BACHELOR OF PHARMACY HONOURS
FMU4357– PHYSICAL PHARMACY – LEVEL 4
FINAL EXAMINATION
DURATION: THREE (03) HOURS

DATE: 18TH MARCH 2022   TIME: 9.30 A.M. – 12.30 P.M.

Part B – Short Answer Questions (20 marks)

01.

1.1 Define the term "Half-life" of radionuclides.   (03 marks)

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1.2 Mention the four (04) major types of emulsions.   (04 marks)

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1.3 Write the equation for the radioactive decay and define the terms.   (03 marks)

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02.

2.1 Write two (02) main criteria which are used to categorize suspensions.   (04 marks)

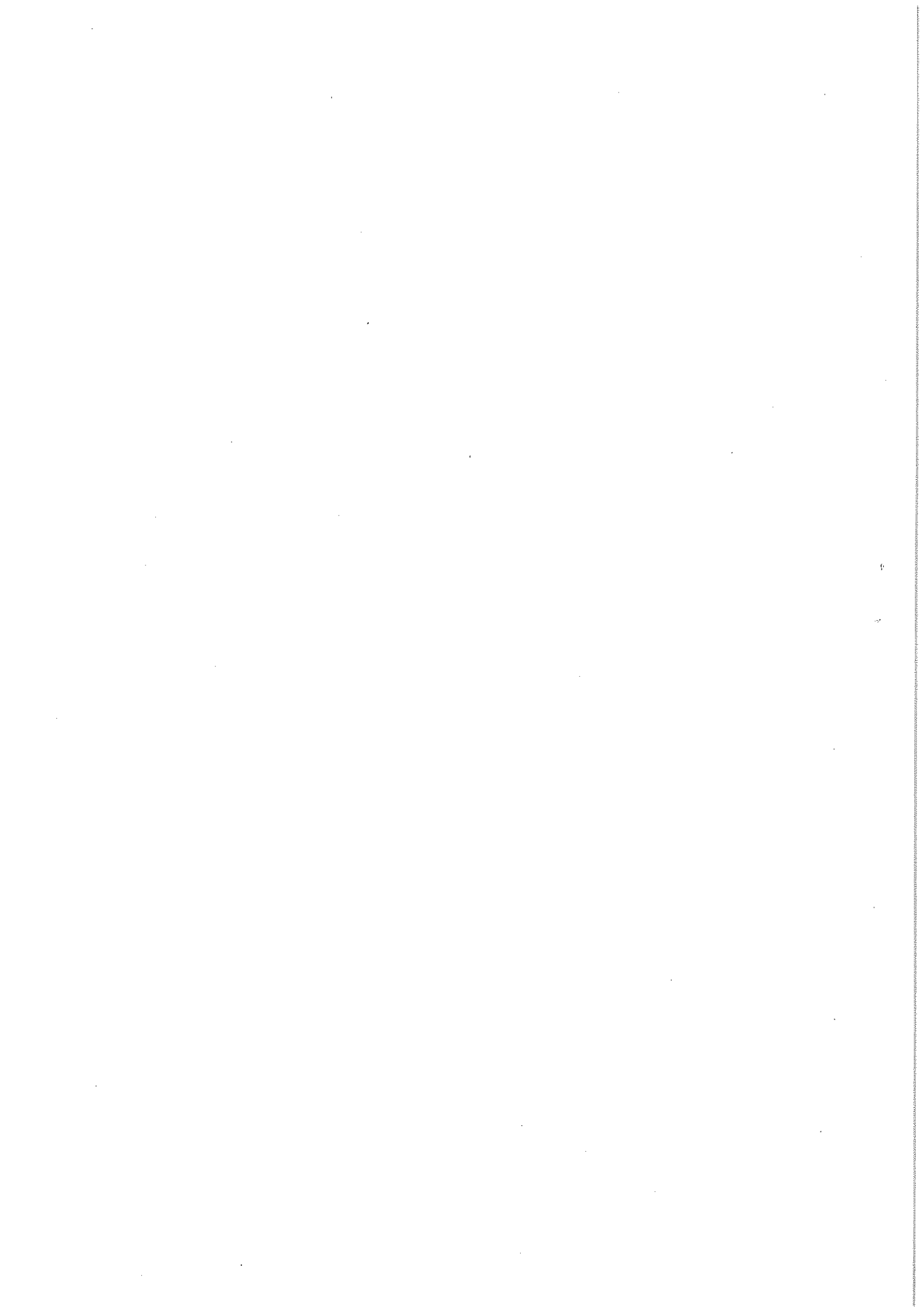..

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2.2 Write any two (02) main applications of Thermodynamics in Pharmacy.   (04 marks)

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2.3 What is bioavailability?   (02 marks)

Part C – 04 Structured Essay Questions (60 marks)

01.

1.1 What is a polymer? (01 mark)

1.2 Write any four (04) uses of polymers in Pharmacy. (02 marks)

1.3 What are the four (04) main classes of polymers? (02 marks)

1.4 What are thermoplastic and thermoset polymers? (02 marks)

1.5 What is polymerization? (01 mark)

1.6 Explain addition polymerization briefly. (05 marks)

1.7 What is meant by "addition homo-polymerization"? (02 marks)

02.

2.1 Give the main steps of dissolution solid dosage form. (03 marks)

2.2 Why dissolution tests are necessary to perform for drug-dosage forms? (04 marks)

2.3 Name any two (02) of dissolution test models. (02 marks)

2.4 Explain surface renewal theory and the diffusion layer model briefly. (06 marks)

03.

3.1 What is complexation? (01 mark)

3.2 Write two (02) main classes of chemical complexes. (02 marks)

3.3 What are the purposes of analyzing chemical complexes? (02 marks)

3.4 Write two (02) methods, which are used to analyze the chemical complexes? (01 mark)

3.5 Explain three (03) experimental methods which are used to determine the protein binding with drugs briefly. (06 marks)

3.6 Explain protein binding mechanism briefly. (03 marks)

04.

4.1   Drug A ——————————▸ Metabolites

This is a chemically balanced one step equation for the degradation of drug A. Rate of the reaction (R) depends on the concentration of drug A. What is the order of the reaction?

(02 marks)

4.2 Write down the rate equation of the above reaction (rate law) given in question 4.1 and express it in the linear form. Define all the terms.   (05 marks)

4.3 What is meant by the half-life of a drug? Write the equation for half-life for the reaction given in question 4.1.   (02 marks)

4.4 Suppose that the initial concentration of drug A tested is 50 mgmL^{-1} in blood. After one hour, blood report showed that the concentration of drug is 20 mgmL^{-1}. What is the half-life of the drug A? Give your final answer in minutes.   (06 marks)