



SUMMER – 13 EXAMINATION

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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.



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1. Attempt any TEN of the following: **Two marks for each question.**

(a) Define Pharmacognosy. Who wrote the book "Analecta Pharmacognostica"?

Ans: 1 mark for definition and 1 mark for name of the scientist

Pharmacognosy is defined as the scientific and systematic study structural, physical, chemical and biological characters of crude drugs along with their history, method of cultivation, collection and preparation for the market. German scientist Seydler wrote the book "Analecta Pharmacognostica"

(b). Explain the role of 'Galen' in the history of Pharmacognosy.

Galen was Greek pharmacist. He worked on extraction of chemical constituent from the plants. He developed various methods of extraction therefore the branch of pharmacy which deals with extraction of chemical constituent from plants & animals is called as galenical Pharmacy. He also described various methods of formulation of plant and animal drugs.

(c) What are balsams? Name the balsams used in Pharmacy.

1 mark for definition and 1/2 mark for each example.

Aromatic resinous substances of plant origin containing balsamic acids (Benzoic and Cinnamic acid) are known as Balsams. Examples: Tolu Balsam, Benzoin, Peru Balsam

(d) Define with examples:

1/2 mark for definition and 1/2 mark for one example

(i) Antitussives: The agent which act on pulmonary membranes that increases the expectoration are called as antitussives or the agents which expel the bronchial mucus are called as antitussives.

Examples: Vasaka , Tulsi , Tolu Balsam

(ii) Diuretics:

Diuretics are the drugs which increase the flow of the urine.



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Examples:Gokhru and Punarnava

(e)Which part of the plant is used as drug

(i) Gymnema: Dried leaves

(ii)Clove:Flower buds

(iii)Black pepper:Fruit

(iv):Rauwolfia: Dried roots

(f)Mention the synonyms of the following(**1/2 mark each**)

(i)Pyrethrum: Insect flowers

(ii)Nutmeg: Jaiphal,myristica,nux moschata,jayepatri,

(iii)Cinnamon:Kalmi –dalchini,Ceylon cinnamon

(iv)Ephedra: Ephedra stem,Ma-Huang

g)Name the drug having following family. (**1/2 mark each**)

i). Rubiaceae-Cinchona/Ipecacuanha

ii).Burseraceae-Guggul/Myrrh

iii)Zingiberaceae-Ginger/Turmeric /Cardamom

iv)Euphorbiaceae-Amla/ Castor Oil

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h) Write biological source with family.

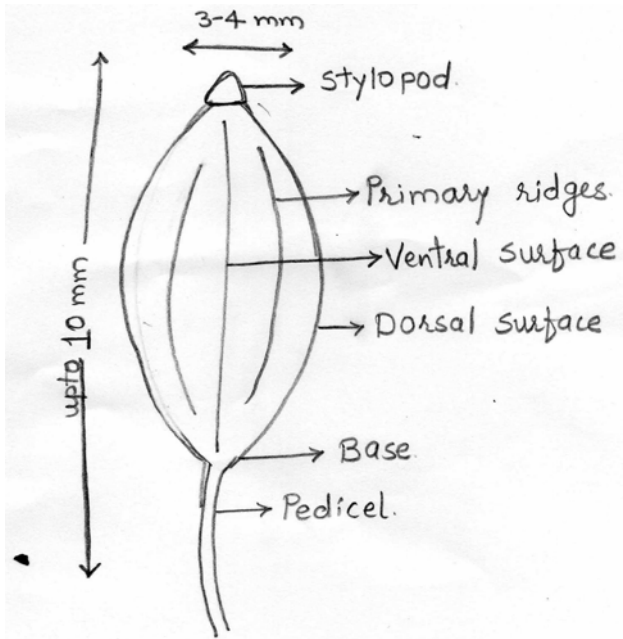
½ mark for biological Source and ½ mark family

(i)Honey- :- It is sugar secretion deposited in honey comb by the bees of *Apis mellifica*, *Apis dorsata*

Family- Apidae

(ii)Shatavari- It is Dried roots & leaves of *Asparagus racemosus* **Family:** Liliaceae

(i) (1 mark for diagram and 1 mark for any 2 morphological characters)



1.Schizocarp (splliting fruits)- Dry fruits from syncarpus ovary that splits at maturity into 2 portions.

