Charles Darwin University

Final Examination

Family Name						
Given Name/s						
Student Number						
Teaching Period	Semester 2, 2018					

PHA302 – Applied Pharmaceutics	DURATION	
	Reading Time:	10 minutes
	Writing Time:	180 minutes

INSTRUCTIONS TO CANDIDATES

Please ensure that your Name and Student Number are indicated clearly on your Answer Booklets and at the top of the multiple choice answer sheet provided.

There are 2 (**TWO**) sections (A and B) for this paper:

Section A contains Forty (40) Multiple Choice Questions. Answer all questions on the College Multiple Choice Answer Sheet supplied. Total marks allocated: Forty (40). Suggested time allocation: ONE hour (60 minutes).

Section B contains Five (5) Short Answer and Calculation Questions. Answer all questions in the 20-page Booklet provided. Show all relevant steps in your calculations and include all relevant units in your answers. Total marks allocated: Sixty (60). Suggested time allocation: TWO hours (120 minutes).

Total marks for this exam paper: 100

EXAM CONDITIONS

You may begin writing from the commencement of the examination session. The reading time indicated above is provided as a guide only.

This is a CLOSED BOOK examination

Any non-programmable calculator is permitted

No handwritten notes are permitted

No dictionaries are permitted

ADDITIONAL AUTHORISED MATERIALS	EXAMINATION MATERIALS TO BE SUPPLIED
No additional printed material is permitted	1 x 20 Page Book 1 x Scrap Paper College Multiple Choice Answer Sheet Formula Sheet/s

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Section B
Short Answer and Calculation Questions
Total Marks for this section: 60 (Sixty)
Answer ALL Five (5) questions
This section should be answered in the 20-page Answer Booklet provided.
Marks for each question are indicated.
Show all relevant steps in your calculations and include all relevant units in your answers.
Suggested Time allocation for Section B: **120 minutes**

Question 1 (12 marks)

a What are the rationales for drug stability testing?

(2 marks)

b Outline drug stability testing under stressed conditions.

(2 marks)

c A freshly prepared solution of a drug contained 5mg/mL. After 21 days, it contained 3mg/mL. Assuming first order decomposition, what are the degradation rate constant and the half-life of this solution?

(4 marks)

d A new product already approved by Therapeutics Goods Administration (TGA) is to be marketed to both Australia and New Zealand in uniform packaging. Outline the range of drug stability tests required, including details on long term stability testing.

(4 marks)

Question 2 (12 marks)

a Define rheology, Newtonian materials, dilatant flow and thixotrophy with examples.

(3 marks)

b Draw accurately the rheograms for Newtonian flow, plastic flow, pseudoplastic flow and dilatant flow. Provide one example of each type of liquids.

(4 marks)

c Compare and contrast between plastic and pseudoplastic flow.

(2 marks)

d The viscosity of human plasma at 37 ^{O}C is 12 cps. Assuming that plasma behaves as a Newtonian fluid, determine the viscosity of plasma required for an infusion that is kept at 25 ^{0}C. The activation energy of plasma is 4.25 x 10^{3} cal/mole and universal molar gas constant is 1.987 cal/mole.

(3 marks)

Question 3 (12 marks)

a Outline the advantages and disadvantages of transdermal drug delivery system (TDDS).

(4 marks)

b Describe the properties of an ideal transdermal product.

(4 marks)

c What are the factors associated with the medicament that affect drug release or penetration from TDDS?

(3 marks)

d What is the "intercellular route" of transdermal drug delivery?

(1 mark)

Question 4 (12 marks)

a Compare between hard gelatin and soft gelatin capsules?

(2 marks)

b Why granulation is important in pharmaceutical formulations for capsules?

(3 marks)

c Give an insight into the soft gelatin capsules. Describe briefly the common ingredients used in soft gelatin capsules.

(4 marks)

d What should be the properties of materials for hard gelatin capsule filling?

(3 marks)

Question 5 (12 marks)

a How granules prevent powder segregation?

(2 marks)

b What are the common problems encountered during manufacturing of tablets? How can you protect tablet from decomposition by moisture, light and heat?

(4 marks)

c Why enteric coated tablets are produced? What materials are used in enteric coatings?

(4 marks)

d What do you mean by freeze drying method? Why this drying method is useful?

(2 marks)

END of Section B

END of Exam Paper