BACHELOR OF PHARMACY HONOURS
FMU6505 – MEDICINAL CHEMISTRY – LEVEL 6
FINAL EXAMINATION
DURATION: THREE (03) HOURS

DATE: 27TH SEPTEMBER 2022 TIME: 1.30 P.M. – 04.30 P.M.

Part B – Short Answer Questions (20 Marks)

01.

1.1 State why the target selectivity of a lead compound is an important factor in drug designing. (02 marks)

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1.2 Name three (03) modern techniques that can be used to determine the chemical structure of a new lead compound. (03 marks)

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1.3 Name three (03) structure simplifications that can be done to a lead molecule, after a successful SAR study. (03 marks)

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1.4 State why rigidification of the structure is needed in drug discovery. (02 marks)

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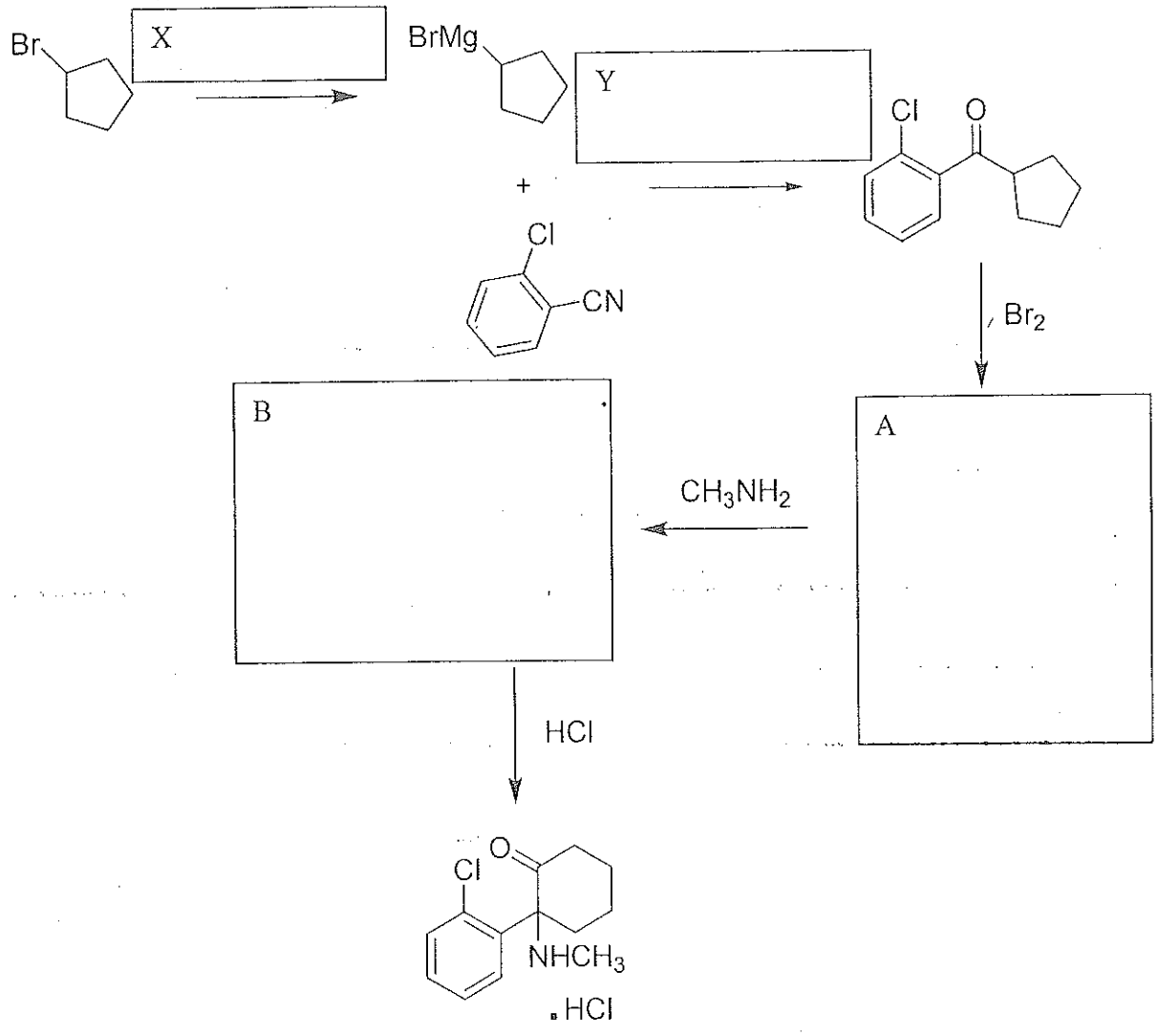
02. Give missing reagents (X and Y) and structures (A and B) in the following synthesis of general anesthetic drug ketamine. (10 marks)



