



October University for Modern Sciences & Arts Model Answer of Final Exam

Faculty	Pharmacy
Department	Pharmacognosy
Module Code	PHG112 (Year 1)
Module Title	Pharmacognosy
Semester	Fall 2024
Date	18-1 -2025
Time Allowed	2 hours
Total Mark	60 marks
No. of Pages	4 Pages
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 are to be answered. The exam is located in THREE PAGES. Total marks= 60

Question 1: You are working as a teaching assistant in the pharmacognosy course and some of your students came to the laboratory and asked about some confusing points: (10 marks, 2 each)

1-Ahmed till now cannot recognize hemlock from star anise (type of fruit and active constituents).

Item	Hemlock	Star anise
Type of fruit	Cremocarp	Aggregate of follicles
Active constituent	Coniine , toxic alkaloid	Volatile oil

2-Hesham cannot distinguish between mentha and artemisia (active constituents and uses).

Item	Mentha	Artemisia
Active constituents	Volatile oil mainly menthol, flavonoids, tannins	Volatile oil mainly Monoterpenes such as Artemisia ketone, camphor-artemisinin-coumarin
Uses	-Local action: antipruritic, mild local anesthetic and antiseptic -Systemic action: carminative and gastric sedative -Flavoring agent	-Treatment of malaria -Anti-viral against SARS-CoV-2 -Wound healing

3-Maha cannot differentiate between onion and potato (active constituents and uses).

Item	Onion	Potato
Active constituents	Sulfur compounds	vitamin C, potassium, various B vitamins, calcium, iron, phosphorus, copper
Uses	Hypoglycemic. Antibacterial. Inhibition of platelet aggregation. Antihyperlipidaemic .	Prevents aging Improves digestion Treats ulcers Speeds up Wound Healing

4-Huda till now cannot recognize mucilage in linseed and foenugreek (location and test).

Item	Linseed	Foenugreek
Location	Epidermal cell	Endosperm
Test	Ruthenium red	Methylene blue

5-Ola needs to know the difference between pungent principles from ginger and capsicum (name and method of destruction).

Item	pungent principles from ginger	pungent principles from capsicum
Name	Gingerol	Capsaicin
Method of destruction	Boiling with KOH	Oxidation with permanganate or dichromate

Explain how can you guide your students in each case

Question 2: Explain the reason for each of the following statements: (10 marks, 2 each)

1-A mixture of castor oil, jojoba oil and rosemary oil is used as a cosmeceutical product.

This mixture helps to boost hair growth, it can moisturize dry hair, it can reduce dandruff, it can help grow hair, repairs damaged hair and reduce hair fall.

2-Avocados are one of the best foods for reducing inflammation in tissues, joints, and muscles

This is attributed to the wide range of phytochemicals, flavonoids, carotenoids, phytosterols, fatty alcohols, and omega-3 fatty acids it contains.

3-Lemon juice, is able to cure skin disorders.

The juice contains vitamin C, it can be applied to reduce the pain of sunburn. It is also good for acne and eczema. act as an anti-aging, and a natural antiseptic.

4-Ashwaganda is an adaptogen to help increase energy and resistance to stress.

It contains steroidal lactones and alkaloids so it helps as a sleep aid and memory enhancement.

5-Fennel is used in the preparations containing rhubarb.

Fennel is used as a carminative. It regulates the peristaltic function of GIT and relieves the pain and cramping associated with purgatives to allay their gripping effect.

Question 3: Read the following cases and answer the corresponding questions (18 marks)

Case 1

Adel is 35- year- old, he is heavy smoker, he wants to stop smoking but he needs a replacement.

I- Suggest a drug that can be used to help him, mention its main active constituent, and explain other uses of this drug. (3 marks)

Name (1mark)	Main active constituents (1mark)	Other uses (1mark)
Lobelia	-Alkaloids (0.25-0.4%)Lobeline, lobelidine, lobelanine and isolobelanine.	1-Expectorant 2-Inbronchitis& bronchial asthma as it dilates the bronchioles 3-Ressucitation of new born

Case 2

Mona is suffering from severe migraine

I-Suggest a crude drug that can be used to treat this problem, mention its main active constituent, and how can you test for this active constituent. (3 marks)

Ergot (1mark)

Ergotamine alkaloid (1mark)

-Chemical test: Test for Chitin: Digest the sclerotium with NaOH to give chitosan, acetic acid and ammonia. Chitosan + Iodine + H₂SO₄ gives violet colour (1mark)

Or

Van Urk test: Shake the ergot with Na₂CO₃ and CHCl₃. Separate the chloroform layer and shake it with PDMAB and FeCl₃ in H₂SO₄ where a blue colour is developed in the acid layer

II- Suggest two other active constituents of this drug, and explain their uses. (4 marks)

Ergometrine alkaloid (1 mark): -It stimulates the uterus and initiate delivery (labor) (1 mark)

Ergotoxin alkaloid (1 mark): used to treat hypertension (1 mark)

Case 3

Mrs. M. came to your pharmacy complaining from some problems; she suffers from damaged hair, presence of dandruff that irritate her scalp. She also has dry skin with the appearance of some wrinkles in her face. She asked you to formulate two natural preparations; each as a mixture of 2 crude drugs to be used for each problem

I. Suggest the components of the two preparations (4 marks).

For damaged hair, presence of dandruff that irritate her scalp: onion juice, castor oil, rosemary oil, jojoba oil (use any two drugs) (2 marks).

