

GUJARAT TECHNOLOGICAL UNIVERSITY
B.Pharm. Sem-I Examination December 08/January 09

Pharmaceutics-I (210005)

DATE: 29-12-2008, Monday TIME: 11.00 am to 2.00 p.m. MAX. MARKS: 80

Instructions:

- 1. Attempt any five questions.**
- 2. Make suitable assumptions wherever necessary.**
- 3. Figures to the right indicate full marks**
- 4. Draw labelled diagrams wherever required.**

- Q.1.(a)** Define: Filtration **01**
- (b) Explain factors affecting filtration. **05**
- (c) A rotary filter rotates at the speed of 2rpm. The fraction of total filtering area immersed in the slurry is 0.20. Under the given operating conditions, it delivers 1.5 cubic feet of filtrate per minute per square feet of submerged area. If 6 feet cube of the filtrate is delivered per revolution by this rotary filter, what is the total area of the filter cloth on the drum? **05**
- (d) Explain in brief centrifugal effect. Enumerate applications of centrifugation in pharmacy. **05**
- Q.2.(a)** Define centrifugation. **01**
- (b) Explain the construction, working, advantages and disadvantages of perforated basket centrifuge. **05**
- (c) Write a brief note on cartridge filters. **05**
- (d) Explain the construction and working of filter-press. **05**
- Q.3.(a)** Define: Evaporation. **01**
- (b) Draw a labelled diagram of falling film evaporator. Describe it in brief. **05**
- (c) Explain factors affecting rate of evaporation. **05**
- (d) Explain: Volatility and Relative Volatility. Enumerate ideal requirements of a condenser. **05**
- Q.4.(a)** Define: Distillation. **01**
- (b) Write a brief note on distillation columns (fractionating columns). **05**
- (c) A liquid mixture of ethyl alcohol and water is in equilibrium with a vapour containing ethyl alcohol and water at a total pressure of 760mm Hg. A sample of vapour indicates that it contains 3.3 moles of ethyl alcohol for every 1.7 moles of water. If the liquid has a mole fraction 0.52 of ethyl alcohol, what is the relative volatility of the mixture? **05**

- (d) Explain: (i) Duhring's Rule (ii) Raoult's Law. **05**
- Q.5.(a)** Define: Equilibrium Moisture Content (EMC). **01**
- (b) Explain factors affecting selection of dryers used in manufacturing of pharmaceutical products. **05**
- (c) Draw the drying rate curve and explain the different stages in drying of solids. **05**
- (d) Explain the term "Refrigerant". Enumerate ideal properties of refrigerant. **05**
- Q.6.(a)** Define: Percentage relative humidity (%RH). **01**
- (b) Explain the advantages of protecting Pharmaceutical Products from atmospheric humidity during their manufacturing and storage. Suggest some methods of humidity control. **05**
- (c) What is Lyophilisation? Explain in brief applications of lyophilisation. **05**
- (d) Explain construction and working of "Fluidizer Bed Dryer" **05**
- Q.7.(a)** Suggest one application of the following: **04**
- (i) Membrane Filter (ii) Leaf Filter
- (iii) Tray dryer (iv) Spray Dryer
- (b) Explain the term: "Adiabatic Condition". **02**
- (c) State whether the following sentences are true or false. **10**
Justify your answer.
- (i) Separation in centrifuge is based on the difference in densities.
- (ii) Azeotropic mixture of Ethanol and Water cannot be separated by simple distillation process.
- (iii) Thermolabile substances can be dried using microwave oven.
- (iv) Silica Gel can be used as a refrigerant.
- (v) Rate of filtration increases with increase in temperature of slurry.
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