2. Mericarp- Each portion of Schizocarp (cremocarp) is called as mericarp.

3. Two mericarp join together by a thread like structure called as carpophore

4.Primary ridges are 5 or more runs from apex to base.



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(j) Name the drug which contain

(i) Aconitine - Aconite

(ii) Colchicine-Colchicum

(iii) Emetine- Ipecacuanha

(iv) Vitamin A-Shark liver oil

(K) Gold Beater skin test: - A piece of gold beater skin, (intestine of ox) when treated with 2% HCL and washed with distilled water. It is placed in the solution of tannin for 5 mins. It is washed with distilled water and transfer to 1% ferrous sulphate. A change in colour of goldbeater's skin to brown or black indicates the presence of tannin .

(l) Name the four drugs acting on Nervous system

(Any four drugs of the following , ½ marks each)

Hyocyamus, Belladonna, Datura, Aconite, Ashwagandha, Ephedra, Opium, Cannabis, Nux Vomica.

Q2. (a) (2 marks for Merits and 2 marks for Demerits)

Merits:

1. Since the drugs available in the market are mostly in the form of organized and unorganized drugs, there morphological and microscopical characters help in their identification.
2. More convenient for practical purpose.
3. Adulterants can be located easily.

Demerits:

1. It does not give idea about chemical constituent and biological behavior of drugs.
2. Animal and mineral drug are difficult to classify.
3. It requires thorough knowledge of morphology of adulterants and drugs.



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Q2.b) for definition 1 mark, for any 2 methods with Example 1 ½ marks each

Adulteration is the debasement of an article/ Adulteration is substituting the original crude drug partially /completely with other similar type of drug.

Methods of drug Adulteration.

1. Replacement by exhausted drugs

Ex.1.Exhausted saffron is coloured artificially

2. Ginger is mixed with starch & coloured.

3. The fictitious nutmegs are made from mineral matter pressed into mould & flavored.

2. Substitution with superficially similar but inferior drugs

Ex.1. Adulteration of cloves by mother cloves.

Saffron with dried flower of carthamus tinctorius.

3.Substitution by artificially manufactured substituent

Ex.1. Paraffin wax is tinged yellow & substituted for yellow bees wax.

2. Artificial invert sugar is mixed with honey.

4.Substitution by sub- standard commercial varieties

Ex.1. capsicum frutescens(capsicum minimum), substituted by capsicum annum.

2. Alexandrian senna with Arabian senna.

3. Strychnos nux-vomica adulterated with Strychnos nux-blanda/ S. potatorum seeds.

5. Presence of organic matter obtained from the same plant

Ex.1. clove are mixed with clove stalks.

Caraway & Anethum fruits are mixed with other parts of inflorescence

6.Synthetic chemical

Ex.1. Benzyl benzoate to balsam of peru.

2.Citral to oil of lemon grass.

7.Waste from market/substitution by harmful substances

Ex.1. Limestone in asafoetida.

2.Pieces of amber coloured glass in colophony.

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c) (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 25μ

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

Collapsed parenchyma: 2 layers, flattened parenchyma.

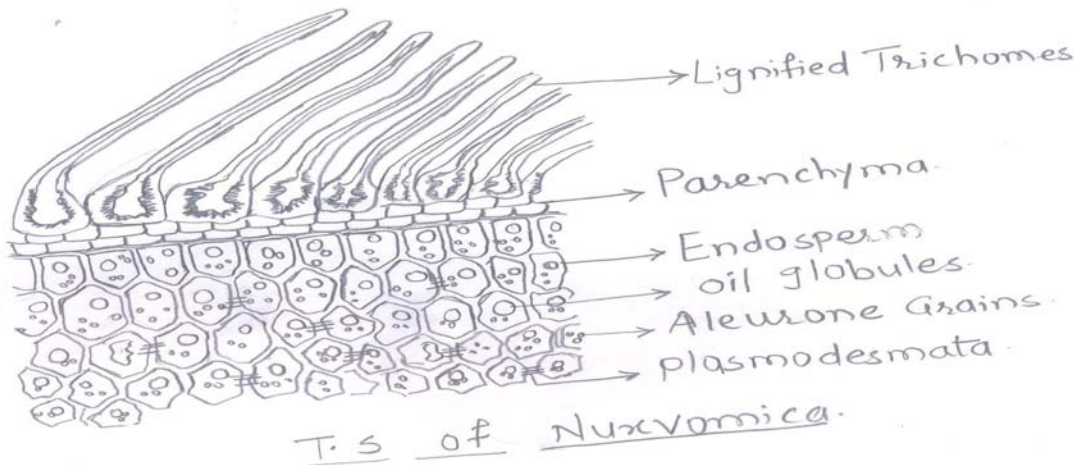
2. ENDOSPERM:

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 30μ in diameter. Only globoids are presents.

