

UNIVERSITY OF RUHUNA – FACULTY OF ALLIED HEALTH SCIENCES  
DEPARTMENT OF PHARMACY

SECOND BPHARM PART II EXAMINATION – NOVEMBER/DECEMBER 2021

PH 2254: PHARMACOGNOSY 1B - PRACTICAL

TIME: THREE HOURS

**INSTRUCTIONS**

- There are two parts in this question paper (Part A and Part B).
- Answer all questions.
- No paper should be removed from the examination hall.
- Do not use any correction fluid.

**PART A**

**01.**

1.1. You are provided with an oven dried plant sample (A: 5 g) and a sample of crude extract obtained from a plant material (B: 25 ml.).

1.1.1. Carry out an appropriate hot extraction technique to obtain an aqueous crude extract of sample **A**. Write down all the steps you have followed to obtain the hot aqueous crude extract from the above sample. (15 marks)

1.1.2. Carry out the screening tests for identification of phytochemical groups present in each sample (**A** and **B**) using only the chemical reagents provided.

1.1.2.1. Record the chemical tests carried out and the relevant observations. (20 marks)

1.1.2.2. Name **three** different phytochemical groups present in each crude extract. (15 marks)

1.2. Write down a short account on factors affect the efficacy of the extraction of plant material. (25 marks)

1.3. Fibers can be obtained from various sources. Name **one** natural source for each fiber type given below. (10 marks)

1.3.1. Plant fibers

1.3.2. Animal fibers

1.4. Identify the pharmaceutical products (A-C) provided with you and write down the type of the fiber they are made of. (15 marks)

**PART B**

**02.**

- 2.1. Identify the given powder based on anatomical characters. (20 marks)
- 2.2. What are the identifying microscopic characters of elabatu? (20 marks)
- 2.3. What are the identifying anatomical characters found in Adathoda? (20 marks)
- 2.4. How to differentiate calcium carbonate crystals from oxalate crystals under the microscope? (20 marks)
- 2.5. List the important identification characters of ginger, niyangala, bebila, datura. (20 marks)

@@@@@@@@





**UNIVERSITY OF RUHUNA – FACULTY OF ALLIED HEALTH SCIENCES**  
**DEPARTMENT OF PHARMACY**  
**SECOND BPHARM PART II EXAMINATION – NOVEMBER/DECEMBER 2021**  
**PH 2254 PHARMACOGNOSY IB – SEQ**

**TIME: THREE HOURS**

**INSTRUCTIONS**

- There are **six** questions in part **A** and **B** 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 Carbohydrates have different applications in the pharmaceutical, food and cosmetic industries. Complete the following table with the appropriate answers. (30 marks)

Name	Source	Monomeric unit	Pharmaceutical use
Alginate			
Agar			
Pectin			
Lactose			
Starch			

- 1.2 Briefly explain the uses of natural gums in pharmaceutical preparations. (30 marks)

- 1.3 Write a short account on the types of tannins and their general chemical properties. (30 marks)

- 1.4 An image of a nutgall, which is a rich source of tannin is shown below.



- 1.4.1 Name the insect responsible for the formation of this nutgall. (02 marks)

- 1.4.2 What plant give rise to nutgalls? (02 marks)

- 1.4.3 List **three** compounds isolated from nutgalls. (06 marks)

**02.**

- 2.1 Complete the following table with missing information regarding glycosides. (45 marks)

Source	Major glycoside/s produced	Category of Glycoside	Pharmaceutical importance
Ex			
<i>Salix alba</i>	Salicin	Phenolic glycoside	Anti-inflammatory
<i>Aspergillus</i> sp			
<i>Vanilla planifolia</i>			
<i>Digitalis purpurea</i>			
<i>Rhamnus purshiana</i>			
<i>Glycyrrhiza glabra</i>			
<i>Aloe vera</i>			

2.2. Write a short note on each of the following.

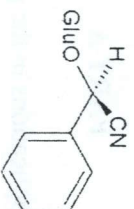
2.2.1. Medicinal uses of *Zingiber officinale*.

