



October University for Modern Sciences & Arts Midterm Exam MODEL ANSWER

Faculty	Pharmacy
Department	Pharmacognosy
Module Code	PHG112 (Year 1)
Module Title	Pharmacognosy
Semester	Spring 2026
Date	29/03/2026
Time Allowed	1 hour
Total Mark	30 Marks
No. of Pages	4
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.

ALL QUESTIONS SHOULD BE ANSWERED

30 Marks

Question 1:

(9 marks, 0.75 marks each)

Choose the correct answer

1- Which of the following best defines nutraceuticals?

- a. Synthetic drugs used for treating diseases
- b. Products derived from food with additional health benefits beyond nutrition
- c. Cosmetic products that only improve appearance
- d. Herbal medicines used exclusively in hospitals
- e. Nutritional supplements containing only vitamins

2- A patient with celiac disease is advised to consumeseeds.

- a. Pumpkin
- b. Nigella
- c. Quinoa
- d. Chia
- e. Castor

3- Which of the following structures results from the fusion between the funicle and the integument?

- a. Raphe
- b. Chalaza
- c. Hilum
- d. Micropyle
- e. Endosperm

4- Linseed is contraindicated in cases of.....

- a. *Angina pectoris*
- b. *Diabetes mellitus*
- c. Intestinal obstruction
- d. Constipation
- e. Heart failure

5- The main active constituent responsible for many therapeutic activities of nigella seeds is....

- a. Ricinine
- b. Thymoquinone
- c. Physostigmine
- d. Colchicine
- e. γ -linolenic acid

6- In some fruits such as apples and pears, which structure participates in fruit formation in addition to the gynaecium?

- a. Cotyledon
- b. Corolla
- c. Receptacle
- d. Calyx
- e. Anthers

7- The scar left by the removal of the seed from its funicle or stalk is known as.....

- a. Raphe
- b. Chalaza
- c. Hilum
- d. Micropyle
- e. Endosperm

8- Which of the following statements about castor seeds is correct?

- a. The seeds are safe for direct consumption
- b. The seeds contain the toxic protein ricin
- c. The seeds contain the toxic alkaloid ricinine
- d. The oil is unsafe to be used to boost hair growth
- e. They are mainly used to treat diarrhea

9- The fruit type of plants belonging to family Umbelliferae (Apiaceae) such as fennel and anise is:

- a. Capsule
- b. Drupe
- c. Berry
- d. Cremocarp
- e. Aggregate

10-is a crude drug used to reduce intraocular pressure in cases of glaucoma.

- a. Colchicum
- b. Calabar
- c. Pumpkin
- d. Physostigmine
- e. Chia

11- The cremocarps of the apiaceous fruits shows a total of vittae.

a.6 b.8 c.10 d.12 e.14

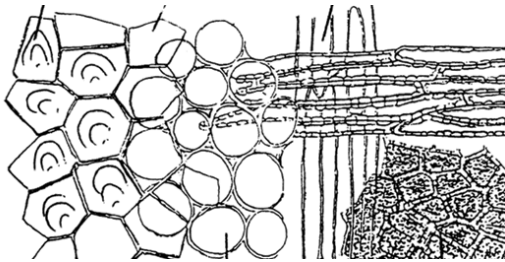
12- Which chemical constituent in *Ammi visnaga* is mainly responsible for its spasmolytic action?

a. Psoralene b. Khellin c. Physostigmine d. Ricinine e. γ -linolenic acid

Question 2:

(12 Marks, 2 marks each)

Answer ONLY SIX of the following questions



(A)



(B)

