THE OPEN UNIVERSITY OF SRI LANKA
FACULTY OF HEALTH SCIENCES
DEPARTMENT OF PHARMACY
ACADEMIC YEAR 2020/2021 – SEMESTER I

BACHELOR OF PHARMACY HONOURS
FMU5403- PHARMACEUTICAL TECHNOLOGY I - LEVEL 5
FINAL EXAMINATION
DURATION: THREE (03) HOURS

DATE: 15TH MARCH 2022 TIME: 9.30 A.M.- 12.30 P.M.

Part B- Short Answer Questions – SAQs (20 marks)

1.

1.1. Define the term 'evaporation' (02 marks)

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1.2. State two (02) uses of evaporation in the pharmaceutical industry. (02 marks)

I. .....

II. .....

1.3. Give three (03) types of mixtures according to their fundamentals in the mixing behavior. (03 marks)

I. .....

II. .....

III. .....

1.4. State three (03) factors affecting the process of mixing. (03 marks)

I. .....

II. .....

III. .....

Index No.....

2.

2.1. Briefly explain the effect of particle size in powder segregation. (03 marks)

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2.2. State three (03) methods that can be used to reduce powder segregation. (03 marks)

I. .....

II. .....

III. .....

2.3. Give two (02) reasons for using clarification in the pharmaceutical industry. (02 marks)

I. .....

II. .....

2.4. Write two (02) advantages of tubular-bowl centrifuge. (02 marks)

I. .....

II. .....

Index No.....

Part C- Structured Essay Questions (60 marks)

1.

1.1. Define the term 'Radiation' used for heat transfer. (02 marks)

1.2. Write short notes on the following. (06 marks)

1.2.1. Heat exchangers

1.2.2. Insulating materials

1.3. Explain three (03) factors affecting the rate of crystallization. (03 marks)

1.4. Discuss the differences between crystalline and amorphous solids. (04 marks)

2.

2.1. Briefly explain the agitation method used for particle separation. (03 marks)

2.2. Discuss the differences between sedimentation and elutriation. (03 marks)

2.3. Explain the operational principles of upward airflow elutriator. (04 marks)

2.4. Answer the following questions with regards to rotary cutter mill.

2.4.1. Name four (04) parts of the machine. (02 marks)

2.4.2. Explain the principle/s of size reduction process of the above machine. (02 marks)

2.4.3. List two (02) factors that determine the size and shape of the milled particles obtained by the above machine. (01 mark)

3.

3.1. According to Reynold's equation, state four (04) factors that influence fluid flow. (02 marks)

3.2. Briefly explain three (03) types of fluid flow explained by Reynold's experiment using diagrams. (06 marks)

3.3. Briefly describe the advantages of using vortex shedding flow meter. (03 marks)

3.4. Briefly describe the following, (04 marks)

3.4.1. Efflorescence

3.4.2. Deliquescence

Index No:.....

4.

4.1. State the Raoult's law. (02 marks)

4.2. A liquid mixture is consisting of two (02) components, namely, A and B. Mole fraction of A in this liquid mixture is 0.8. The mixture is distilled at 60 °C. The vapour pressures exerted by A and B, in their pure state at 60 °C, is 10 atm and 30 atm, respectively. Assuming this mixture follow Raoult's law, answer the following.

4.2.1 Calculate partial pressure (P_A) exerted by A. (01 mark)

4.2.2 Calculate partial pressure (P_B) exerted by B. (01 mark)

4.2.3 Calculate mole fractions of A and B in the vapour. (01 mark)

4.2.4 Which compound has the lower boiling point? Explain your answer. (02 marks)

4.3 State four (04) processes used in the function of an air conditioner. (04 marks)

4.4 Explain the functional method of desiccant dehumidifiers. (04 marks)