



WINTER -15 EXAMINATION

Subject Code: **0807**

Model Answer

Page No: 01/23

Important Instructions to examiners:

- 1) The answers should be examined by key words and not as word-to-word as given in the model answer scheme.
- 2) The model answer and the answer written by candidate may vary but the examiner may try to assess the understanding level of the candidate.
- 3) The language errors such as grammatical, spelling errors should not be given more Importance (Not applicable for subject English and Communication Skills).
- 4) While assessing figures, examiner may give credit for principal components indicated in the figure. The figures drawn by candidate and model answer may vary. The examiner may give credit for any equivalent figure drawn.
- 5) Credits may be given step wise for numerical problems. In some cases, the assumed constant values may vary and there may be some difference in the candidate's answers and model answer.
- 6) In case of some questions credit may be given by judgement on part of examiner of relevant answer based on candidate's understanding.
- 7) For programming language papers, credit may be given to any other program based on equivalent concept.



WINTER -15 EXAMINATION

Subject Code: **0807**

Model Answer

Page No: 02/23

Q.1 Attempt any TEN of the following (2 marks for each question)

20

a) Define crude drug. Write two examples of crude drugs obtained from natural source.

Definition of " Crude drugs" = 1 mark, 2 Examples = 1 mark.

Crude drugs are natural products obtained from natural sources like plants, animals, minerals and others which after collection are subjected only to drying or making them into transverse or longitudinal slices or peeling them in some cases.

examples- (**any two suitable examples**) - Acacia, Ginger, cinchona benzoin, Datura and others

b) What are enzymes? Write two examples.

Definition of enzymes = 1 mark, 2 Examples = 1 mark

Enzymes

Definition- Enzymes are the protein substances, which serve a role of catalyzing the biochemical reactions

Examples - (any two) - Papaya, Yeast, Diastase

c) Name two crude drugs which are used as – (i) Coloring agent (ii) Sweetening agent

2 suitable examples -1/2 mark each

Coloring agents - Turmeric, Indigo, Cochneal, caramel, saffron, chlorophyll

Sweetening agents- Honey, Glycerrhyza.

d) Who is described as “ Father of Medicine”? Why?

For name -1/2 mark, Reason - 1.5 marks

Hippocrates (460 – 360 B.C.) is described as "Father of Medicine"



WINTER -15 EXAMINATION

Subject Code: **0807**

Model Answer

Page No: 03/23

Hippocrates, the Greek physician, was the first to study anatomy and physiology of human being. He also prepared "Physician's oath" which is used till today.

e) Which part of the plant is used in medicine in following ? (1 drug – ½ mark each)

(i) Black pepper

(ii) Ajowan

(iii) Picrorrhiza

(iv) Dioscorea

drug	Part of plant
(i) Black pepper	Unripe fruits
(ii) Ajowan	Ripe fruits
(iii) Picrorrhiza	Roots, Rhizomes
(iv) Dioscorea	Tubers

f) Why saponin glycosides are not safe for intravenous administration? Explain.

when Saponin glycosides are dissolved in water colloidal solutions are formed.

The solutions of saponin glycosides are administered intravenously, come in contact with blood, they cause hemolysis. The hemolysis is harmful for the health of a patient. So the saponin glycosides are unsafe to be administered intravenously.

g) Which drug is found to contain – 1/2 mark each

(i) Ferulic acid

(ii) Hydrocarpic acid



WINTER -15 EXAMINATION

Subject Code: **0807**

Model Answer

Page No: 04/23

(iii) Vascicinone

(iv) Ascorbic acid

Constituent	Drug
(i) Ferulic acid -	Asafoetida
(ii) Hydnocarpic acid -	Chaulmoogra oil
(iii) Vascicinone -	Vasaka
(iv) Ascorbic acid -	Amla

h) Name the drugs having following synonym. (1/2 mark each)

(i) Puncture Vine

(ii) Crow fig

(iii) Insect flower

(iv) Marihuana

Synonym	Drug
(i) Puncture Vine	Gokhru
(ii) Crow fig	Nux vomica
(iii) Insect flower	Pyrethrum
(iv) Marihuana	Cannabis



WINTER -15 EXAMINATION

Subject Code: **0807**

Model Answer

Page No:05/23

i) What is Ayurveda? Describe contribution of “Sushrut”

Description - 1 mark, Sushrut contribution- 1 mark

Ayurveda is an indigenous system of medicine, prepared from Rigveda and Atharvaveda. The principle of ayurveda states that a human body is made up of three basic components namely Vata, Pitta and Cough. According to Ayurveda, there is an equilibrium in a body in healthy state. A disease is state of innequilibrium. By the use of natural products the health can be reestablished.

