HU-1612020701020200 Seat No. _____

Master in Pharmacy Management (Sem. II) (CBCS) Examination

June/July - 2017

Pharmaceutical Engineering

Time : **3** Hours] [Total Marks : **80**

Instructions : (1) Answer any three questions from each section.
(2) Question one and question five are compulsory.
(3) Figure to the right indicates marks.
(4) Draw neat and clean diagrams when required.

SECTION - I

1 Answer any SEVEN out of TEN. **14**

(a) Define the term tie substance and enlist its applications.

(b) Define the principle of stoichiometry with a suitable example.

(c) Write a difference between black body and grey body.

(d) Why mercury is used as a liquid in the manometer ?

(e) Write down any four difference between reciprocating pumps and centrifugal pump.

(f) Write the usefulness of glass lined equipment in the pharmaceutical plant.

(g) What is air binding in pumps? How it can be overcome.

(h) Define conductivity with suitable example.

(i) Write down the difference between orifice meter and venture meter.

(j) Distinguished between steady state and non-steady state.

2 Answer the following questions : 13

(a) Write a short note on Bernoulli's theorem. 7

(b) With a neat diagram write down the principle, construction, working, advantages and disadvantages of Pitot tube. 6

3 Answer the following questions : 13

(a) Derive an equation for heat transmission through a circular pipe from Fourier's law. 7

(b) Describe Reynolds experiment elucidating, different type of flow patterns, when a liquid flows through a closed channel. 6

4 Answer the following questions : 13

(a) Explain in detail the factors affecting selection of material of pharmaceutical plant construction. 7

(b) Explain the term 'mass balance' and 'energy balance'. What are its applications ? 6

SECTION - II

5 Answer any two out of three : 14

(a) With a neat diagram write down the principle, construction, working, advantages and disadvantages of pneumatic conveyors.

(b) Describe the principle, construction, working, advantages and disadvantages of multipass heater.

(c) Describe dimensional equation and dimensionless equation with two examples of each.

6 Answer the following questions : **13**

(a) With a neat diagram write down the principle, construction, working, advantages and disadvantages of rotary positive displacement pumps. **7**

(b) Write a short note on steam traps. **6**

7 Answer the following questions : **13**

(a) Define corrosion. Explain in detail the electrochemical theory of corrosion. **7**

(b) Write a short note on solid/fluid mass transfer. **6**

8 Answer the following questions : **13**

(a) Explain the energy losses that occur when a fluid flow through a pipe. **7**

(b) Explain in detail the influence of mass transfer on unit operations. **6**