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UNIVERSITY OF RUHUNA – FACULTY OF ALLIED HEALTH SCIENCES

DEPARTMENT OF PHARMACY

FIRST BPHARM PART II EXAMINATION – NOVEMBER 2021

PH 1242 PHARMACEUTICS IB – SEQ

TIME: TWO HOURS

INSTRUCTIONS

- There are **four** questions in part **A, B, C** and **D** in this SEQ paper.
- Answer **all** questions.
- No paper should be removed from the examination hall.
- Do not use any correction fluid.
- Use illustrations where necessary.

PART A

01.

1.1

1.1.1 What is meant by rheology? (***15 marks***)

1.1.2 What is viscosity? (***10 marks***)

1.1.3 Name five parameters that influence the viscosity of a liquid. (***15 marks***)

1.1.4 Briefly explain the difference between Newtonian and non-Newtonian fluids? (***15 marks***)

1.2

1.2.1 State the first law of Thermodynamics. (***15 marks***)

1.2.2 Briefly explain the following processes in Thermodynamics.

1.2.2.1 Adiabatic process (***10 marks***)

1.2.2.2 Cyclic process (***10 marks***)

1.2.3 Write formulae for internal energies of above two processes according to the first law of Thermodynamics. (***10 marks***)

02.

2.1

2.1.1 Define the physical half- life of a radioisotope. (***15 marks***)

2.1.2 What is effective half- life of a radiopharmaceutical and how does it relate to physical half-life? (***20 marks***)

2.1.3 Write five desirable properties of radiopharmaceuticals in nuclear imaging. (***15 marks***)

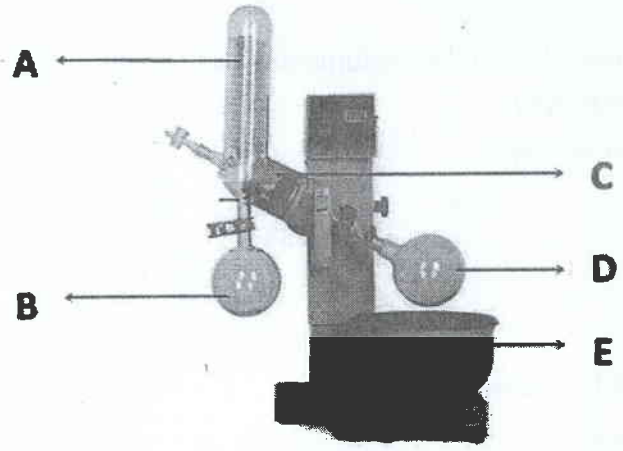
PART B

2.2

2.2.1 List five types of distillation. (*10 marks*)

2.2.2 Briefly explain one of the distillation types you mentioned in 2.2.1. (*15 marks*)

2.3



2.3.1 Write the name of the above equipment. (*05 marks*)

2.3.2 Name the five parts labelled as A-E of the above equipment. (*20 marks*)

03.

3.1 Define the term "colloids". (*05 marks*)

3.2 List five methods used for the preparation of lyophobic colloids. (*15 marks*)

3.3 Briefly explain the differences between lyophilic colloids and lyophobic colloids. (*20 marks*)

3.4 Discuss the physical properties of colloids. (*30 marks*)

3.5 Briefly describe the below mentioned processes. (*30 marks*)

3.5.1 Lyophilization

3.5.2 Decantation

3.5.3 Centrifugation

3.5.4 Elutriation

3.5.5 Maceration

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PART C

4.1

4.1.1 Briefly explain the following phenomena pertaining to surface tension of a liquid.

"Surfaces of some liquids (meniscus) have a concave shape in a capillary while the surfaces of other liquids have a convex shape." (***10 marks***)

4.1.2 Assume water rises in a capillary tube to a height of 2.0 cm. Calculate the height that water will rise through another capillary tube in which the radius is one-third of the first tube? (***15 marks***)

4.1.3 Write short accounts on the following pertaining to colloids. Give examples wherever possible. (***25 marks***)

4.1.3.1 Dialysis and electrodialysis.

4.1.3.2 The colloidal particles repel each other and do not cluster together to settle down.

PART D

4.2 Suspension is a pharmaceutical dosage form which is commonly used in pediatric drug administration.

4.2.1 Discuss the differences between flocculated and deflocculated suspensions. Use graphical representations where necessary. (***30 marks***)

4.2.2 A newly manufactured pharmaceutical suspension contains a concentration of 120mg/ml of the drug A. The manufacturing company keeps few suspensions as samples for stability studies and finds its concentration after 18 months as 80mg/ml. Assuming the above drug degradation via a first order reaction, calculate the following.

4.2.2.1 Rate constant for the above phenomena. (***10 marks***)

4.2.2.2 Half-life of the above preparation. (***05 marks***)

4.2.3 Name two main types of stability testing carried out for pharmaceuticals. (***05 marks***)

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