



October University for Modern Sciences & Arts

Model Answer of Midterm Exam

Faculty	Pharmacy
Department	Pharmacognosy
Module Code	PHG 112 (Year 1)
Module Title	Pharmacognosy
Semester	Fall 2025
Date	6/ 11 / 2025
Time Allowed	One hour
Total Mark	30 Marks
No. of Pages	4 (cover page is not included)
Material provided	----
Equipment permitted	-----
Additional Instructions	All answers must be in English otherwise they 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 are to be answered.

Total marks= 30

Question 1: Choose the correct answer:

(9 marks, 0.75 mark each)

1-It results because the coats at the apex not quite complete leaving such a scar

a-Micropyle b-Hilum c- Kernel d- Chalaza e-Plumule

2- Strophiole is a type of outgrowth of testa present in.....seeds.

a- Strophanthus b-Cardamom c-Nutmeg d-Colchicum e-Castor

3-.....seed is used in the treatment of obesity

a- Calaber bean b-Colchicum c-Nigella d- Evening primerose e- Chia

4-.....is an example of exalbuminous seed

a-Cardamom b-Linseed c-Foenugreek d-Mustard e-Strophanthus

5- is a term used to describe any product derived from food sources with extra health benefits.

a- Cosmeceuticals b-Pharmacognosy c-Nutraceuticals d-Herbal medicine e-Phytochemistry

6- seeds are used as analgesic in urinary disorders.

a- Nigella b-Castor c- Foenugreek d- Jojoba e- Pumpkin

7-..... is the main key element used for the identification of Foenugreek.

a- Mat-like structure b- Non glandular hair c-Endosperm d-Glandular hair e-Palisade-like epidermal cells

8- Star anise is classified as.....fruit

a-Simple b-Aggregate c- Drupe d- Berry e-False

9- Umbelliferous fruits are classified as..... fruits.

a-False b-Dehiscent c-Indehiscent d-Schizocarpic e-Polycarpous

10-.....is the seed used to treat respiratory tract conditions, support circulatory and immune system

a- Nigella b-Castor c- Foenugreek d- Jojoba e- Pumpkin

11-is a minute thread that lies between the two mericarps of Umbelliferous fruits.

a- Stylopod b-Cremocarp c- Carpophore d-Primary ridge e-Secondary ridge

12-..... is the compound responsible for the taste and smell of anise.

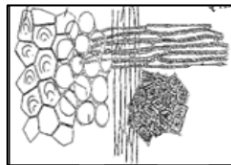
a- Trans-anethole b- Methyl chavicol c- Anisaldehyde d- Dianethole e-Dianisidine

1	2	3	4	5	6	7	8	9	10	11	12
a	d	e	d	c	e	e	b	d	a	c	a

Question 2: Explain each of the following sentences (12marks)



(A)



(B)

a- Identify the key element shown in figure (A) (0.5 mark), mention the name of the drug (0.5 mark), and 2 characters of the family (2 marks).

Non glandular hair (0.5 mark)- Anise (0.5 mark)

Characters of the family (two only) (2 marks)

Morphological characters

- 1)The fruit is true, simple, dry, schizocarpic, cremocarp that splits upon drying into two indehiscent one seeded mericarps.
- 2)The apex of the fruit is crowned with a conical structure named stylopod (represents the remains of the style, stigma and nectary disc)
- 3)The fruits are derived from inferior ovary as clear from the presence of remains of floral parts just beneath the stylopod at the fruit apex
- 4)Each mericarp has a flat surface, the commissural surface, and a rounded surface, the dorsal surface
- 5)Surface of the cremocarp is characterized by the presence of 10 primary ridges(5 on each mericarp) over the vascular bundles & 8 secondary ridges over the vittae
- 6)Each mericarp is one-seeded. The seed is attached by its testa to the pericarp so that it completely fills the locule
- 7)The seed is apically placented and contains a small embryo that is embedded in an oily endosperm. It is derived from anatropous ovule; consequently, a fine vascular strand, the raphe, extends on the commissural surface of each seed
- 8)Carpophore is a minute thread lies between the two mericarps. It is an elongation of the receptacle between the carpels

