UNIVERSITY OF JAFFNA
BACHELOR OF PHARMACY
THIRD YEAR FIRST SEMESTER EXAMINATION – AUGUST 2017
PHAPT 3153 PHARMACEUTICAL TECHNOLOGY

Date: 22.08.2017. **Time: 03 Hours**

ANSWER ALL EIGHT QUESTIONS.
Answer Part A and Part B in separate answer books.

Part A

1.

1.1 List the pharmaceutical uses of size reduction process. (20 marks)

1.2 Enumerate the properties of materials that affect the size reduction process. (20 marks)

1.3 Briefly describe the

1.3.1 different mechanisms involved in the size reduction process. (30 marks)

1.3.2 working principle of ball mill. (30 marks)

2.

2.1 Explain how 'caking of crystals' occur during storage? (20 marks)

2.2 Briefly explain the factors that contribute to the 'caking of crystals'. (30 marks

2.3 Describe the theory of

2.3.1 molecular distillation process (25 marks)

2.3.2 fractional distillation process. (25 marks)

3.

3.1 Define the following terms.

3.1.1 Equilibrium moisture constant (10 marks)

3.1.2 Bound moisture (10 marks)

3.2 Briefly describe the following pharmaceutical processes.

3.2.1 Percolation method (30 marks)

3.2.2 Spray drying (50 marks)

4.

4.1 Define the following terms that are used in the compaction of powdered solids.

4.1.1 Compression (10 marks)

4.1.2 Consolidation (10 marks)

4.2 Briefly explain the different bonding theories that are involved during the compression of powders. (60 marks)

4.3 Explain how density and particle size of materials that affect the mixing process. (20 marks)

5. Write an account on

5.1 environmental hazards that affect the pharmaceutical packages. (50 marks)

5.2 properties and usage of stainless steels that are used in the construction of pharmaceutical equipments. (50 marks)

Part B

6.

6.1 Define Reynolds number and its importance in fluid motion. (20 Marks)

6.2 State the Bernoulli's equation in fluid motion. (10 Marks)

6.3 A three horizontal interconnected different size pipes are attached to the wall of reservoir in pharmaceutical industry. The water level in the reservoir is in the height of 1.5 m above the pipeline axis. From the lower end of the pipeline, water flows out to the open space. Diameters of the pipes from the reservoir to open end are 0.24 m, 0.1 m and 0.12 m and length of the pipes are 3.0 m, 1.0 m and 2.0 m respectively.

6.3.1 Calculate the flow velocities of water in each pipe. (25 Marks)

6.3.2 Determine the flow type of water in each pipe. (15 Marks)

6.3.3 Calculate the pressure difference (in water height) in each pipe. (20 Marks)

6.3.4 Draw the pressure line across the pipes. (10 Marks)

(Density of water is 1000 kg/m^3 and Acceleration due to gravity is 9.81 m/s^2. Kinematic viscosity of water at 12^0 C is 1.24×10^{-6} m^{2}s^{-1}. You may assume that water is an ideal fluid).

7.

7.1 Define "Relative humidity". (10 Marks)

7.2 Briefly explain the following terms that are used in humidity.

7.2.1 Air saturation (10 Marks)

7.2.2 Dew point (10 Marks)

7.2.3 Specific humidity (10 Marks)

7.3 Write short note on effect of humidity on human and electronic devices. (30 Marks)

7.4 Briefly describe the steps involved in separation of serum from a blood sample. (30 Marks)

8.

8.1 Briefly describe the working principle of an air conditioner. (20 Marks)

8.2 Briefly explain how the following factors that affect the rate of filtration.

8.2.1 Viscosity (10 Marks)

8.2.2 Pressure (10 Marks)

8.2.3 Centrifugal force (10 Marks)

8.3 List the necessary requirements in the designing of a fermenter. (25 Marks)

8.4 Briefly describe the wet corrosion process on a metal and how it can be prevented? (25 Marks)

xxxxxxxxxxxxxx