



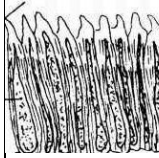
October University for Modern Sciences & Arts Midterm Exam Model answer

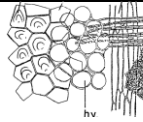
Faculty	Pharmacy
Department	Pharmacognosy
Module Code	PHG 112
Module Title	Pharmacognosy
Semester	Fall 2023 (80)
Date	14/11/2023
Time Allowed	1 hour
Total Mark	30 Marks
No. of Pages	6
Material provided	-
Equipment permitted	-
Additional Instructions	All Answers must be in English otherwise it will not be considered.

No books, paper or electronic devices are permitted to be brought into the examination room other than those specified above.

Question 1: (17 marks)

Predict the shown spaces, then discuss the following questions: (12.5 marks/0.5 mark each)

	Plant name	Main active constituent	One use	Chemical test	One key element	Type of embryo
A	Psyllium	Acidic mucilage (10 – 12 %) 2- Small amount of glycoside. 3- Fixed oil - protein	1-Bulk laxative (alone or associated with other purgatives as: Senna & Cascara). 2- Promising in lowering cholesterol and controlling diabetes.	Red colour with Ruthenium Red	-----	-----
B	Fenugreek	<u>mucilage</u> hydrolysis (mannose & Galactose) <u>Alkaloids:</u> Gentianine trigonelline saponins glycosides (steroidal sapogenin, gitogenin)	1- Hypoglycemic in diabetic patients 2Lactagogue 2-3-Treatment of dyspepsia & gastritis	methylene blue		Accumbent embryo
C	3-Castor seeds	Alkaloids: <u>Ricinine</u>	The oil is a powerful purgative (the seeds are toxic).	Sudan III	-----	-----
D	NUX VOMICA	strychnine	-Improves the appetite and digestion but it has been considerably misused as a general tonic. -Increase the blood pressure and is therefore valuable in certain cases of	-Mount a little of powdered Nux vomica in nitric acid, an orange red colour is produced (<u>Brucine</u>) - Mount a little of powdered <u>Nux vomica</u> in <u>Mandelin's reagent</u> (Ammonium	Sclerides like-epidermis with 10 lignified ribs	Straight

			cardiac failure	metavanadate+ H ₂ SO ₄ ; a <u>pinkish to violet</u> colour is produced (<u>Strychnine</u>)		
E	Linseed	-fixed oil containing high contents of the unsaturated fatty acids: oleic acid (39%), linoleic acid (15%) and α - linolenic acid -cyanogenic glycoside (linamarin). - mucilage	1-Linseed is used in patients with <u>rheumatoid</u> <u>arthritis and</u> <u>psoriasis</u> . 2-Demulcent in acute or chronic gastritis (<u>mucilage</u>) 3-Bulk laxative in habitual constipation, due to its <u>mucilage</u> & <u>fixed oil</u> which have a lubricant effect.	For Mucilage : Red colour with Ruthenium Red For Fixed oil : Red colour with sudan III		Straight
F	STROPHANTHUS	mixture of cardiac, glycosides K – strophanthin & K - strophanthoside	Cardiac stimulant and cardiotonic	<u>sulphuric acid</u> (66 % v/v)	hairs showing one lignified rib	straight

- Referring to plants from (A to F), answer the following questions: (4.5 marks)

1-What do you suggest for the preparation of drug (A) in a pharmaceutical dosage form? (1 mark)

- Psyllium husk:
- Psyllium seed husk are indigestible and are a source of soluble **dietary fiber**.
- The seeds are placed in water , the seed coat swells (the epidermal cells) forming layers of mucilage around the seed which are peeled & left to dry.
- It is then purified and used as laxative (in chronic constipation).

2-Explain the consequences that will happen if a pregnant female who is suffering from constipation used drug (B). (0.5 mark)

-oxytocic and uterine stimulant activity

3-Justify for hard texture of the dried seeds of (D). (0.5 mark)

cells with very thick, hemicellulosic, non lignified wall showing plasmodesma

4-State in your own words two reasons of non-toxicity of drug (E). (1 mark)

- Toxic effects arising from the liberation of HCN from the cyanogenic glycoside (Linamarin) by the enzyme linamarase.

When crushed seeds are taken internally, linamarase is partly inactivated under the influence of the acidity of the stomach and less than 1% of the cyanogenic glycoside is hydrolyzed.

Hydrolysis time of four hours is required *in vivo* system.

The majority of HCN, liberated is converted rapidly into the relatively non toxic thiocyanate through a detoxification mechanism in the body.

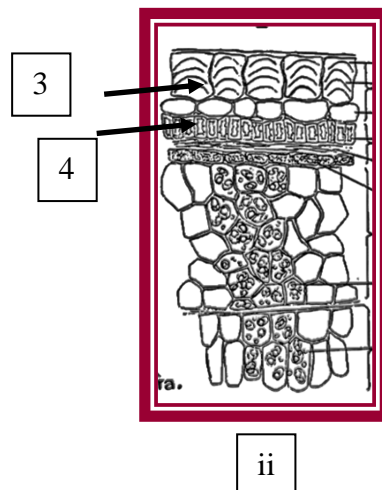
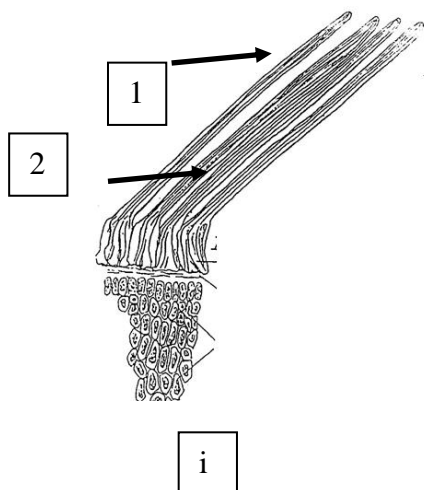
The minor part of HCN remained is eliminated via the urine and the feces