(25 marks)

2.2.2. Cytotoxic compounds from *Podophyllum* resin.

(25 marks)

2.3. Following image exhibits the typical structure of a cyanogenic glycoside. Show how it could release HCN upon hydrolysis. (05 marks)



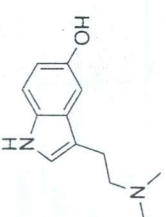
03.

3.1. Name the following psychoactive drugs shown below and indicate their source. (30 marks)

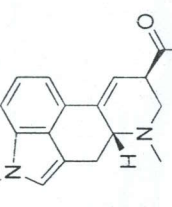
3.1.1.



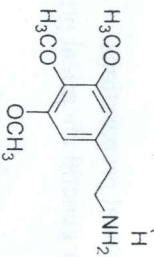
3.1.2.



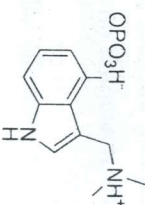
(30 marks)



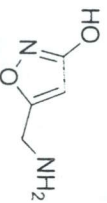
3.1.3.



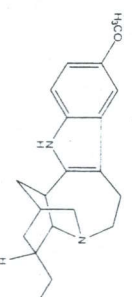
3.1.4.



3.1.5.



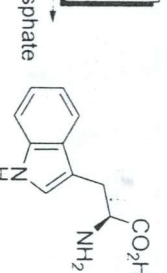
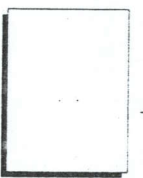
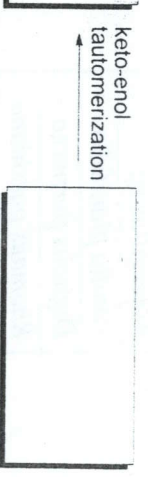
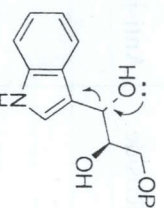
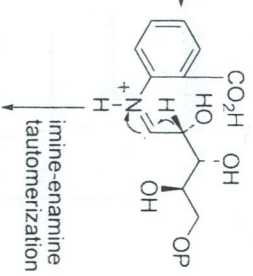
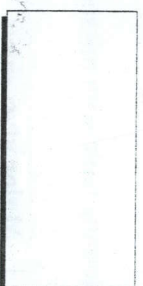
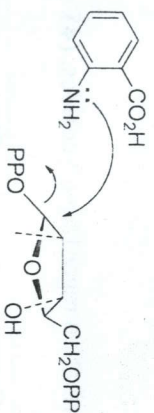
3.1.6.



3.2. Write a short note on common poisonous plants in Sri Lanka with special emphasis to the major toxic compounds and plant parts responsible for toxicity. (20 marks)