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





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d) (1 mark for definition and 3 marks for classification with example)

Volatile oils are odourous and colourless principles of plants and animal sources. These are evaporated when exposed to air, hence called v.o. and as they are evaporated when exposed to air, they are also called as ethereal oils. They represent the essential or active constituents of Plants then they are called as essential oils.

Sr.no	Type	Examples
1	Hydrocarbon volatile oil	Turpentine, black pepper
2	Alcohol volatile oil	Cardamom, rose
3	Aldehyde volatile oil	Cinnamon, lemon peel
4	Ester volatile oil	Lavender
5	Ketone volatile oil	Caraway, camphor
6	Oxide volatile oil	Eucalyptus
7	Phenol volatile oil	Clove
8	Phenolic volatile oil	Fennel, nutmeg

e) (1 mark each for definition , biological source , chemical constituent and uses of any 1 drug of the following)

Definition :-Glycosides are the organic compounds of plant and animal origin which on acidic or enzymatic hydrolysis gives a sugar or non sugar molecule. The Sugar molecule is called as Glycon, where as the non sugar molecule is called as aglycon or genin.

1.Digitalis

Biological Source:- It is dried leaves of *Digitalis Purpurea* **Family**- Scrophulariaceae

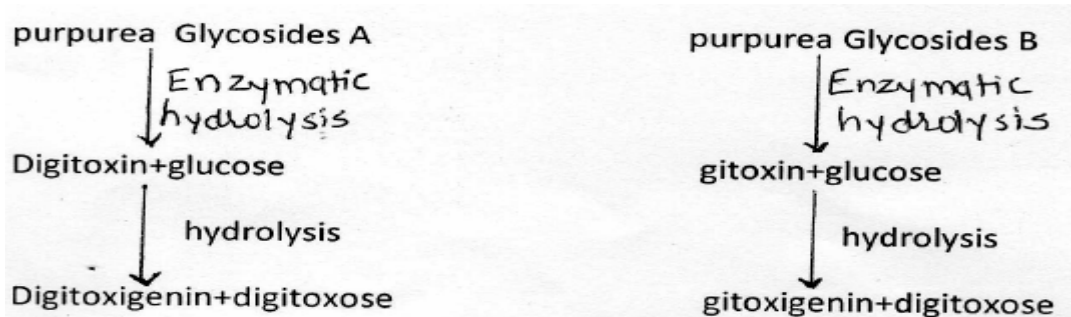
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Digitalis contains 0.2% - 0.45% mixture of Cardiac glycosides (Cardenolides), Purpurea Glycosides A and B. It also Contains Other Glycosides Such as Odoroside H, Glucogitaloxin, gitaloxin, Verodoxin and glucoverodoxin. The product of hydrolysis of purpurea Glycosides A and B, are as under.



Additionally it also contains 2 saponin G. viz Digitonin and gitonin and also contain hydrolytic Enzyme

USES: In congestive cardiac failure to increase cardiac output and to relieve venous congestion, so called as cardiac tonic.

2.SENNA

Biological Source:-dried leaves of *Cassia angustifolia* or *Cassia acutifolia* Family- Leguminosae

1. Anthraquinone Glycoside- sennoside-A, Sennoside-B, Sennoside -C, Sennoside-D

2. Aloe emodine, Kaempferol, rhein and isorhamnetin.

3. Aglycon of senna- sennidin.

Uses: Laxatives, irritant purgative

Q.3 Attempt any 3 (4marks for each)

a) Drug evaluation involves the determination of identity, purity and quality of a drug. (1 mark)

Moisture content : The percentage of active chemical constituents in crude drugs is mentioned on air dried basis. Hence the moisture content of a drug should be determined and should be controlled. The moisture content of a drug should be minimized in order to prevent decomposition of crude drugs either due to chemical change or microbial contamination. (Description 2 marks, at least 2 examples 1 mark)



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The moisture content is determined by heating a drug at 105°C in an oven to a constant weight .

