

04-12-14 (Reg)

Total No. of printed pages = 5

PY 132303

Roll No. of candidate

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2014

**B. Pharm 3rd Semester End-Term Examination**  
**BASIC ENGINEERING – I**

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

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

1. Fill in the blanks : 1×10=10
- (a) ..... deals with fluids in motion.
- (b) Manometers are the devices used for measuring .....
- (c) In viscous conditions, the average velocity over the whole cross-section is ..... times the maximum.
- (d) The driving force is the ..... between the upstream and downstream of the filter.
- (e) Centrifugal effect = .....

[Turn over

- (f) ..... have the natural tendency of absorbing moisture.
- (g) Chemical name of Freon 12 is .....
- (h) ..... do not have specific shape.
- (i) General description of Type II glass is .....
- (j) In ..... , the pumping element moves in forward and backward directions in a cylinder.
2. (a) What is a pressure head ? How is it calculated ? 2
- (b) Give Reynold's number and explain the symbols used therein. 2
- (c) What is meant by 'air binding' in pumps ? 2
- (d) Write notes on check valve. 2
- (e) List the properties of filter aids. 2
- (f) Write two pharmaceutical applications of centrifugation. 2

- (g) Define crystal and critical humidity. 2
- (h) Differentiate between humidity and relative humidity. 2
- (i) Mention the composition of glass. 2
- (j) Differentiate between crystalline solids and amorphous solids. 2
3. (a) What are the merits and demerits of venturimeter over orifice meter ? 3
- (b) Describe the types of flow patterns exhibited by liquids in motion. 3
- (c) Discuss the theory of reciprocating pump. 3
- (d) Describe the construction and working of leaf filter. 3
- (e) Explain the principle behind centrifugal separation. 3
- (f) Classify centrifuges based on their mechanism of separation. 3
- (g) Discuss factors affecting caking of crystal. 3

- (h) Write the utility of humidity charts. 3
- (i) Explain the principle of dehumidification. 3
- (j) Describe steel as a material of plant construction. 3
4. (a) What methods are employed for preventing the hazards of handling and use of poisonous chemicals in industry. 4
- (b) Define air-conditioning. Discuss the approaches for achieving air-conditioning. 4
- (c) Describe the construction and working of a rotary continuous filter. 4
- (d) Compare the characteristics of centrifugal pumps and reciprocating pumps. 4
- (e) Write Bernoulli's equation and explain the symbols used therein with a labelled diagram. 4
5. (a) Explain the energy losses that occur when a fluid flows through a pipe with relevant equations. 5

- (b) Describe the principle of pneumatic conveyor with a labelled diagram. 5
- (c) Explain the construction and working of filter press. 5
- (d) Discuss the Mier's super-saturation theory of crystallization. What are the limitations of the Mier's theory ? 5