- a- Identify the key element shown in figure (A), mention the name of the drug and 2 of its uses.
Mat-like structure- Linseed- Internally: 1-Linseed is used in patients with rheumatoid arthritis and psoriasis. 2-Demulcent in acute or chronic gastritis (mucilage) 3-Bulk laxative in habitual constipation, due to its mucilage & fixed oil which have a lubricant effect. The laxative action arises from an increase in the volume of the intestinal bowel contents and consequent reflex stimulation of peristalsis. 4-Anti-inflammatory (Omega-3 fatty acids have demonstrated effect due to reduced production of inflammatory mediators). 5- Heart protecting against angina pectoris, since Omega-3 fatty acids reduce the whole blood viscosity & lowers the cholesterol level. Externally: Used as an emollient in poultices for boils, carbuncles and other skin infections. (ANY 2 USES)
- b- Identify the key element shown in figure (B), mention the name of the drug and its active constituents.
Warty simple non-glandular hairs- Anise- Essential oil (1.5-5%) containing: Trans-anethole (80-90%), responsible for the taste and smell. Methyl chavicol (1:2%), which also smells like anise but doesn't taste sweet. Anisaldehyde (1%).
- c- Evening primrose oil is often used to relief Premenstrual Syndrome (PMS). Comment.
Evening primrose oil is a source of phytoestrogens, or compounds that mimic the effects of estrogen in the body. It is often used to help balance hormones, particularly in women. It can be beneficial for symptoms related to hormonal imbalances (low estrogen), such as Premenstrual Syndrome (PMS) and menopausal symptoms. The GLA in primrose oil helps regulate hormone levels in the body.
- d- Strophanthus seeds can be employed as a substituent for digitalis. Rationalize.
It is used as substituent for digitalis as both are cardiac stimulants and cardiotonics, but it is not cumulative and less liable than digitalis to produce gastric& intestinal irritation.
- e- Contrast the effects of jojoba oil and castor oil on damaged hair.

Jojoba oil: 1. Moisturises Hair 2. Promotes Hair Growth & Thickness 3. Repairs Damage From Heat & Styling Tools 4. Maintains Scalp's Natural Balance 5. Controls Dandruff
Castor oil: Applying castor oil just once a month can boost hair growth up to five times the usual rate. It can moisturize a dry, irritated scalp. Castor oil's antibacterial and antifungal properties can reduce dandruff. It can help grow hair in other parts of the body, like the eyebrows and eyelashes

f- Recommend a drug that can be used externally as a lotion for treating vitiligo and give its active constituents.

***Ammi visnaga*, Bitter principles: Khellin, visnagin and visnadin, Flavonoids: quercetin, Essential oil containing α -terpineol and linalool, Fixed oil & protein**

***OR Ammi majus*, Bitter principles: Psoralene and Ammidin, Fixed oil & protein**

g- Define the fruit pericarp and distinguish between its three layers.

The fruit wall enclosing the seed and is typically made up of three distinct layers: the epicarp, which is the outermost layer; the mesocarp, which is the middle layer; and the endocarp, which is the inner layer surrounding the ovary or the seeds.

Question 3:

(9 marks)

Read carefully the following case studies and answer the corresponding questions:

Case A:

(5 marks, 1 mark each)

A start-up cosmeceutical company is developing a new men's grooming product: a post-shave soothing balm. They want to use a natural ingredient to reduce the redness and irritation caused by shaving. Their goal is to create a product that not only soothes and moisturizes but also actively helps repair the skin barrier and has anti-aging benefits

1- Define "cosmeceutical" and why is it different from "cosmetics"?

Cosmeceuticals are topical agents that offer properties of both cosmetics, which beautify or enhance appearance, and drugs, which therapeutically alter the skin's physiology and/or reverse a disease process.

Cosmetics are substances or products intended to be applied to the external parts of the body (such as the skin, hair, nails, lips, and teeth) for the purpose of cleansing, beautifying, perfuming, or altering appearance without affecting the body's structure or functions.

2- Identify the natural ingredient that could be added in this preparation.

Foenugreek

3- Elaborate on its mechanism of action as an anti-aging ingredient.

It has an anti-collagenase activity and increased collagen production will be used as anti-aging remedy

4- Mention the side effect that should be stated on the post-shave balm label.

Repeated external applications can result in undesirable skin reactions.

5- How can you ensure the identity of this natural ingredient using microscopical examination. (2 key elements)

Fragments of testa showing the palisade like epidermal cells, the basket-like cells of the sub-epidermal layer.

Case B: (4 marks, 1 mark each)

During a severe influenza season, a local pharmacy is inundated with prescriptions for antiviral medications. A 60-year-old man arrives with a prescription for oseltamivir (Tamiflu), but the pharmacy is temporarily out of stock due to the high demand. The man is anxious, as he has underlying respiratory conditions and is worried about catching the flu.

1- Can you recommend a natural spice that contains the same ingredient used to make Tamiflu so that the patient could make a tea with it instead.

Star Anise

2- Identify the compound that makes it similar to Tamiflu.

Shikimic acid

3- This spice can be sourced from China or Japan, which species is more preferred? Justify your answer

Chinese species as Japanese star anise (*Illicium anisatum*), is highly toxic and inedible

4- This spice odour is comparable to that of another famous spice, what is it and why are these odours similar?

Its volatile oil mainly anethole more than 4.5%., which is the same ingredient that gives the anise (*Pimpinella anisum*) its distinctive odor

----- - **End of questions**