Drugs	Moisture Content(% w/w) (Not More Than)
Aloes	10
Digitalis	05
Ergot	08
Acacia	15
Starch	15

b)The general method of extraction is as follows.(

Method 1-The drug is powdered and extracted with ethanol . The solvent is moved and residue is treated with dilute inorganic acid, whereupon the bases are extracted as their soluble salts.The free bases are liberated by addition of sodium carbonate and extracted with organic solvents like ether or chloroform .The solvent is removed under vacuum and the crude Alkaloidal extract is separated by physical means such as chromatography.

Method 2 –The powdered drug is moisten with water and mixed with lime, which combines with acids,tannins and other phenolic substances. The extraction is then carried out with benzene or petroleum ether. The organic layer is shaken with aq. Alkali . Alkaloidal salts remain in aq liquid are separated ,basified and extracted with chloroform for further purification.



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c) (Any 4 points with ex,1 mark for each point)

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 are inadequate. To describe these drugs , physical characters such as solubility , optical rotation , refractive index are used.</p> <p>Ex. Aloe , bees wax, tragacanth, asafoetida</p>

d)(1 mark definition , 3marks for 6 points ½ mark each)

Surgical dressings are used to include all the materials either used alone or in combination to cover the wound.

1. They Should be sterile before use.
2. They Should be stored in a dry well ventilated place at a temp not exceeding 25⁰c.
3. Permitted antiseptic should be used in prescribed concentration .
4. Adhesive products should not be allow to freeze.



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5. There should not be any loose thread, fibre ends in the dressings.

6. They should be dyed unless mention in the monograph.

e) (Definition, Biological source, Chemical constituent, and uses-1 mark each)

Tannins are the astringent substances having capacity to combine with tissue proteins and precipitate them.

1) Black catechu

Biological source- It is dried Aq extract of the heartwood of Acacia catechu Family :- Leguminosae

Chemical constituent- 1. Tannins- Acacatechin (Acacia catechin) It is insoluble in cold water and soluble in hot water.

Acacatechin on oxidation produces catechutanic acid

2. It also contains Catechu red, Gum, quarcetin

3. It does not contain chlorophyll and florescent substance

Uses-(any 2 uses)

1. Astringent

2. Water softening agent.

3. For digestive purpose

4. For mfg of stencils and printer inks.

5. As a preservative for fishing net.

6. Dyeing and tanning

7. For relaxed condition of throat, mouth, gum and in cough



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2)Pale catechu

Biological source -It is a dried aq extract prepared from the leaves and young twigs of drug Uncaria gambier

Family:- Rubiaceae.

Chemical constituent-

It contains Condensed tannins in the form of catechins, catechutanic acid, and catechu red.

Quercetin and gambier fluorescin.

Uses.

1.As an astringent in the treatment of diarrhoea.

2.In Dyeing and tanning industry

3. for protecting the fishing net.

Q 4. Answer the following (any 3 ,4marks each)

a) Resins are amorphous mixture of essential oils, oxygenated product of terpenes and carboxylic acid and found as an exudation from the trunk of trees.(1 mark)

According. to the principle constituents(**1 mark**)

1.Acid Resins- Acid is the main constituent of the resins.

e.g. Abiatic acid (colophony), Commiphoric Acid (Myrrh).

2.Ester Resins - Ester is the main constituent of the resins

e.g.Benzyl Benzoate (benzoin), Ethyl cinnamate(storax)

3.Resin Alcohol - The contents are the complex alcohols of high molecular weight.they are either in free state or as esters. e.g Peruresinotannol (peru balsam), Toluresinotannol(tolubalsam)



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RESIN COMBINATION (Definition 1 Mark, Classification 1 Mark)

Homogenous combinations of resins with other plant products like volatile oil, gum etc. are known as resin combinations Resin.

The diff combinations which are.....

1. Oleo resin –(volatile oil + resin)

e.g Ginger, capsicum etc

2. Oleo gum resin –(volatile oil + gum + resin)

e.g. Asafoetida, Myrrh

3. Glycoresins (Sugar + resin)

e.g jalap , ipomoea

4. Balsam-(Benzoic acid +cinnamic acid)

e.g tolubalsam, peru balsam

b) PREPARATION OF ABSORBENT COTTON

Fruits (capsules) are 3-5 celled , which contain numerous seeds .

Seeds covered with hair , known as Balls .

