

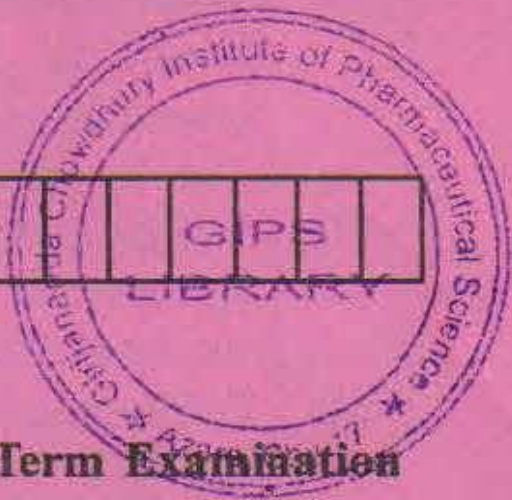
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PY 132303

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SCANNED 2016

B Pharm 3rd Semester End-Term Examination

BASIC ENGINEERING-I

(Unit Operations-I)

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

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

1. Answer any *ten* questions : 10×3=30
- (a) What is Reynolds number ? Describe its importance.
- (b) Define fluid flow. Write the applications of fluid flow in pharmaceutical industry.
- (c) Express Hagen-Poiseuille's relationship. What is its importance ?
- (d) Classify pumps with examples.

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- (e) What is humidity ratio ? Write the effect of humidity in the preservation of pharmaceuticals.
- (f) Define a tone of refrigeration. Write the applications of refrigeration in pharmacy ?
- (g) Differentiate between surface and depth filtration.
- (h) Define filter aids and write the handling process of filter aids.
- (i) Discuss the theory of centrifugation.
- (j) Enumerate different types of crystals.
- (k) Explain electrochemical theory of corrosion with examples.
- (l) What do you mean by dust explosion ? Discuss methods for controlling dust in pharmaceutical industry.

2. Answer any *eight* questions : 8×5=40

- (a) Discuss the control mechanisms of water pollution and air pollution.

- (b) Describe the biological corrosion and suggest the preventive measures.
- (c) What are the properties of glass ? What are its applications in pharmaceutical industry ?
- (d) Describe the important features of humidity charts.
- (e) Define air conditioning. Write the approaches for achieving air conditioning.
- (f) Discuss Mier's Supersaturation theory of crystallization. Mention the limitations of Mier's theory.
- (g) Discuss perforated basket centrifuge with figure.
- (h) Explain the mechanism of filtration. Describe the construction and working of leaf filters.
- (i) Differentiate between orifice meter and venture meter.
- (j) Discuss different energy losses occur in fluid flow with relevant equations.

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

- (a) (i) Describe Reynolds classic experiment elucidating different types of flow patterns, when a liquid flows through a closed channel. 5
- (ii) Water is flowing through a 5.0 cm I.D pipe at an average velocity of 50 cm/sec. Calculate Reynolds number and Friction factor considering the density of water = 1g/cc and viscosity of water = 1cp. 5
- (b) Explain the construction, working, advantages and disadvantages of filter press. 10
- (c) Discuss the theory of crystallization. Write factors affecting caking of crystals. $6+4=10$
- (d) Write short notes on any *two* : $5+5=10$
- (i) Pneumatic conveyors
- (ii) Krystal crystallizer
- (iii) Pitot tube.