For dry skin with the appearance of some wrinkles in her face: potato juice, lemon juice, avocado, papaya (use any two drugs) (2 marks).

II. Mention the main constituents for each drug in both preparations (4 marks).
According to the chosen herb, mention the active constituents.

Question 4: You are supplied with a tea bag composed of three drugs detected from the following key elements (two key elements for each drug): (12 marks)

a) Predict a common medicinal use for this mixture (one mark)

Cough mixture

b) Identify the key elements and name the corresponding drug (6 marks)

Anise:

1-Hair 3- branched vittae (2 marks)

Thyme:

2-Non glandular hair 4- glandular labiate hair (2 marks)

Liquorice:

5-Crystal sheath 6- xylem vessel (2 marks)

c) Describe the tests that can be used to confirm the identity of the components of the tea bag (3 marks)

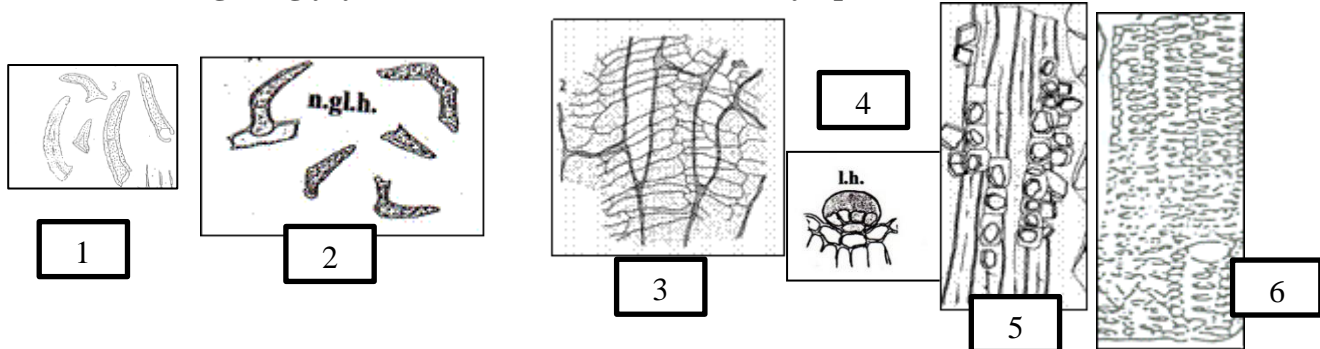
Anise: Sudan III , for volatile oil (one mark)

Thyme : Thymol crystals + 1 ml glacial acetic acid + 6 drops conc H₂SO₄ + 1 drop HNO₃ , deep bluish green (one mark)

Liquorice : 1-Froth test:Powder + Water in a test tube and shake well, Persistent froth stable for more than 1 min. (saponin) or

2- Powder +66% H₂SO₄, orange red colour (one mark)

- d) Is there any contraindication for the use of these drugs? Explain (2 marks)
Glycyrrhizin is known to cause negative side effects, such as hypertension and edema; removing the glycyrrhizin is meant to avoid these symptoms



Question 5: Match Column A with the appropriate statements from columns B & C. Re-write Column A with the chosen answers in your answer paper (10 marks)

Column A	Column B	Column C
(C , 6) chinese knotweed	a-It is an oleo-gum-resin	1- used to treat goiter and obesity
(h , 5) aloe	b- It is the protein obtained by boiling the collagenous tissues of animals such as skin, tendons, ligaments and bones with water	2- It is used as a coloring matter for tooth-pastes and tinctures
(f , 4) olibanum	c- It contains anthraquinone derivatives	3- Adding few drops of nitric acid to the residue, a purplish violet colour is produced.
(i , 8) opium	d- It is obtained from ox, sheep or pigs	4-It boosts immunity
(g , 9) insulin	e-It is obtained from the mucous membrane of the stomach of domesticated animals such as pig, sheep or calf.	5- used systemically to treat constipation and peptic ulcers.
(j , 2) cochineal	f- It contains alpha-boswellic acid, olibanic acid and volatile oils.	6-It is used as anti-hair greying
(a , 3) myrrh	g- It is obtained from the pig.	7- It is used in dyspepsia caused by deficient gastric secretion
(d , 1) thyroxine	h- It is the solid residue obtained by evaporating the liquid, which drains from the cut leaves.	8- Used as cough sedative, hypnotic, and analgesic
(b , 10) Gelatin	i- It is the latex obtained by incision from the unripe capsules.	9-It has the property of reducing the amount of sugar in the blood.
(e , 7) Pepsin	j-It contains carminic acid .	10- On heating with soda lime , ammonia odour is evolved