

UKA TARSADIA UNIVERSITY

B.Pharm. (1st Semester)

Subject :030020103-Pharmaceutical Engineering (OLD1)

Time : **2.30 pm to 5.30 pm**

Duration : 3 Hours

Date : **24/05/2014**

Max. Marks : 70.

Instructions:

1. Attempt all questions.
2. Write each section in a separate answer book.
3. Make suitable assumptions wherever necessary.
4. Figures to the right indicate full marks allocated to that question.
5. Draw diagrams/figures whenever necessary.

SECTION - 1

Q-1 (A) Do as directed.

[07]

- I) Differentiate between unit operation and unit process.
- II) Define Stoichiometry.
- III) Write statement of energy conservation law.
- IV) Define Viscosity and write its units.
- V) Comment on type of flow of the fluid having Reynold's number 6790.
- VI) Convert 30 km/hour to m/sec
- VII) Write MKS and SI units of pressure.

Q-1 (B) Answer the following in brief. (Any 4)

[08]

- I) Explain the applications of pharmaceutical engineering in pharmacy.
- II) Explain material balance in unit operation with suitable example.
- III) Explain the term with suitable example : Dimensionless equation
- IV) Define tie substance. What is significance of tie substance in pharmacy?
- V) Differentiate between Newtonian and Non-Newtonian systems.
- VI) Enlist types of manometers used to measure pressure.

Q-2 Answer the followings

[10]

- A) Describe types of graphical representations utilised for data interpretation in pharmacy.

OR

- A) Write a note on Limekiln Performance.
- B) Describe principle, construction, working, advantages and disadvantages of rotameter.

OR

- B) Prove Raynolds number is dimensionless and explain mechanism of fluid flow.

Q-3 Answer the following in detail. (Any 2)

[10]

- A) Compare and contrast Orifice meter and Ventury meter.
- B) A salt solution originally contains 4 % w/v sodium chloride in water. It is evaporated to 5% w/v solution. Calculate % of water evaporated during evaporation process.
- C) Describe principle, construction, working, advantages and disadvantages of orificemeter.

SECTION - 2

Q-4 (A) Do as directed.

[07]

- I) Enlist two heat exchangers.
- II) State Stefan- Boltzman's law.
- III) Define: Black body.
- IV) Give one example of convection and radiation.
- V) State: Fourier's law
- VI) What do you mean by mass transfer?
- VII) Give differences between: absorptivity and emissivity.

Q-4 (B) Answer the following in brief. (Any 4)

[08]

- I) Discuss colour coding of pipelines used for material transfer in industry.
- II) Write classification of steam traps with suitable examples.
- III) Comment: Stainless steel is the best material for plant construction.
- IV) Explain latent heat.
- V) Write the composition of glass.
- VI) Write advantages of plastic.

Q-5 Answer the following.

[10]

- A) Enumerate modes of heat transfer. Differentiate them with examples.

OR

- A) Write Fourier's law. Derive an equation for rate of heat transfer when the resistances are in parallel.
- B) Define corrosion. Describe factors affecting the corrosion.

OR

- B) Write electrochemical theory of corrosion. Discuss various ways to prevent corrosion.

Q-6 Answer the following in detail. (Any 2)

[10]

- A) Discuss types of glass used in pharmaceutical plants.
- B) Describe factors affecting the selection of material for pharmaceutical plant construction.
- C) Describe working and modifications of belt conveyer.