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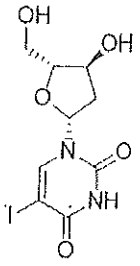
Part C – 04 Structured Essay Questions (60 Marks)

01.

1.1 What is the basis for categorizing antiviral drugs? (01 mark)

1.2 List the three (03) main categories of antiviral drugs. (03 marks)

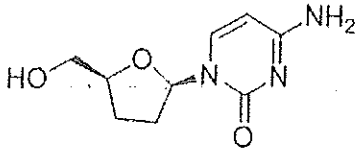
1.3 Explain the mechanism of action of antiviral drug, *Idoxuridine.* (08 marks)



Idoxuridine

1.4 Draw the structure of the active form of the following antiviral drug, *Zalcitabine.*

(03 marks)

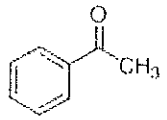


02.

2.1 List three (03) piperidine analogues that can be used as potent antiparkinsonism agents. (03 marks)

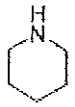
2.2 Antiparkinsonsnium drugs can be used to deal with different conditions of the disease. What are these different conditions of the disease? (03 marks)

2.3 During the synthesis of piperidine analogues, two of the most commonly used starting materials are piperidine and formaldehyde. What is the structure of the product formed when these two are mixed with acetophenone? (05 marks)



acetophenone

formaldehyde



piperidine

2.4 What is the name of the above reaction? (04 marks)

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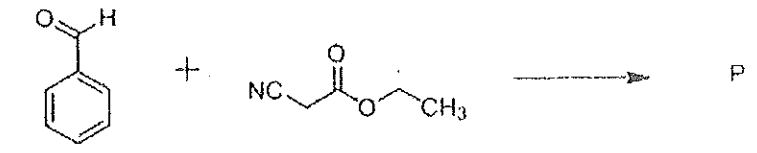
03.

3.1 What are the three (03) categories of cardiovascular drugs? (03 marks)

3.2 What is the main function of vasopressor drugs? (03 marks)

3.3 Prenylamine is a commonly used vasopressor drug. In the synthesis of this drug following reaction of benzaldehyde with ethylcyanoacetate is used. Draw the product of this reaction. (05 marks)



Benzaldehyde Ethylcyanoacetate

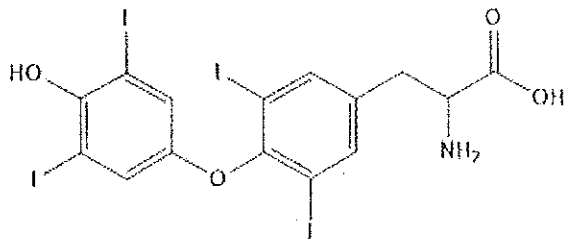
3.4 What is the name of this reaction? (04 marks)

04.

4.1 What are the five (05) main mechanisms of action based anti-thyroid agents? (05 marks)

4.2 Explain the mechanism in action of Thyroid Inhibitors? (05 marks)

4.3 Draw two (02) metabolized structures of the following thyroid hormone. (04 marks)



4.4 What would be the most suitable starting material for the thyroid hormone synthesis? (01 mark)