Sushrut was an Indian physician and surgeon. He knew about 1500 formulations of natural products obtained from plants, animals and minerals. He used to operate on various systems and organs in human body and animals. His collection is known as "Sushrut samhita"

j) Differentiate between organised and unorganised drugs

for any 4 points - 2 marks, ½ mark each



WINTER -15 EXAMINATION

Subject Code: 0807

Model Answer

Page No: 06/23

Organized crude drug	Unorganized crude drug
<p>1. It is obtained from definite anatomic parts of the plants such as flowers, leaves, fruits etc</p> <p>2. It is made up of definite tissue and cell.</p> <p>3. It is solid in nature</p> <p>4. Microscopical characters are used for identification.</p> <p>5. Botanical and zoological terminology can be used to describe the drug</p> <p>Ex. Coriander , fennel, datura, etc</p>	<p>1. It is obtained from plants or animals by means of physical process such as drying ,, incision ,extraction such as juices ,resins.</p> <p>2. It does not have cellular structure.</p> <p>3. It is solid, semi-solid and liquid in nature.</p> <p>4. Chemical tests and physical standards are used for identification.</p> <p>5. Botanical and zoological terminology is inadequate. To describe these drugs, physical characters such as solubility, optical rotation, refractive index are used.</p> <p>Ex. Aloe , bees wax, tragacanth, asafoetida etc</p>

k) Write biological source and uses of lemongrass oil.

Biological source = 1 mark, any 2 Uses = 1 mark

Lemongrass oil

Biological source- Lemongrass oil is obtained by steam distillation of leaves and aerial parts of *Cymbopogon citrates* or *Cymbopogon flexuosus*

Family - Graminae

WINTER -15 EXAMINATION

Subject Code: **0807**

Model Answer

Page No: 07/23

Uses - 1. Used in common cold and cough.

2. Aromatic stimulant, carminative

3. Favoring agent

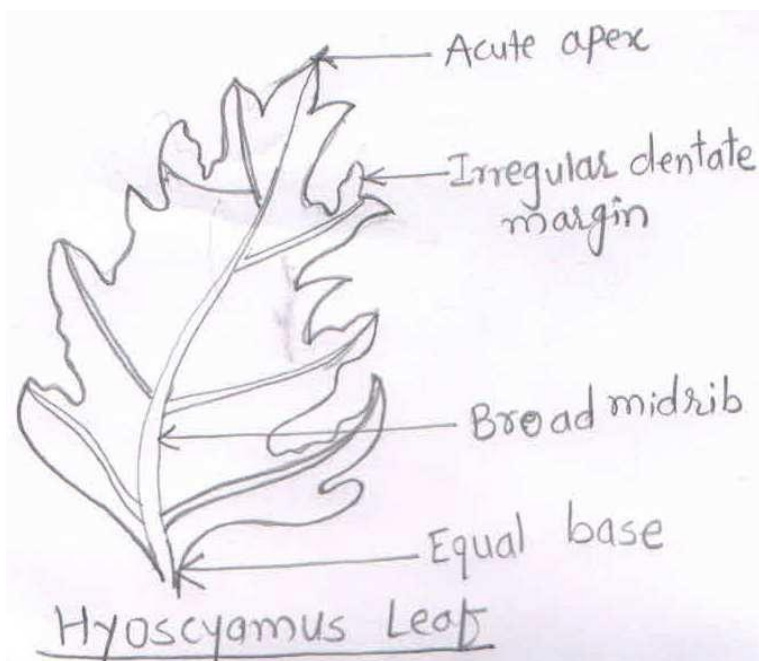
4. Used in perfumes

5. Citral is used as starting material in synthesis of β ionone which is further used in manufacture of Vitamin A .

1) Describe morphological characters of Hyocyamus with diagram

Diagram -1 mark , Description- 1 mark

Diagram-



Description -

Colour – leaves are grayish green to pale green



WINTER -15 EXAMINATION

Subject Code: **0807**

Model Answer

Page No: 08/23

Odour –None

Taste – Bitter

Size – 20 – 30 cm in length, 4-10 cm wide

Extra features – Leaves are petiolate, with acute apex, asymmetrical base, dentate margin. The venation is reticulate with prominent midrib.