Balls are collected , dried & taken to ginning press , where in trichomes are separated from seeds.

The hairs thus separated are called as raw cotton and the remaining hair are called as linters (linters are used for manufacturing inferior grade of cotton wool.)

Raw cotton obtain from above is subjected to a process called combing. This saperates the long and short fibres .The long fibres are spun and woven as cloth and short fibres are called combers waste. This is used for manufacturing of absorbent cotton.

Remove impurities (vegetable debries) from raw cotton



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To remove wax , fatty material & colouring matter ,raw cotton is taken to the machine , cotton opener & followed by treatment with dil Soda solution or soda ash solution under pressure for about 10-15 hrs .Washed with water & treated with suitable bleaching agent .Again washed , dried & make a flat sheet .Fiinally packed in paper wrappers & sterilized.

OR

Preparation of silk

The larvae of the silkworm produce silk fibroin fibres from the glands in their mouth.

These fibroin fibres get united with a gum-like secretion known as sericin & forms cocoon.

The cocoons containing a thread which is abt 1200m in length.

The fibers are not allow to grow further into an insect.so cocoons are heated to 60-80⁰C by exposing them to steam.

The exposed cocoons are boiled with water, to dissolve the gum & to separate the fibres.



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c)(1/2 marks for each point)

Volatile oil	Fixed oil
<p>1. Evaporated at room temp.</p> <p>2. These do not produce permanent stain on paper</p> <p>3. Chemically these are terpenes and their oxygenated products .</p> <p>4. They are not saponified by alkali</p> <p>5. Volatile oil do not have food value</p> <p>6. Volatile oil have pleasant odour, that's why used in perfumery ,cosmetics,soaps,incense sticks, food and pharmaceutical industries etc</p> <p>7. They do not turn rancid on storage.</p> <p>8. e.g. Orange oil, Lemon oil</p>	<p>1. Not evaporated at room temp</p> <p>2. Do produce permanent stain on paper .</p> <p>3. Chemically they are fatty -acid with glycerol.</p> <p>4. They are saponified by alkali</p> <p>5. Fixed oil have food value .</p> <p>6. Fixed oil does not have pleasant odour</p> <p>7. They turn rancid on storage due to free acidity</p> <p>8 e.g. Arachis oil, Castor oil</p>



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d) Definition, general properties (any 2), Biological source, uses- 1 mark each)

Enzymes are proteins & they act as biological catalysts.

General properties (any 2)

1. They are colloidal in nature, heat labile, highly specific in action.
2. They are sensitive to pH
3. The enzymatic reactions are 8-10 times more rapid than non enzymatic reaction .

Papain

Biological Source: It is a proteolytic enzyme obtained from latex of *Carica papaya*.

Family: Caricaceae

USES (any 2 uses ½ mark each)

1. Papain is proteolytic enzyme that tenderises meat & act as clarifying agent in many food industry.
2. It is a common ingredient of brewery industry.
3. These are used in the care of some chronic wounds to clean up dead tissue.
4. It is an ingredient in some toothpastes or mints as teeth – whitener

e)(for definition -2 marks, Biological source-1 mark, chemical constituent -1 mark)

PERFUMES: are agents used for creating pleasant odour.

FLAVOURING AGENT: are agents used to impart flavour for oral pharmaceutical preparation, by masking unacceptable odour & taste.

i) SANDAL WOOD (Biological source-1 mark, chemical constituent -1 mark)

Biological source – It is Dried heartwood of *Santalum album*,

Family: Santalaceae



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CHEMICAL CONSTITUENTS

Sandalwood oil: α -santalol & β -santalol(95%)

Also contain santene, santenone, teresantol

OR

ii) **PEPPERMINT OIL/ MENTHA OIL**

Biological source-It is volatile oil obtained by steam distillation of fresh flowering tops of Mentha piperita **Family:** Labiatae

CHEMICAL CONSTITUENTS

Peppermint oil- l-menthol (70%),

Terpenes: menthone, methyl acetate, l-limonene, cineole, pinene, camphene, etc.

