

October University for Modern Sciences & Arts Final Exam MODEL ANSWER

Faculty	Pharmacy
Department	Pharmacognosy
Module Code	PHG112 (Year 1)
Module Title	Pharmacognosy
Semester	Spring 2025
Date	25/05/2025
Time Allowed	2 hours
Total Mark	60 Marks
No. of Pages	5
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

60 Marks

Question 1:

(18 marks, 1 mark each)

Choose the correct answer:

1- 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- Medicinal plant

2-seeds are usually employed as treatment for gout.

a-Evening primrose b- Linseed c-Colchicum d- Chia e-Pumpkin

3-seed oil is applied to promote the hair growth of eyelashes and eyebrows.

a-Foenugreek b-Castor c-Jojoba d- Chia e-Linseed

4- Mat-like structure is the major key element of powdered.....

a-Foenugreek b-Strophanthus c-Capsicum d- Chia e-Linseed

5- can be used in the treatment of the early stages of glaucoma.

a-Colchicine b-Eserine c-Ricinine d-Trigonelline e-Oubain

6- An example of false fruit is.....

a-Orange b-Anise c-Apple d-Tomato e-Peach

7- Khellin is the major active constituent of.....

a-Anise b-Star anise c-Coriander d-Ammi visnaga e-Ammi majus

8- Socrates was put to death by means of.....poison.

a-HCN b-Eserine c-Ricinine d-Coniine e-Oubain

9- The pungency of capsicum is destroyed by treatment with.....

a-NaOH b-KOH c-HCl d-H₂SO₄ e-K₂Cr₂O₇

10-..... prevents the spread of herpes simplex virus and coxsackievirus.

a-Capsicin b- Papain c-Chymopapain d-Litchitannin A2 e- Beta-Carotene

11- alkaloid stimulates the uterus to initiate delivery.

a-Ergometrine b- Ergotamine c- LSD d- Ergosterol e- Ergotoxin

12-.....is the major constituent in the volatile oil of artemisia.

a-Thymol b-Menthol c- Linalool d- Artemisia ketone e- α-pinene

13-.....is effective in reducing the effect of macular degeneration.

a-Lychee b-Avocado c-Lemon d- Papaya e-Capsicum

14-Deglycyrrhizinated licorice, or DGL, is made from licorice from which the glycyrrhizin has been removed as it is known to cause negative side effects, such as.....

a-Hyperthyroidism b-Hypertension c-Hypercholesterolemia d-Hyperplasia e-
Hyperpigmentation

15-Turmeric is yellow colored due to its content of.....

a-Turmerone b-Zingiberene c-Curcumin d-Atlantone e-Turmeric acid

16-In case of mental and physical fatigue related to stress, it is advisable to use.....

a-Ashwagandha b-Rhubarb c-Liquorice d-Ginger e-Kontweed

17-.....is an unorganized drug that promotes collagen growth, thus could be applied to reduce the appearance of wrinkles.

a-Myrrh b-Frankincense c-Gelatin d-Opium e-Aloe

18-.....is an animal-derived drug used in treatment of dyspepsia caused by deficient gastric secretion.

a-Gelatin b-Thyroxin c-Pepsin d-Pancreatin e-Insulin

Question 2:

(18 marks, 2 marks each)

Answer only NINE of the following questions:

a- The seeds of papayas are good for a healthy heart. Rationalize.

The seeds of papayas are good for a healthy heart. Having three powerful antioxidant vitamins, namely vitamin A, C, and E, means papayas are helpful in preventing problems such as atherosclerosis and diabetic heart diseases.

The presence of pro-carotenoid phytonutrients as well as vitamins helps prevent oxidation of cholesterol in the body. When oxidation of cholesterol takes place, it sticks to the walls of the blood vessels and forms plaque that can lead to heart attacks and strokes.

b- Ergot alkaloids should be always used separately. Justify.

Because they show different pharmacological actions and uses:

1- Ergometrine alkaloid:

- Oxytocic: It stimulates the uterus → initiate delivery (labor)
- It reduces postpartum hemorrhage

2- Ergotamine alkaloid:

- Vasoconstrictor, used for the treatment of migraine.
- Used in combination with caffeine to treat headaches.

c- Distinguish between Spanish and Russian liquorice.

Spanish liquorice

Russian liquorice

-It is mainly peeled stolon (rhizome) and few root.
-The stolon bears scale leaves, buds and root scars and microscopically has central pith.
-It has a sweet taste free from any bitterness.

-Mainly unpeeled roots
-It has sweet taste but with bitterness

d- Comment on the cosmeceutical applications of lemon juice.

Lemon juice, being a natural antiseptic medicine, may also be able to cure problems related to the skin. The juice contains vitamin C, and therefore, it can be applied to reduce the pain of sunburns and bee stings as well. It is also good for acne and eczema.

Citrus juices like lemon juice act as an anti-aging remedy and may reduce wrinkles and blackheads too.

e- Opium contains about 25 different alkaloids. Mention 2 of its major alkaloids and their uses.

Morphine: Analgesic – Codeine: Anti-cough

f- Recommend an unorganized crude drug that could be used in treatment of goiter, mentioning its active constituent.

Thyroid gland- Thyroxin

g- If you were supplied by a subterranean organ, how can you recognize if it was a root or a rhizome?

The root:

- *It is derived from the radical and grows towards the soil and water
- *It has no leaves
- *No nodes and internodes
- *No buds
- *No chlorophyll
- *Apical growing point called root-cap.

The rhizome:

-It has nodes and internodes

-The growing point covered with scaly leaves and not root cap.