Q.2 Attempt any THREE of following(4 marks each)

12

a) Draw well labeled diagram of transverse section of Nux Vomica and describe the same.

2marks for Description and 2 marks for Diagram with labels

1.TESTA:

Lignified trichomes: Thick walled, bent and twisted lignified trichomes, immersed from epidermis, parallel in one direction. Length: 600 to 1000, diameter about 25 μ

Epidermal cell: Single layer, forms lignified trichomes, large thick walled with oblique linear pits (base of trichomes). Collapsed parenchyma: 2 layers, flattened parenchyma.

2. ENDOSPERM:

Thick walled cellulosic parenchymatous cells. Cell shows hemicelluloses in the cell wall and following characteristics:

Plasmodesma: fine protoplasmic strands between the walls of endospermic cells.

Aleurone grains: About 30 μ in diameter. Only globoids are presents.

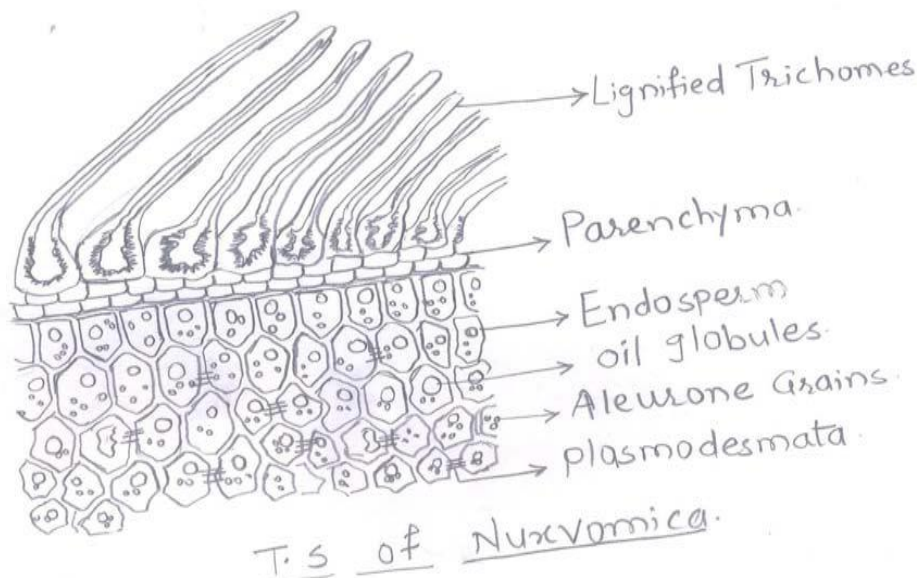
Oil globules: fixed oils as small oil droplets in the cells.

WINTER -15 EXAMINATION

Subject Code: 0807

Model Answer

Page No: 09/23



b) What is evaluation of crude drug? Describe Ash value as a criteria in evaluation.

Definition-1mark ,Ash value description- 3marks

Definition - Drug evaluation means confirmation of identity of a crude drug and determination of its quality and purity.

Ash value is percentage of ash obtained on complete incineration of a crude drug.

Experiment - An exactly weighed quantity of the crude drug is burnt completely. The ash obtained is heated at about 450°C . The residue is weighed and %age is calculated.

Significance – The ash value indicates amount of inorganic salts present in the drug.

Example – Aloes – 5 % W/W

Clove – 7 % w/w

Acid insoluble ash – The total ash insoluble in dil. HCl is acid insoluble ash. It measures adhering dirt and sand with the drug.



