

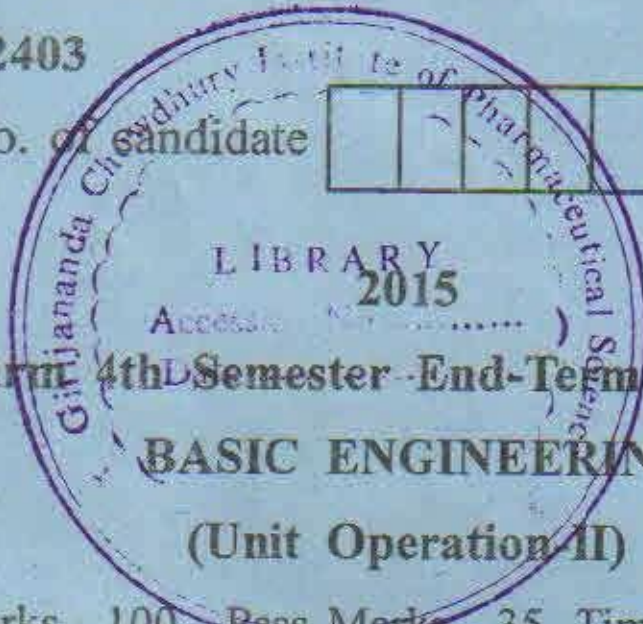
ASTU (Reg.) - 01.06.2015

Total No. of printed pages = 4

PY 132403

Roll No. of candidate

--	--	--	--	--	--	--	--	--	--



B. Pharm 4th Semester End-Term Examination

BASIC ENGINEERING

(Unit Operation II)

Full Marks – 100 Pass Marks – 35 Time – Three hours

The figures in the margin indicate full marks for the questions.

1. Answer any *six* questions : 2×6=12
- (i) What are 'Grey bodies' ? How do they radiate heat ?
 - (ii) State and explain Fourier's law of heat transmission with equation.
 - (iii) What are the reasons for vortex formation ? How is it prevented ?
 - (iv) Mention two applications of fractional distillation.
 - (v) What do you mean by evaporator capacity ?

[Turn over

(vi) Name the factors which affect the degree of size reduction.

(vii) Give the principle of freeze drying.

2. Answer any *six* questions: $3 \times 6 = 18$

(i) Describe a method of separation of materials by difference of density.

(ii) Give the advantages and disadvantages of liquid heat interchangers.

(iii) Explain the principle and application of molecular distillation.

(iv) Describe the constant rate and falling rate periods.

(v) Describe the specifications of sieves as per IP.

(vi) Explain the effect of feed and feed rate on efficiency of Ball mill.

(vii) Why is Agitated Film evaporator is used to evaporate highly viscous solutions ?

3. Answer any *eight* questions: $5 \times 8 = 40$

(i) Describe the conduction of heat through a circular pipe. Give suitable equations for rate of heat transfer and explain the terms.

(ii) Describe the construction and working of fluidised bed dryer.

(iii) Describe the drying rate curve. Explain its applications.

(iv) List the laws governing size reduction. What is work index ?

(v) Explain the working and applications of a cyclone separator.

(vi) State with equations the statistical parameters applicable to mixing process. What is mixing index ?

(vii) Give the working principle of flash distillation. What are its advantages, disadvantages and applications ?

(viii) What are the factors on which the efficiency of the fractional distillation depends ? Differentiate the packed column from plate column.

(ix) Enumerate the factors influencing evaporation. Give a note on application of evaporation process in Pharmaceutical Industry.

4. Answer any *three* questions : $10 \times 3 = 30$

(i) (a) Explain the concept of film and overall heat transfer coefficient in forced convection.

(b) Describe the concept of spray drying. Give the advantages of spray dried products over drum dried products.

$5 + 5 = 10$

(ii) (a) Give the importance of size reduction in Pharmacy. Show as to how the nature of raw materials and finished products determine the selection of a size reduction equipments.

(b) Describe the turbine mixer with flow pattern.

$5 + 5 = 10$

(iii) (a) Give the construction and working of Triple Roller Mill. Give its applications.

(b) Elaborate the concept of multiple effect evaporator. What are its specific advantages ?

$5 + 5 = 10$

(iv) Give the construction and working of distillation unit used in the preparation of water for Injection IP. What is destructive distillation ? Give its applications.

$7 + 2 + 1 = 10$