |
| | b. | If 100kg of grain is dried from a moisture content of 28% to 14%, what is the moisture shrink and effective reduction in weight of the grain? | CO2 | 5 |
| | c. | How does EMC of the grain influence storage? (Use the dry Vs humid comparison). | CO2 | 5 |
| (OR) | | | | |
| 4. | a. | Briefly, summarize the functioning of the following types of dryers with neat sketches.) i. Non-Mixing Thin-Layer Dryer ii. Mixing Thin-Layer Dryer iii. Deep Bed Dryer | CO3 | 5 5 5 |
| | b. | What are the properties on which the magnitude of absorbed radiation by grain depends on? | CO1 | 5 |
| 5. | a. | Derive the different types of pressure distribution theories that are used to calculate the pressure load on a grain silo. | CO3 | 20 |
| (OR) | | | | |
| 6. | a. | Illustrate the different parts of a wheat Kernel with suitable sketches. Examine why each of these parts are important to human nutrition. | CO1 | 10 |
| | b. | Deduce why old grains generate stale odor? | CO1 | 5 |
| | c. | Illustrate the Migration of Moisture in a grain silo during winter & summer | CO1 | 5 |
| 7. | a. | Outline the process of manufacturing thermoformed trays using suitable diagrams. | CO3 | 10 |
| | b. | Name the part of the Wheat Kernel that is referred to as the “embryo”. Justify why that part of the wheat kernel is removed during the milling process? | CO2 | 5 |
| | c. | Describe the type of protein found in wheat kernel? What is its response to temperature? | CO2 | 5 |
| (OR) | | | | |
| 8. | a. | Role-play the working sequence of a chamber machine used for MAP | CO2 | 5 |

| | | | | |
|----|----|--|-----|-----------|
| | | application? | | |
| | b. | Paraphrase the physical properties of grain that are of consequence while designing storage structures for grains. Your answer should define each property, mention the method of measurement and relate its significance in designing structures. | CO2 | 15 |
| | | <u>Compulsory:</u> | | |
| 9. | a. | Elaborate upon the different Pests that are commonly found in stored (or) pantry foods. | CO3 | 20 |

ALL THE BEST