WINTER -15 EXAMINATION

Subject Code: **0807**

Model Answer

Page No: 10/23

Example- Agar – 1 % w/w, Clove – 0.75 w/w

Advantages – The calculation of ash value helps in-

- (i) Identification of crude drug
- (ii) Determination of purity of drug
- (iii) Identification of adulterant.

c) Mention six methods of classification of crude drugs. Write advantages and disadvantages of taxonomical method of classification

List of 6 methods - 2 marks any 2 advantages - 1 mark, any 2 disadvantages - 1 mark

Names of methods of classification

- (i) Alphabetical method
- (ii) Taxonomical method
- (iii) Morphological method
- (iv) Chemical method
- (v) Pharmacological method
- (vi) Chemo taxonomical method

Advantages of Taxonomical method of classification -

- (i) The method can be used to classify drugs obtained from plants and animals.
- (ii) The plants having common morphological features are classified under same families and having distinguishing characteristics, can be studied at one time.
- (iii) It is a more scientific.

Disadvantages of Taxonomical method of classification -

- (i) The method does not recognise organised and unorganised drugs.
- (ii) Mineral drugs get excluded from this classification..
- (iii) The method does not inform part of plant or animal used in medicine.
- (iv) Does not give idea about the chemical constituents of drugs.



WINTER -15 EXAMINATION

Subject Code: **0807**

Model Answer

Page No: 11/23

d) What are barks? Describe three methods of collection at barks.

Definition of barks - 1 mark

Explanation of methods of collection of barks - 1 mark for each method

Definition of Barks - Barks are secondary external tissue lying outside the cambium in stems or roots of dicotyledonous plants.

Methods of collection of barks-

(i) Felling method - The tree is cut at the base and the bark is peeled out. As the method causes complete destruction of plant, it is not used now - a - days.

(ii) Uprooting method - In this method the roots of the plant are dug out of soil and the barks are stripped off from roots and branches. Example - Collection of Cinchona barks in Java.

(iii) Coppicing method - In this method the stem of plant is cut at some height above the soil. The stumps, which remain in ground are allowed to send shoots, which develop further independently yielding aerial parts. These new parts are cut off and bark is collected from shoots. The method is economical and less time consuming so commonly used to collect the stem barks. Example - Cinnamon bark

3. Attempt any THREE of the following : (4 marks each)

a) What are balsams ? Give one chemical test for identification of balsam containing cinnamic acid. Write its biological source. (Definition 1 mark, one chemical test 1 mark, Biological source 2 marks)

It is an aromatic resinous substance of plant origin containing balsamic acid and/or cinnamic acid and/or their esters.

Ex. Balsam of tolu, benzoin, balsam of peru.



WINTER -15 EXAMINATION

Subject Code: **0807**

Model Answer

Page No: 12/23

Benzoin(Sumatra) is balsam that contains cinnamic acid. Its Chemical test for identification and biological source is as given below:

Chemical Test: (any 1 chemical test)

Add Potassium permanganate solution to Benzoin and warm, odour of benzaldehyde is produced.

Heat benzoin in dry Test tube, covering with glass slide On observation under microscope Cinnamic acid crystals are observed.

To 2.5g of benzoin ,add solvent ether, decant ether layer & to it add 2/3 drops of H₂SO₄ A deep reddish brown is observed in Sumatra benzoin

Biological source: Benzoin is a balsamic resin obtained from Styrax benzoin, belonging to family Styraceae or Styrax paralleloneurus. Family –Styraceae.

b) What are sutures? Write ideal properties of sutures.

Definition :(1 marks)

Sutures are sterile thread like strings or strands specially prepared and sterilized and used in surgery for sewing , stitching tissues like skin,muscles ,tendons etc by a needle.

Ideal Properties Of Sutures(Any 6 properties for 3 marks i.e. ½ mark for each property)

- 1.They must be Sterile.
- 2.They should not cause irritation.
3. They should have finest possible gauze.
4. They should have adequate strength.
5. If absorbable their time of absorption should be known .
- 6.They are intended to be used for one occasion only .



WINTER -15 EXAMINATION

Subject Code: **0807**

Model Answer

Page No: 13/23

c) Define each of the following with example. (½ mark for definition and ½ mark for any one of the examples)

(i) Antiseptic:

Antiseptics are chemical sterilizing substances which are used to kill pathogenic microbes or for prevention of their growth.

Examples: Benzoin, Myrrh, Curcuma (Turmeric), Neem, (Any one of these examples)

(ii) Substitute: : It involves total replacement of original drug with totally different substance, contains same type of active chemical constituents but at a lesser extent.

