



HEI-1612020701020200 Seat No. _____

M. P. M. (Sem. II) (CBCS) Examination

December – 2017

Pharmaceutical Engineering

Time : 3 Hours]

[Total Marks : 80

- Instructions :** (1) Answer and tie both the sections separately.
(2) Figure to the right indicates marks.
(3) Answer any three (3) questions from each section.
(4) Que. One (1) & Que. Five (5) are compulsory.
(5) Draw neat and clean diagrams as required.

SECTION – I

- 1** Answer Any **Seven** out of given TEN questions : **7×2=14**
- (a) Define : (1) BTU (2) Calorie
 - (b) Color code for piping system in industry
 - (c) Glass as a material for plant construction.
 - (d) 'Reynolds number is unitless' - give comment and prove it.
 - (e) Write the SI & CGS units for mass, length, heat & force.
 - (f) What are differences between Gate Valve and Globe Valve?
 - (g) Define and explain turbulent flow.
 - (h) What is absolute temperature? Convert 150 °C into different absolute temperature units.
 - (i) Dimensional equation and dimensional analysis
 - (j) Convert : (1) 2.5 gram/cubic.cm to pound/gallon
(2) 120 kg/hr.m² to lb/hr.ft²

- 2** Answer the following :
- (a) Classify Intra-plant conveyors. Describe construction working and advantage of belt conveyor with a neat sketch. **7**
- (b) Write short note on fuels and combustion. **6**
- 3** Answer the following :
- (a) Classify different types of valves and pumps. Explain globe valve and centrifugal pump with suitable diagram. **7**
- (b) Explain Dalton's Law and Amagat's law with its corollary. **6**
- 4** Answer the following :
- (a) Write principle, working, construction and application of rotameter. **5**
- (b) Give mechanism, working and application of any type of heat exchanger. **5**
- (c) Differentiate between orificemeter and venturimeter. **3**

SECTION – II

- 5** Answer Any **Two** out of given Three questions : **2×7=14**
- (a) Define radiation and Black body. Explain Stephen Boltzmann law for black body.
- (b) Classify the types of fluid flow and meters to measure the flow.
- (c) Describe the various modes of heat transfer.
- 6** Answer the following :
- (a) Write a note on material balance. **7**
- (b) Discuss the theory of corrosion. Describe the importance of corrosion. **6**

- 7** Answer the following :
- (a) Discuss the factors affecting selection of materials for the construction of pharmaceutical plant. **7**
 - (b) Derive an equation for overall heat transfer coefficient. **6**
- 8** Answer the following :
- (a) Define Mass transfer. Write a note on solid/fluid mass transfer. **5**
 - (b) Write a short note: Steam as Heating media. **5**
 - (c) Write a note on Fick's law of mass transfer. **3**
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