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UNIVERSITY OF RUHUNA – FACULTY OF ALLIED HEALTH SCIENCES

DEPARTMENT OF PHARMACY

FOURTH BPHARM PART I EXAMINATION – APRIL 2023

PH 4134 PHARMACEUTICAL TECHNOLOGY – SEQ PAPER

TIME: THREE HOURS

INSTRUCTIONS

- There are **three** parts in this paper **(Part A, B and C)**.
- Answer all questions.
- No paper should be removed from the examination hall.
- Do not use any correction fluid.
- Use illustrations where necessary.

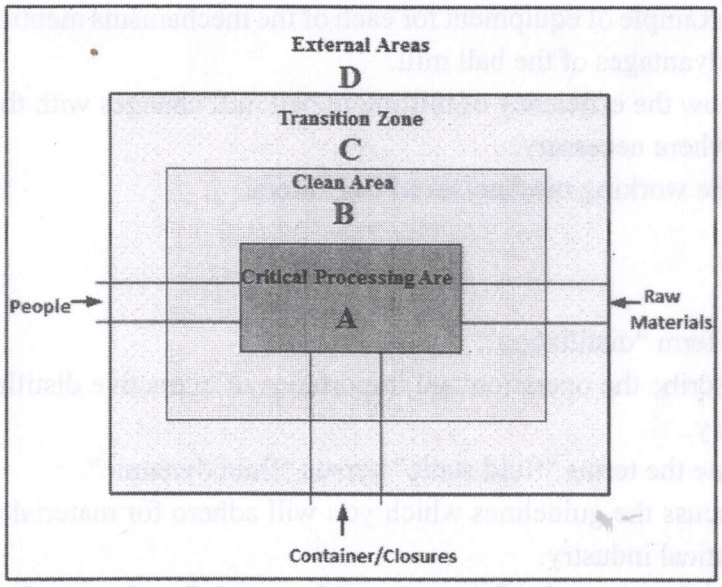
PART A

1.

1.1 The needs of a manufacturing facility are defined during the facility programming stage. State five basic criteria that should be satisfied in a proper facility layout. ***(20 marks)***

1.2 Briefly explain the importance of a bubble diagram in pharmaceutical plant construction. ***(25 marks)***

1.3 The design concept given below is used to ensure the aseptic processing of pharmaceutical products. List one possible activity that can be carried out in each area (A-D). ***(15 marks)***



1.4 Discuss the difference between terminal sterilisation and aseptic processing of pharmaceuticals. ***(20 marks)***

1.5 '*Among all the pharmaceutical manufacturing activities, sterile pharmaceutical production is the most difficult process to execute*'. Justify the above statement. ***(20 marks)***

2.

2.1 Define the term 'cosmetic dermatology' giving two relevant examples. ***(10 marks)***

2.2 Classify the following cosmetics according to their major function. ***(12 marks)***

2.2.1 antiperspirant
2.2.2 sunscreen
2.2.3 face powder
2.2.4 lipstick
2.2.5 toothpaste
2.2.6 baby soap

2.3 Explain the factors need to be considered in the initial stages of the development of a new face cream. (*38 marks*)

2.4 Briefly explain two tablet processing problems in commercial scale tablet production. (*20 marks*)

2.5 State the characteristics of a tablet which is suitable for coating. (*20 marks*)

3.

3.1 Name four types of surfactants classified according to the ionic charge possessed by the molecules. (*10 marks*)

3.2 State five common problems that can arise from poor humidity control in a pharmaceutical manufacturing plant. (*15 marks*)

3.3 Write a short note on the wet gum method which is used to prepare emulsions. (*25 marks*)

PART B

3.4 List four advantages and four disadvantages of a freeze dryer. (*20 marks*)

3.5 Discuss four advantages that can be achieved in vacuum dryer over tray dryer comparing the structural features of these two dryers. (*30 marks*)

4.

4.1 What are the four main mechanisms use to reduce the particle size in pharmaceutical manufacturing? (*08 marks*)

4.2 Write one example of equipment for each of the mechanisms mentioned in 4.1. (*12 marks*)

4.3 List four advantages of the ball mill. (*20 marks*)

4.4 Describe how the efficiency of milling in ball mill changes with the speed of rotation. Use diagrams where necessary. (*30 marks*)

4.5 Describe the working mechanism of bag filters. (*30 marks*)

PART C

5.

5.1 Define the term "distillation". (*10 marks*)

5.2 Briefly describe the operation and importance of extractive distillation related to the field of pharmacy. (*25 marks*)

5.3 Differentiate the terms "fluid static" versus "fluid dynamic". (*20 marks*)

5.4 Briefly discuss the guidelines which you will adhere for material and energy balance in a pharmaceutical industry. (*25 marks*)

5.5 Compare and contrast the flow pattern of parallel-flow heat exchangers from the counter-flow heat exchangers. (*20 marks*)

6.

6.1 List three mechanisms of mixing process. (*15 marks*)

6.2 Mention two mixing equipment use in pharmaceutical industry. (*10 marks*)

6.3 Describe the mixing devices used to support the mixing process. (*35 marks*)

6.4 Briefly explain the following.

6.4.1 Forced circulation evaporator (*20 marks*)

6.4.2 Important characteristics of filter aids (*20 marks*)

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