Example: Cinnamomum burmanii and cinnamomum loureirii are substitutes for cinnamomum zeylanicum.

(iii) Carminative : Carminatives are the drugs that expel gases from the gastrointestinal tract by increasing peristalsis.

Examples: Fennel, Coriander, ajowan, Cardamom, Ginger, Black Pepper, Asafoetida, Cinnamon, Nutmeg, Clove. (Any one of these examples)

(iv) Astringent: Astringent is the agent which causes contraction of organic tissue by precipitating of proteins.

Examples: Black catechu, Gambier (Pale catechu).

d) Name two drugs containing following chemical group or structure. (1 mark for names of 2 drugs i.e. ½ mark for each drug)

(i) Tropine alkaloid:

Datura, Cocoa, Belladonna, Hyoscyamus, Withania. (Any two of these drugs)

(ii) True tannins: Catechu, Gambier, Cinchona. (Any two of these drugs)



WINTER -15 EXAMINATION

Subject Code: **0807**

Model Answer

Page No: 14/23

(iii) **Cyanogenitic glycosides:** Wild cherry bark and bitter almond

(iv) **Natural wax:** Bees wax

4. Attempt any THREE of the following :(4 marks for each)

a) Define the following with examples. (Any two)(Definition 1 mark and example 1 mark)

(i) Oxytocic:

An agent that causes expulsion of the contents of uterus by contracting the uterine smooth muscles.

Example: Ergot

(ii) Anthelmintic: Substances used to expel the worms out of intestine like thread worms, tape worm, round worm etc.

Example: Santonin quassia

(iii) Galactagogue: is a substance that promotes lactation (milk secretion) in humans.

Example: Shatavari

b) What are vitamins ? Describe biological source, chemical constituent and uses of any one crude drug containing vitamin.

(Definition 1 mark, Biological source 1 mark, Chemical constituent 1 mark, Uses 1 mark)

Definition:

Vitamins are the substances which are essential for maintenance of normal metabolic function but are not synthesized by human body on its own and hence has to be supplied from outside sources .

Biological source, chemical constituent and uses of either SHARK LIVER OIL or AMLA



WINTER -15 EXAMINATION

Subject Code: **0807**

Model Answer

Page No: 15/23

1.Shark liver oil :

Biological source: It's a fixed oil obtain from fresh and carefully preserved livers of shark from *Hyperion brevirostris*

Chemical Constituent:

1. Vitamin A
2. Glycerides of saturated and unsaturated Fatty acid .

Uses:

1. In deficiency of Vitamin A
2. As an antixerophthalmic factor.
3. As a nutritive
4. In preparation of Dilute Shark liver oil, Shark liver oil emulsion, Shark liver oil with vitamin D
5. In burns and sun burns ointment.

2.Amla:

Biological source: This consists of dried as well as fresh fruits of the plant *Embllica officinalis*

Family : Euphorbiaceae

Chemical constituents:

- 1.Vitamin C 2. Fat ,phyllembelin and 5% tannin
3. Phosphorus, iron and calcium
- 4.Pectin



WINTER -15 EXAMINATION

Subject Code: **0807**

Model Answer

Page No: 16/23

Uses:

1. Diuretics, refrigerants and laxatives
- 2 Diarrhea and dysentery
- 3 In Jaundice, Dyspepsia and Anemia along with iron compound
- 4 In the preparation of inks, hair oils and shampoo
- 5 Ingredient of Triphala and Chyawanprash.
6. Seeds are given in the treatment of Asthama and bronchitis

c) Describe life cycle of Ergot. (Diagram 2 marks & Explanation 2 marks)

Stages of life-cycle are as

- i) Over wintering stage
- ii) Stage of sexual reproduction
- iii) Stage of asexual reproduction

The sclerotia are produced in late summer. They fall on the ground in autumn. When the favourable conditions for germination are available, these sclerotia germinate in the spring to produce purple coloured stalks which on further growth form flattened spherical cavities known as perithecia. Each perithecium contains several asci. Each ascus contains eight threads like ascospores. Ascospores come out & get dispersed by air. The dispersal of ascospores takes place at time of flowering of rye plant. Ascospore become entangled with the stigma of host & produce mycelia which penetrate through ovary. The mycelia give rise to conidia, produced from the surface of ovary. Honey-dew attracts insects, along with it conidia are from place to place & is known as honey-dew stage.