Histological characters

- 1)Epicarp is usually one row (epidermis).
- 2) Glandular trichomes are rare, while non-glandular trichomes occur as unicellular to multicellular having a shaggy form.
- 3)The fruits are characterized by the presence of schizogenous secreting ducts (vittae) in the mesocarp, containing volatile oil or bitter principles; they are six in number in each mericarp.
- 4)The vascular bundle is bicollateral fibro-vascular bundle and sometimes accompanied by reticulate parenchyma cells. They are five in number in each mericarp and located in the mesocarp in primary ridges.
- 5)The endocarp is composed of one row of narrow elongated cells. It appears in surface view as parallel cells, arranged in groups, either in parquetry or non-parquetry manner.
- 6)Endosperm is composed of thick cellulosic cells containing fixed oil and aleurone grains. Each aleurone grain contains one or more micro-rosette crystals of calcium oxalate.

- b- Identify the key element shown in figure (B) (0.5 mark), mention the name of the drug(0.5 mark) and its uses. (2 marks).
Mat – like structure (epidermis, hypodermis, sclerides) (0.5 mark)
Linseed (0.5 mark)
Uses: (2 marks)
- Nutraceutical: Anti-inflammatory, heart protection, demulcent, bulk laxative, emollient for skin
- Cosmeceutical: Hair mask & oil, strengthens follicles
- c- Suggest two toxic drugs (1 mark), mention the reason of toxicity of each drug (2 marks)
Castor seeds (0.5 mark), the seeds contain an irritant substance named Ricin that poisons the blood, it inhibits protein synthesis in animal cells and leads to cell death.
N.B: One of the most potent natural toxins known. One seed can kill a child (1 mark)
Hemlock fruit (0.5 mark),
Coniine is a poisonous alkaloid found in poison and contributes to hemlock's fetid smell.
It is a neurotoxin which disrupts the peripheral nervous system. Death caused by respiratory paralysis (1 mark)
- d- Compare the applications of psyllium and quinoa seeds (2 marks).
Psyllium: bulk laxative (alone or associated with other purgatives as: Senna & Cascara) especially during pregnancy. Promising in lowering cholesterol and controlling diabetes.
Quinoa: treatment of Obesity, Diabetes, Celiac disease and Antioxidants.
- e- Coriander is usually added to purgative preparations. Rationalize. (1 mark).
Coriander is spasmolytic, carminative added to purgative preparations to prevent the gripping effect.

Question 3: Read carefully the following cases and answer the corresponding questions (9 marks)

- a- A 35-year-old man suffers from type 2 diabetes. Suggest a crude drug suitable for him (1 mark) mentioning its main active constituent (1 mark). He complains from nerve pain (diabetic neuropathy) , suggest another drug to treat this symptom (1 mark) mentioning its main active constituent (1 mark), showing how to test for this active constituent (1 mark).
Crude drug: Foenugreek , psyllium, chia or quinoa (1 mark)
Main active constituent: (1 mark) according to the chosen seed
Diabetic neuropathy: Capsicum Fruit (1 mark)
Main active constituent (1 mark) Pungent principles named Capsaicinoids including capsaicin
Test for this active constituent (1 mark) Capsaicin gives a bluish-green colour on addition of few drops of FeCl₃ Or Capsaicin dissolved in H₂SO₄ and small piece of sucrose sugar is added, a violet colour is developed after few hours.
- b- A young lady was suffering from kidney stone. Suggest a drug for treatment of this case (1 mark). What should you warn her about this drug (1 mark). How can you differentiate it from the other species (2 differences) (2 marks).

The drug is *Ammi visnaga* (1 mark)
Not used in pregnancy due to uterine stimulating activity of khellin

Side effects

1- Photodermatitis in sensitive individuals

2- Prolonged use or an overdose may cause nausea, vertigo, constipation, lack of appetite, headache, allergic symptoms (itching) and sleeplessness (1 mark)

Item	<i>Ammi majus</i>	<i>Ammi visnaga</i>
Colour	No violet tinge	Violet tinge
Carpophore	Forked	Simple
Shape of VB	Oval	Crescent shaped
Inner most layer of mesocarp	Non-porous	Porous
Epicarp	Distinctly striated	Finely striated

End of questions