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SB-1151

Second Year B. Pharmacy Examination

March / April – 2011

PH - 201 : Unit Operation - II

(Pharmaceutics - III)

Time : Hours] [Total Marks : **70**

Instructions :

(1)

નીચે દર્શાવેલ ☛ નિશાનીવાળી વિગતો ઉત્તરવહી પર અવશ્ય લખવી.
Fillup strictly the details of ☛ signs on your answer book.

Name of the Examination :

☛ **S. Y. B. Pharmacy**

Name of the Subject :

☛ **PH - 201 : Unit Operation - 2**

☛Subject Code No. : **1 1 5 1** ☛Section No. (1, 2,.....) : **1&2**

Seat No. :

Student's Signature

(2) There are **two** sections, each of 35 marks.
(3) Each section having three questions.
(4) Attempt all questions from each section.
(5) Answer and submit both sections separately.

SECTION - I

1 Attempt any **FIVE** from the followings : **10**

(1) Classify various types of distillation process.
(2) Draw a neat and labeled diagram of Fluid energy mill.
(3) Explain the principle of lyophilization.
(4) Enlist various applications of crystallization in pharmacy.
(5) Enlist various disadvantages of Ribbon mixer.
(6) What is size separation technique ? Why is it needed in the industry ? Discuss sedimentation and elutriation techniques for size separation with suitable diagrams.
(7) A binary mixture of methyl alcohol and water having total vapor pressure of 760 mm Hg. When the liquid contains 0.40 mole fraction methyl alcohol, the equilibrium vapor contains 0.729 mole fraction of methyl alcohol. Methyl alcohol is more volatile. Calculate relative volatility.

2 Attempt any **four** from the followings : **16**

(1) Draw a neat and labeled diagram; discuss mechanism, contruction and working of Cyclone separator.

(2) Discuss the principles of steam distillation.

(3) Explain with diagram the principle, construction and working of planetary mixer.

(4) Describe Mier's theory of supersaturation.

(5) A batch dryer remove water from a solid material at a rate of 30 lb per hr during the constant rate period. Under the operating conditions, the critical free moisture content is 0.5 lb water / lb dry solid and the equilibrium moisture content is 0.04 lb water / lb dry solid. 400 pounds of dry solid, containing 200 lb water enter the drier. How long will the total drying require if the final product contains 0.08 lb water / lb dry solid.

(6) Why automation is required in pharmaceutical processes ? Discuss with examples.

3 Attempt any **three** from the followings : **9**

(1) Discuss in details Roller Mill.

(2) Explain with a neat labeled diagram of the principle, working and application of Swenson walker crystallizer.

(3) Discuss principle, construction and working of Fluid bed dryer.

(4) Explain the terms 'Positive mixtures', 'Negative mixtures' and 'Neutral mixtures' giving suitable example.

(5) What will be the yield of glauber salt ($Na_2SO_4 - 10H_2O$), if a pure 35% solution is cooled to 20°C without and loss due to evaporation ? Solubility of glauber salt in water at 20°C is 19.4 g per 100 g water.

SECTION - II

4 Attempt any **eleven** from the followings : **11**

(1) Comment : crystals are pure.

(2) Comment : Varying size of balls is required for efficient size reduction in ball mill.

(3) Define : sublimation.

(4) Enumerate the different types of condensers used in the process of distillation.

(5) define case hardening.

(6) Define Calendria.

(7) Comment : water can boil at 60°C.

(8) State whether the following state is true or false and justify your answer : Human blood plasma can be dried by spray dryer.

(9) Define EMC along with its application.
(10) State whether the following states is true or false and justify your answer : Thermal drying is the only method of drying materials.
(11) What will be the optimal speed of ball mill, if diameter of ball mill is 12 inch ?
(12) Comment : Vortex formation should be avoided while liquid-liquid mixing.
(13) Define mixing and degree of mixing.
(14) Explain the role of hydrostatic head in BPR.
(15) Define reflux ratio.

5 Attempt any **three** from the following : **12**

(1) Classify various materials used for sieve and discuss various standards of sieve.
(2) Discuss the factors affecting the rate of evaporation.
(3) Describe principle, working and application of freeze dryer.
(4) Classify the mixers used for mixing of liquids. Write a note on Propeller mixers.
(5) A solid is dried in a batch operation under such conditions that the rate of drying during the constant rate period is 50 lb water removed per hr and critical free moisture content is 0.30 lb water/lb dry solid. The curve of drying rate Vs moisture content is followed. Equilibrium moisture content of the material is 0.05 lb water / lb dry solid. If material contains 600 lb dry solid and 300 lb water at the start, estimate the time required to obtain a final product containing 0.1 lb of moisture per pound of dry solid.

6 Attempt any **two** from the followings : **12**

(1) Define multiple effect evaporator. Discuss its principle with suitable diagrams.
(2) Classify reactors used in pharmaceutical industry. Discuss the contructions, working and applications of any one pharmaceutical reactor.
(3) Describe with a neat and labeled diagram with principle, construction, working, advantages and disadvantages of Climbing film evaporator.