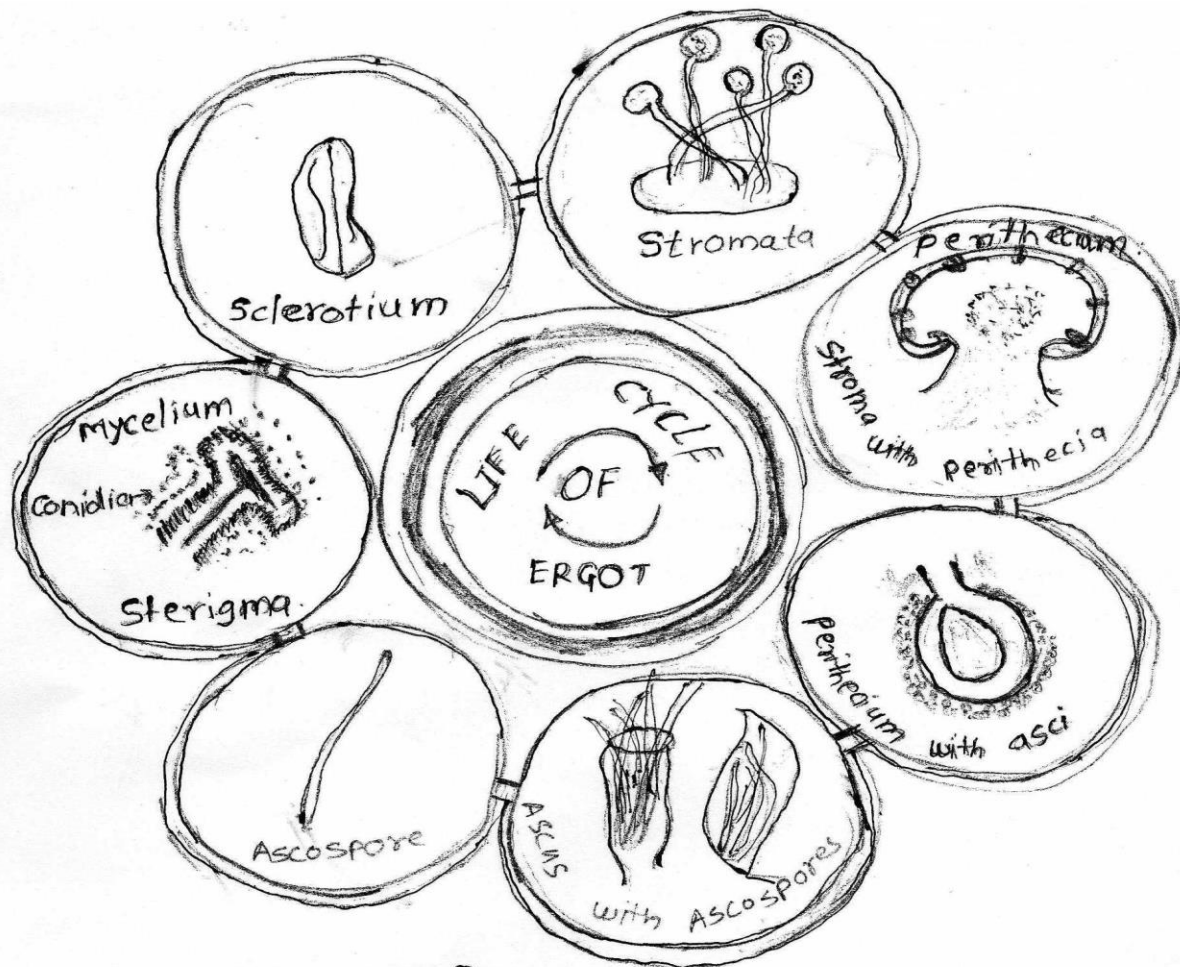
WINTER -15 EXAMINATION

Subject Code: 0807

Model Answer

Page No: 17/23

In second stage , hyphae penetrate deeply into the ovary & develop into mass covering entire ovary which results in formation of elongated sclerotium & known as sclerotium stage. Sclerotium develops , attains maximum size & falls on ground along with seeds of the host.



