Pharm. Engineering-II (15PH402)
THEORY

UNIT -I

1. Fluid Flow: Type of flow, Reynold's number, Viscosiy, concept of boundary layer, basic equations of fluid flow, valves, flow meters, manometers and measurement of flow and pressure. Application of fluid flow. A few numerical problems may be solved.

2. Dehumidification and Humidity Control: Basic concepts and definition, wet bulb and adiabatic saturation temperature, psychrometric chart and measurement of humidity, application of humidity, measurement in pharmacy, equipments of dehumidification operations.

UNIT -II

3. Material Handling Systems:

Liquid handling – different types of pumps.

Gas handling – various types of fans, blowers and compressors.

Solid handling – Conveyers

UNIT -III

4. Crystallization: Characteristics of crystals like – purity, size shape, geometry, habit, forms size and factors affecting them. Solubility curves and calculation of yields, material and heat balances around Swenson Walker Crystalizer. Supersaturation theory and its limitations, nucleation mechanisms, crystal growth, study of various types of crystallizer, tanks, agitated batch, Swenson Walker, single vacuum, circulating magma and Krystal crystallizer, caking of crystals and its prevention, numerical problems on yields.

UNIT -IV

5. Materials of Construction: General study of composition, corrosion, resistance, properties and applications of materials of construction with special reference to stainless steel and glass.

6. Industrial Hazards and safety Precautions: Mechanical, Chemical, Electrical, fire and dust hazards, industrial dermatitis, accident records etc.

UNIT -V

7. Centrifugations: Principles of centrifugation, classification of centrifuges industrial centrifugal filters and centrifugal sedimenters such as perforated basket centrifuge, semicontinuous centrifuge, super centrifuge, De laval clarifier.

RECOMMENDED BOOKS:

1. Cooper and Gunn's Tutorial Pharmacy Edited by S.J.Carter (CBS Publishers, Delhi)
2. Pharmaceutical Engineering by K.Sanbamurty (New Age International, New Delhi)
3. Chamical Engineering by Badger and Banchero (Mc Graw Hill, New Delhi)
4. Pharmaceutical Dosage forms by Aulton.(Churchill Livingstone, Edinburg)
5.Pharmaceutical engineering(principles and practice) by C.V.S. Subramanyam,J. Thimma Setty,Sarasija Suresh,Mrs V.Kusum Devi

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Pharm. Engineering-II
PRACTICAL 3 hours/ week
(A minimum of 15 experiments shall be conducted)

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1. Determination of rate of evaporation.
2. Determination of overall heat transfer coefficient.
3. Experiments based on steam, extractive and azeotropic distillations.
4. Experiments based on determination of radiation constant.
5. Experiments based on sieve analysis.
6.Experiments based on size reduction using ball mill
7. Experiments to illustrate the influence of various parameters on the rate of drying.
8.Measurement of flow of Determination of rate of drying, free moisture content and bound moisture content.
9. Experiments to illustrate solid – solid mixing, determination of mixing efficiency using different types of mixers.
10.fluids and their pressure, determination of Reynolds number.
11. Determination of humidity – use of Dry Bulb and Wet Bulb temperatures and Psychrometric charts.
12. Experiments to demonstrate applications of centrifugation.
13. Experiments based on crystallization.
14 .Other experiments based on theory.