AMAG09 CROP PROCESS AND DRYING AND STORAGE ENGG.

UNIT-1 SCOPE AND IMPORTANCE OF FOOD PROCESSING

1.1 Post-harvest losses, principles and methods of food processing. Processing of farm crops; cereals, pulses, oil seeds, fruits and vegetables and their products for food and feed.
1.2 Processing of animal products, minimal processing,
1.3 Principle of size reduction, grain shape, size reduction machines; crushers, grinders, cutting machines etc.
1.4 Operation, efficiency and power requirement – Rittinger's, Kick' s and Bond' s equation, fineness modulus.

UNIT-2 THEORY OF MIXING

2.1 Types of mixtures for dry and paste materials, rate of mixing and power requirement,
2.2 Mixing index. Theory of separation, size and unsized separation, types of separators,
2.3 Size of screens, sieve analysis, capacity and effectiveness of screens, pneumatic separation.

UNIT-3 MICROWAVE AND DIELECTRIC HEATING

3.1 Extrusion processing, Scope & importance of material handling devices,
3.2 Study of different types of material handling systems; - belt, chain and screw conveyor,
3.3 Bucket elevator, pneumatic conveying, gravity conveyor design consideration,
3.4 Capacity and power requirement.

UNIT-4 MOISTURE CONTENT AND METHODS FOR DETERMINATION

4.1 Importance of EMC and methods of its determination, EMC curve and EMC model, principle of drying, theory of diffusion, mechanism of drying- falling rate,
4.2 Constant rate, thin layer, deep bed and their analysis, critical moisture content, drying models, calculation of drying air temperature and air flow rate,
4.3 Air pressure within the grain bed, Shred' s and Hukill' s curve, different methods of drying including puff drying, foam mat drying, freeze drying, etc.
4.4 Study of different types of dryers- performance, energy utilization pattern and efficiency, study of drying and dehydration of agricultural products.

UNIT-5 TYPES AND CAUSES OF SPOILAGE IN STORAGE

5.1 Conditions for storage of perishable products, functional requirements of storage,
5.2 Control of temperature and relative humidities inside storage,
5.3 Calculation of refrigeration load; modified atmospheric storage and control of its environment, air movement inside the storage,
5.4 Storage of grains: destructive agents, respiration of grains,
5.5 Moisture and temperature changes in stored grains; conditioning of environment inside storage through different methods,
5.6 Warehouse - design and control of environment.

5.7 Storage condition for various fruits and vegetables under cold and CA storage system. Economic, aspects of storage.

Reference Books:

1. Multon,J.L. (1989). Preservation and Storage of Grains, Seeds and their By-Products: Cereals, oil Seeds, Pulses and Animal Feed. CBS Publishing and Distributions, Delhi.
2. Ooraikul, B and Stiles, M.E. (1992). Modified atmosphere Packaging of Food. Ellis
3. Pande,P.H. (1994). Principles of Agricultural Processing- A Text Book. Kalyani
4. Ryall Lipton. (1989). Handling, Transportation and Storage of Fruits and Vegetables (Vol. 1 and 2). AVI Publishing Co., West Port, USA.