5-I-The given transverse sections are **correlated** to which seeds from (A-F) (0.5 mark)

Nux vomica and linseed

II- **label** numbers from (1-4) (1 mark)

1-Hairs 2-Epidermis 3-epidermis 4- sclerides



Question 2:

Correct the underline word at each sentence by a suitable term: (5 marks)

Sentences	Corrected word
1- <u>In Anatropous ovule</u> , the whole ovule is bent upon itself instead of upon the funicle so that the funicle, chalaza and micropyle are all close to one another and no raphe is present e.g.Mustard seed	Campylotropous
2- <u>The raphe</u> is a basal swollen part of the nucellus from which arise the integuments & where the vascular strand from the funicle branches to enter different parts of ovule	Chalaza
3- <u>Endosperm</u> is the root growing point	Plumule
4- <u>Nigella seed</u> is a seed with pigment layer devoid of coloring matter and sclereids which are much more even in height.	White mustard
5- <u>In Orthoplocus embyo</u> the radicle may be bent over or against one of the straight cotyledons e.g. Cannabis	Incumbent
6- <u>Arillus</u> is the outgrowth of a seed used as cardiotoxic	Awm
7- <u>The epidermis of linseed</u> is prolonged into long hairs showing 10	Nux vomica

lignified rib	
8-Colchicum is a hallucinogenic seed	Nutmeg
9-Black mustard can be used in gout	Colchicum
10-The main active constituent in nigella is alkaloids	Volatile oil

Question 3: Answer the following cases (6.5 marks)

1-A 23 years old female suffering from habitual constipation and nervous strain. (3 marks)

a-Select a seed to treat her case? (1 mark)

Cardamom

b-What is the main active constituents present in of the chosen drug? (1 mark)

-Volatile oil. The oil contains a high percent of terpinyl acetate and cineole and smaller quantities of other monoterpenes, including alcohols and esters

c-How would you test for the chosen drug? (1 mark)

-Sudan III-Red colour with Ruthenium Red

2- A 21 years old male presents to the clinic suffering from severe pain in his joints. On physical examination, it was noticed that the patient has rheumatoid arthritis. A counter irritant drug was given to him. (2 marks)

a-Suggest a name of a drug that is likely to be needed in the treatment regimen. (0.5 mark)

Black Mustard

b-What is the main active constituent of this drug? (0.5 mark)

1 Mucilage

2 Protein 3- F.O. 4-Sinigrin glycoside

c- How would you test for this drug? (0.5 mark)

Test for purity Hg(NO₃)₂T.S

d- Choose a name of an alternative seed with the same use to your chosen drug. (0.5 mark)

White Mustard

3- Mr Ahmed is a 48-year-old presented at the eye unit of a teaching hospital with a history of gradual, painless vision loss. On physical examination, he was diagnosed with glaucoma. (1.5 marks)

a-Select the name of a drug that is likely to be used in the treatment of this case. (1 mark)

Calabar beans

b-What is the main active constituent of a drug that could be helpful in his case? (0.5 mark)

Alkaloids (physostigmine also known as eserine)

Question 4: You are provided with 6 sentences, point out the odd word that doesn't coordinates with the corresponding mentioned parameter in each sentence. (1.5 marks/0.25 mark each)

- | | |
|---|-------------------------|
| 1- <u>Linseed</u> - Nux vomica- <u>Black mustard</u> | (straight embryo) |
| 2- Black mustard - <u>Linseed</u> - <u>Foenugreek</u> | (mucilage in epidermis) |
| 3- <u>Psyllium</u> - <u>linseed</u> -Nigella | (omega fatty acids) |
| 4- <u>Linseed</u> - Strophanthus- Nux vomica | (one seed coat) |
| 5- <u>Testa</u> -Endosperm-Embryo | (kernal) |
| 6- <u>Nux vomica</u> -Strophanthus -Colchicum | (outgrowth) |

 End of questions

Assessment of Achievement of Module LOs:

Midterm Written Exam				
Question Number	Type of Questions according to Bloom's taxonomy	Marks	Marks %	Module LOs (as numbered in module specifications)
I	Comprehension (table) Knowledge (Question 2 ,5 II) Application (Questions 1,3,4,5 I)	17	11.3	1-1-1-1-1 ,1-1-4-1-1 2-2-1-2-1 ,2-3-1-1-1 3-2-6-1-1
II	Knowledge Application	5	3.3	1-1-1-1-1 ,1-1-4-1-1 2-2-1-2-1 ,2-3-1-1-1 3-2-6-1-1
III	Case 1 a Application b Knowledge c Comprehension Case 1 a Application b Knowledge c Comprehension d Choose Case 1 a Application b Knowledge	6.5	4.3	1-1-4-1-1 ,2-2-1-2-1 2-3-1-1-1 3-2-6-1-1
IV	Analysis	1.5	1	1-1-1-1-1 2-2-1-2-1, 2-3-1-1-1
Total		30	20%	

**October University for Modern Sciences and Arts
Faculty of Pharmacy- Pharmacognosy department
Midterm Exam – Fall 2023
Course Coordinators: Assoc Prof Dr Eman Sherien,
Dr. Ibrahim Ezz**

**PHG 112
Pharmacognosy
1 hour
Date:14/11/2023**

		Marks		
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