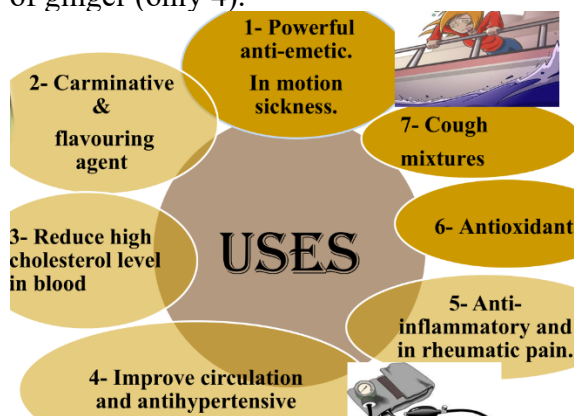
h- Give a chemical test by which you can detect ergot in flour.

Shake the ergot with ether & 5 drops of H_2SO_4 , add $NaHCO_3$ and shake well where a reddish violet colour is given in the aqueous layer (used to detect ergot in flour).

i- Dried juices are considered a class of unorganized drugs. Point out one example mentioning its active constituents (only 2).

Aloe- Anthraquinones-

j- Due to the diversity of ginger metabolites, it possesses numerous therapeutic uses. Cite the uses of ginger (only 4).



Question 3:

(12 marks)

The following are key elements of a herbal tea bag composed of a mixture of crude drugs:



a



b



c

a- Identify the 3 drugs (3 marks)

Rhubarb-Mentha-Thyme

b- Recognize each key element (1.5 marks)

Cluster of CaOX- Epidermis showing Labiaceae hair + non glandular hair- Bent hair

c- Suggest one major use of this herbal tea bag (1 mark)

Laxative in small doses purgative in high doses

d- Justify the addition of drugs B and C to A (2 marks)

To act as antispasmodic due to the gripping effect of the strong stimulating laxative

e- Mention two major active constituents for each drug (3 marks)

Anthraquinones-tannins/Volatile oil mainly menthol-tannins-flavonoids/ Volatile oil

Thymol-tannins-flavonoids

f- How can you confirm the presence of each of these 3 drugs using a chemical test? (1.5 marks)

Rhubarb: 1- Test for anthraquinone glycosides: Boil with Acid (H_2SO_4), Extract with organic solvent (ether or benzene), Add $NH_4OH \rightarrow$ a rose red colour in ammonical layer.

2- Powder rhubarb, by sublimation gives yellow needle-shaped, add KOH gives reddish colour.

Mentha: Oil with a mixture of glacial acetic acid and nitric acid gives blue colour that changes to golden yellow when heating on water bath

Thyme: Thymol crystals + 1 ml glacial acetic acid + 6 drops conc H_2SO_4 + 1 drop $HNO_3 \rightarrow$ deep bluish green

Question 4:

(12 marks, 3 marks each)

Read carefully the following cases and answer the corresponding questions

A-A woman was unfortunately subjected to a premature labor. The neonatal was unable to breathe. He was immediately treated by an injection and respiratory aid till he was able to maintain normal respiration. A few hours later the physician examined the neonatal and noticed signs of internal bleeding which was confirmed by ultrasound. Identify the injection given to the neonatal giving a justification for its use (1 mark). Diagnose the bleeding case (1 mark) and point out the nutraceutical that was missing in the dieting plan of the woman during pregnancy (1 mark).

An injection of lobeline HCl is used for resuscitation in newborn babies

Vitamin K deficiency-related bleeding (VKDB).

Avocado

B-A police officer noticed an unusual behavior of a group of teenagers on the street, their eyes were red and they had impaired motor skills. During the security inspection of the suspects, the officer

found a pack of hand rolled cigarettes. The officer sent the cigarettes to the forensic chemistry lab for analysis along with urine samples of the suspects. Identify the drug that was enclosed in the cigarettes (1 mark) highlighting the major active constituent responsible for its activity (1 mark). In the forensic chemistry lab, how can you confirm the presence of this drug in cigarettes using microscopical examination (0.5 marks) and what test should be applied to the urine samples for further confirmation? (0.5 marks)

Cannabis

Tetrahydro cannabinol (THC) and cannabinoids e.g. Cannabinol & cannabinal

Powder+ HCl produces eff. due to calcium carbonate in cystolith.

Fast blue test: (di-O-anisidine tetrazolium chloride) Biological samples + Fast Blue reagent gives different sequences of colors with different cannabinoids

C-A 28-year-old lady was traumatized which resulted in a case of depression. Her mental case led to severe hair loss, hypertension and insomnia. Suggest a mixture of two crude drugs that could treat her hypertension and insomnia (1 mark) showing the reasons behind your choice (1 mark). Also, formulate a mixture of crude drugs that could be used topically for her hair (1 mark).

Rauwolfia and Ashwaganda

1-Reserpine used as powerful antihypertensive. 2-In insomnia and psycatric disorders.

2- Steroidal lactones: Withanolides and Alkaloids: Withanine, somniferine, used as sleep aid, memory enhancement, an adaptogen

Onion-Rosemary-Castor-Jojoba-Liquorice

D- A 70-year-old Chinese lady was suffering from rheumatoid arthritis that resulted in back pain. Upon her diagnosis, the physician commented on her fairly white skin tone with relatively mild wrinkles and natural black strong hair. The physician prescribed her an oral crude drug for treatment of rheumatoid arthritis as well as a plaster for back pain and strong analgesic. Identify each of these drugs (1.5 marks). The physician asked her about her beauty routine. She laughed and said it was a secret recipe. What do you think she used for skin whitening (0.5 marks), anti-wrinkles (0.5 marks) and natural hair anti-greying? (0.5 marks)

Liquorice-Capsicum-Morphine

Liquorice

Potato-lemon juice-Frankincense-Avocado

Knotweed

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