UKA TARSADIA UNIVERSITY

B.Pharm. (I Semester) University Examination – June - 2012

030020104 - Pharmaceutics I (Unit Operations I)

Max. Marks: 70

Instructions:
1. Attempt all questions.
2. Write each section in a separate answer book.
3. Make suitable assumptions wherever necessary.
4. Figures to the right indicate full marks.
5. Draw diagrams/figures whenever necessary.

Section-1

Q-1 (A)   Do as directed: **[07]**
    I. Define filter medium.
    II. Explain the effect of viscosity of fluid on rate of filtration.
    III. Define centrifugation.
    IV. Explain critical speed of centrifuge.
    V. What is the composition of membrane filter?
    VI. Write formula for economy of an evaporator.
    VII. Write the principle of short tube film evaporator

Q-1 (B)   Answer the following in brief: (Any 4)   **[08]**
    I. Write ideal properties of filter aids.
    II. Classify filter media.
    III. Classify centrifuges.
    IV. Draw neat and labeled diagram of non perforated centrifuge
    V. Classify evaporators.
    VI. Draw neat and labeled diagram of evaporating pan.

Q-2   Answer the following: **[10]**
A) Write advantages, disadvantages and applications of plate and frame filter press.
<div align="center">**OR**</div>
A) Write advantages, disadvantages and uses of multiple effect evaporators.

B) Describe construction and working of rotary drum filter.
<div align="center">**OR**</div>
B) Describe construction and working of short tube evaporator.

Q-3   Answer the following in detail. (Any 2)   **[10]**
A) Explain Meta filter.
B) Describe perforated basket centrifuge.
C) Write a note on Falling Film Evaporator.

Section-2

Q-4 (A)   Do as directed: [07]

    I. A distillation column containing 15 bubble-cap trays has been tested and has been found to be capable of producing a total separation equivalent to 11.5 theoretical stages. Calculate Over all plate efficiency.

    II. Define Relative humidity.

    III. What do you understand by enriching section and stripping section of a distillation column?

    IV. What is specific enthalpy of a moist air?

    V. Write the statement of Raoult's law.

    VI. Define Free Moisture Content.

    VII. What do you understand by bound and unbound moisture?

Q-4 (B)   Answer the following in brief: (Any 4)   [08]

    I. Comment – "For air of zero humidity the EMC will be zero".

    II. Suggest a suitable dryer for vaccines and Tablet granules.

    III. Suggest a suitable method for distillation of Vitamin-E and Turpentine oil.

    IV. Liquid mixture of ethanol and water is in equilibrium with a vapor containing ethanol and water at a total pressure of 760 mmHg. A sample of vapour indicates that it contains 3.3 moles of ethanol for every 1.7 moles of water. If the liquid has mole fraction of 0.52 ethanol what is relative volatility?

    V. Enlist all thermodynamic properties of moist air which are represented on a psychrometric chart.

    VI. Explain briefly wet bulb temperature.

Q-5   Answer the following: [10]

  A) Explain Fluidized Bed Dryer along with its merits, demerits and application.

<div align="center">OR</div>

  A) Granules of paracetamol containing 80 lb of water/100 lb of dry granules are being dried in a conveyer dryer. They dry at a constant rate of 5 lb water /lb.hr, down to a 50% moisture content (0.3lb water evaporated/lb.hr) and then at a rate of proportional to moisture content. Calculate the time required to reach a water content of 1% (0.01lb H_2O/lb dry solid).

  B) Enlist different methods of distillation. Explain any one method in detail.

<div align="center">OR</div>

  B) Explain different types of column used for fractional distillation.

Q-6   Answer the following in detail. (Any 2)   [10]

  A) Describe psychrometric/humidity chart showing all its parts with a suitable diagram.

  B) Explain Principle, working and application of Lyophilization process.

  C) What are deviations from Raoult's law? Classify miscible liquid mixtures based on deviations from Raoult's law.

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