Life cycle of ergot.



WINTER -15 EXAMINATION

Subject Code: 0807

Model Answer

Page No: 18/23

d) Give biological source and chemical constituents of following drugs.

(1/2 mark for Biological source and 1/2 marks for Chemical Constituents)

(i) Digitalis:

Biological Source: It consists of dried leaves of *Digitalis purpurea*

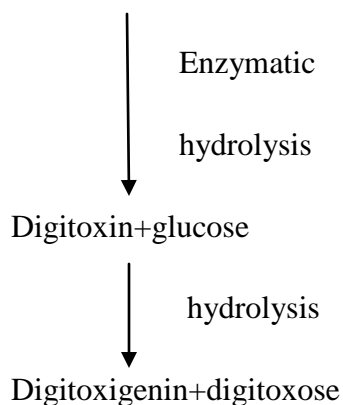
Family: Scrophulariaceae

Chemical constituent:

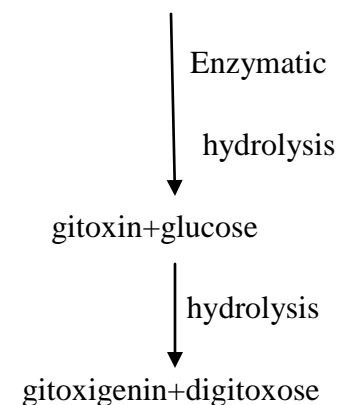
Digitalis contains 0.2% - 0.45% mixture of Cardiac glycosides (Cardenolides), *Purpurea* Glycosides A and B. It also Contains Other Glycosides Such as Odoroside H, Glucogitaloxin, gitaloxin, Verodoxin and glucoverodoxin. It also contains saponin glycosides Digitonin and gitonin. and also contain hydrolytic enzyme.

The product of hydrolysis of *purpurea* Glycosides A and B, are as under.

purpurea Glycosides A



purpurea Glycosides B



(ii) Aloes:

Biological source: It consists of the dried Juice of leaves of *Aloe barbadensis* (Curacao aloes), *Aloe perryi* (Socotrine aloes), hybrids of *Aloe ferox* and *Aloe Africana* or *Aloe spicata* (Cape aloes), Family: Liliaceae



WINTER -15 EXAMINATION

Subject Code: **0807**

Model Answer

Page No: 19/23

Chemical Constituent:

1. C-Glycoside: Barbaloin(yellow coloured crystalline substance),resin and aloe emodin.
2. Iso-barbaloin (curacoa and cape aloe)
- 3.β- barbaloin,Aloinoside A and B,capaloressinotannol with p-Coumaric acid (cape aloe).

(iii) Cinnamon:

Biological Source: It consists of dried inner bark of coppiced trees of Cinnamomum zeylanicum.

Family : Lauraceae

Chemical Substances:

1. Volatile oil(0.5 to 1 %) is the main constituent .This Cinnamon oil contains cinnamaldehyde ,eugenol ,benzaldehyde ,cuminaldehyde.
2. Tannin (1 to 2 %) phlobatannin
3. Sweet substance –mannitol

(iv) Ephedra:

Biological Source:It consists of dried young stems of Ephedra gerardiana and Ephedra nebrodensis

Family: Ephedraceae /Gnetaceae

Chemical Constituents:

Contains about 1-1.5% total alkaloids of ephedra calculated as Ephedrine

Other alkaloids are: pseudo ephedrine ,L- methyl ephedrine,D-methyl iso-ephedrine,D-pseudoephedrine,Norephedrine ,Dimethyl ephedrine



WINTER -15 EXAMINATION

Subject Code: **0807**

Model Answer

Page No: 20/23

Q 5 Attempt any THREE of the following :(4 marks each)

12

a) Describe important characteristic of four adulterants of 'Clove.'(1 mark for each adulterant)

Mother clove/Clove fruits: These are dark brown ,ovate ripened fruits of clove tree.They are slightly aromatic and contain starch.They are very inferior in volatile oil content.

Blown clove-are fully expanded flowers from which usually corolla and stamens get detached.They contain less volatile oil as compared to clove buds.