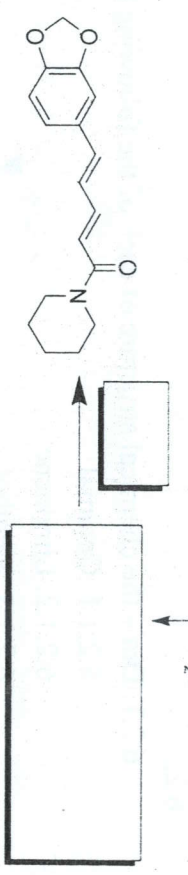
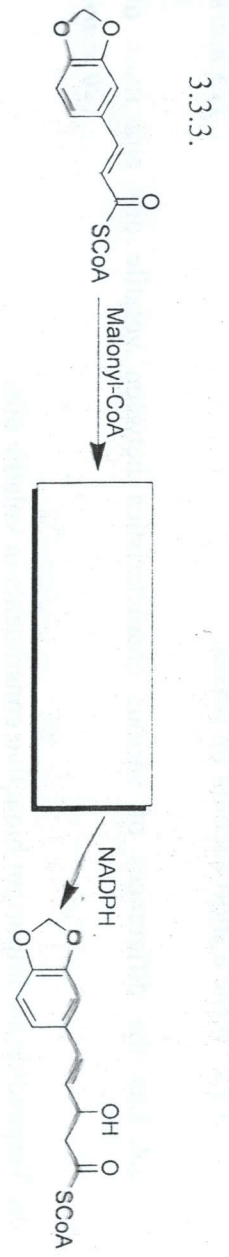
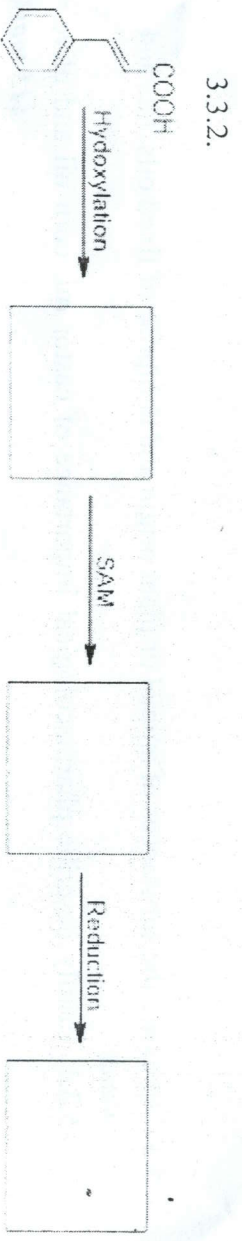
3.3. Write down the missing intermediates of the biosynthesis of following compounds. (50 marks)

3.3.1.



L-Trp





**PART B**

04. Write short accounts on followings:

- 4.1. An overview of chemical and physical nature of the alkaloids. (35 marks)
- 4.2. Distribution of alkaloids in the nature. (25 marks)
- 4.3. Pharmaceutical and medicinal uses of alkaloids. (40 marks)

05. Answer all parts.

- 5.1. Opium is the dried milky exudate derived from the unripe seed capsules of the poppy plant, *Papaver somniferum* and contains about 30 alkaloids.
  - 5.1.1. Write down **three** major alkaloids present in opium. (15 marks)
  - 5.1.2. Diacetyl morphine is obtained by the acetylation process of morphine. Draw the structure of diacetyl morphine. (10 marks)
- 5.2. The alkaloids given in the following table are widely found in the nature. Fill the blanks with the appropriate answers. (25 marks)

Type of the alkaloids	Chemical structure	Chemical classification	Examples for plant source
Example: Reserpine		Indole alkaloids	<i>Rauwolfia serpentina</i>
Nicotine	5.2.1. ....	5.2.2. ....	Tobacco <i>Nicotiana tabacum</i>
Atropine		5.2.3. ....	5.2.4. ....
Arecoline	5.2.5. ....	<i>Piperidine Alkaloids</i>	Betel nuts/ <i>Areca catechu</i>
5.2.6. ....		Piperidine Alkaloids	5.2.7. ....

5.3. Lipids are the substances of animal or plant origin and comprise of fixed oils, fats and waxes.

5.3.1. Briefly describe pharmacological importance of castor oil, corn oil and olive oil. (15 marks)

5.3.2. Write a short account on waxes. (15 marks)

5.4. List the differences of various characteristics between volatile oils and fixed oils. (20 marks)

06. Terpenoids are important bioactive constituents in volatile oils.

6.1. Briefly describe any **five** general properties of terpenoids. (15 marks)

6.2.

6.2.1. Draw the chemical structure of each of the following terpenoids.

6.2.1.1. Geranial (05 marks)

6.2.1.2. Limonene (05 marks)

6.2.1.3. Menthol (05 marks)

6.2.1.4. Camphor (05 marks)

6.2.2. Write down the biological source/s and pharmaceutical uses of menthol and camphor. (20 marks)

6.3. Briefly describe the biological source/s, principle chemical constituent and two pharmaceutical uses of the following volatile oils. (45 marks)

6.3.1. Peppermint oil

6.3.2. Cardamom oil

6.3.3. Clove oil

@@@@@@@@@@@@@@@@