Clove stalks-It contains only 5% volatile oils.Clove stalks can be detected as it contains thick walled pitted stone cells ,prisms of calcium oxalate and small starch grains and reticulate vessels.

Exhausted cloves-In this drug ,volatile is partially /entirely removed by distillation ,so contains less volatile oil. Exhausted cloves are dark in color ,more shrunken and float on water.

b) What is nutmeg mace ? Describe chemical constituents and uses of it.

(2marks for description and 1 mark each for chemical constituents and uses)

The Arillus of the seeds of Nutmeg is called Mace,which arises in the region of hilum,before the flowers open and fertilization takes place.The mace is an orange coloured modification of nutmeg seed.

Chemical constituents :

Mace Contains about 20% fixed oil and 25% volatile oil.It contains amyloextrin Uses:

1.It is used as a Condiment,an aromatic and a carminative .

2.As a flavouring agent,specially for biscuits ,pickle, meat and fish preparations.

c) As a technical product write uses of gelatin and pectin.

Gelatin-(any 4 uses -1/2 mark each)

1.In the of ice creams



WINTER -15 EXAMINATION

Subject Code: **0807**

Model Answer

Page No: 21/23

2. In confectionary, candies and jellies
3. As a Thickener in jams,jellies and salad
4. In preparation of nutrient media.
5. In pharmaceutical industry and cosmetics.
- 6.it is used in manufacture of leather,waterproof paper and in photography.

Pectin- (any 4 uses -1/2 mark each)

- 1.Emulsifying agent.
- 2.Gelling agent in acid medium.
3. As a thickening agent for sauces, jams and ketchups.
- 4 .It is extensively used in cosmetic preparations.
5. Pectin ,in combination with Gelatin ,has been suggested for use as an encapsulating agent in pharmaceutical formulations,to promote sustained release.

d) Differentiate between Raw cotton and surgical cotton.(any 2 points -2 marks each)

Raw cotton	Surgical cotton
1. 90% of cellulose ,7-8% of moisture ,wax, fat and remains of protoplasm	1.It contains entirely cellulose and 6-7% moisture
2. It does not absorb water, it repels water	2.It absorb exudates(blood ,pus mucus)from wounds
3. It is waste cotton fibres	3. It is used for preparation of surgical dressings.



WINTER -15 EXAMINATION

Subject Code: 0807

Model Answer

Page No: 22/23

Q 6 Explain any TWO chemical tests each of any THREE of the following crude drugs.

(2 marks each for any 2 test)

a) Myrrh:

- i) When triturated with water, it forms yellowish brown emulsion.
- ii) Ethereal solution of Myrrh becomes reddish when treated with bromine vapour.
- iii) Ethereal solution of Myrrh becomes purplish when moisten with nitric acid.

b) Honey :

1. Honey is soluble in water and insoluble in alcohol.
2. On keeping sugar is deposited on bottle neck.
3. Stir 10ml of honey with 5ml of solvent ether for 5-10 minutes, allow it separate and draw off 2ml of ethereal layer into a small petridish. Allow ethereal layer to evaporate, to the residue add 1 drop of resorcinol in hydrochloric acid, transient red colour is formed in natural honey, while in artificial honey, the color persists for some time.
4. Take 2 ml of aqueous solution of honey and to it add Fehling's solution solution A and B. The reaction mixture is heated on a steam bath for 5-10 minutes. A brick red color is produced due to presence of reducing sugars.

c) Gelatin

- i) Aqueous solution of drug gives ppt with solution of trinitrophenol and solution of tannic acid.
- ii) on heating gelatin solution with soda lime, ammonia gas is evolved.
- iii) Aqueous solution of gelatin precipitates mercuric nitrate solution forming white colour, which turns black-red on heating.
- iv) Formaldehyde makes gelatin hard & insoluble after drying.
- v) To aqueous solution of drug, add drop of picric acid or tannic acid solution, ppt is produced.



WINTER -15 EXAMINATION

Subject Code: **0807**

Model Answer

Page No:23/23

d) Castor oil

- 1.A clear solution is produced when mixed with equal volume of alcohol. If oil is adulterated it looks turbid.
- 2.It mixes with half its volume of light petroleum ether (40-60^o) and partly soluble in its 2 volumes.