Q.No.5 Attempt any 3 (4 marks each)

a) The term terpene represents hydrocarbon $(C_5H_8)_n$ while terpenoids include hydrocarbons, as well as their oxygenated derivatives. (1)

General properties of terpenoid (3 marks 0.5 for each)

- 1) They are found in all volatile oils of plant or animal origin.
- 2) They have pleasant smell.
- 3) They are insoluble in water & soluble in alcohol, organic solvents & fixed oil
- 4) These consist of carbon & hydrogen & most of them contain oxygen.
- 5) They are made up of isoprene units $(C_5H_8)_n$.
- 6) They volatilise in steam.
- 7) Most of them are optically active.



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b) Pharmaceutical aids - The substances which are of little or no therapeutic value but are essentially used in manufacture or compounding of various pharmaceuticals are known as Pharmaceutical aids (**1mark**)

Classification with examples (**any 6 classes with examples 0.5 marks each**)

Sr.No.	Class	Example
1	Acidulent	Tamarind, lemon juice
2	Colours	Turmeric, saffron, indigo
3	Disintegrating agent	Starch, CMC
4	Diluents	Cinnamon water, peppermint water
5	Emulsifying & suspending agent	Acacia, agar, gelatin
6	filter aid	Talc, bentonite
7	flavours	Cardamom, rose, nut meg
8	Hardening agents	Bees wax, hard paraffin
9	lubricants	Talc, cocoa butter
10	solvents	Alcohol, glycerine
11	Sweetening agent	Honey, saccharin



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c) cultivation of opium: (1.5)

Being narcotic drug , its cultivation, processing and marketing are controlled by narcotic Commissioner of India. Cultivation is done by sowing seeds by broadcasting method. About 3 to 4 kg of seeds per hectar are required. They are mixed with sand & are sown. Distance of 25cm between two plants is maturated. Maximum height of plant is 1m.

Collection and Processing of opium: (2.5)

Collection starts late in February and may extend upto may . unripe capsules which changes colour green to yellowish in winter are incised in afternoon vertically from top to bottom of capsules. Whitish latex come out in the next morning , is scrapped off with knife & transferred to earthen vessel. Each capsule is required to be lanced 3 to 4 times on alternative days till no more latex is left. When sufficient latex is collected , it is kneaded into balls that are wrapped in poppy leaves & dried in the shade.

d) Sutures & ligatures (1 mark for each definition)

These are sterile threads, strings or strands specially prepared for use in surgery.

Ligatures are used for tying the tissues & Sutures are for sewing the tissues together.

Official requirement of surgical dressings (2)

- 1) They should be sterilized before use.
- 2) They should be stored in dry well-ventilated place at a temperature not exceeding 25⁰c.
- 3) They should be used with permitted antiseptics in prescribed concentrations only.
- 4) They should not be dyed unless mentioned in monograph.
- 5) There should not be any loose threads, fibre-ends in dressings.
- 6) adhesive products should not be allowed to freeze.



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e) Life cycle of ergot **(diagram 2marks & 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 contain 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.

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 alongwith seeds of the host.

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Life cycle of ergot.



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Q.No.6. chemical tests for any four drugs (each test for 1mark,) (12)

(any 3tests , 1mark for each test)

a)Acacia

- i) Solution of lead sub-acetate gelatinizes the aqueous solution of Indian gum.
- ii) It does not produce pink colour with ruthenium red.
- iii) Hydrolyse the aqueous solution of gum with dilute hydrochloric acid by boiling. To it add Fehling solution A & B & heat again. Red ppt is observed.
- iv) to 0.1gm powder, add 1ml of N/50 iodine . Mixture dose not acquire crimson colour.
- v)aqueous solution of drug is treated with dilute hydrochloric acid & heated. To it barium chloride solution is added. No ppt is formed.
- vi) aqueous solution of drug is treated with 0.5ml of solution of benzidine in alcohol.shake it well. Blue colour is produced.

b)Turmeric

- i) Powdered drug with sulphuric acid gives crimson colour.
- ii) Aqueous solution of drug with boric acid produce reddish colour which on addition of alkali changes to greenish blue.
- iii) With acetic anhydride & conc.sulphuric acid, it gives violet colour. This test under UV light red fluorescence is seen.
- iv) Prepare tincture of turmeric & impregnate a filter paper with it. Treat same paper with borax solution, green colour is produced.

c) Asafoetida

- i)Fractured surface of drug , if treated with sulphuric acid forms red or reddish-brown colour.



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ii) treated with 50% nitric acid, drug gives green colour.

iii) when triturated with water it forms yellowish-orange emulsion.

iv) Triturate drug with sand & 5ml of hydrochloric acid to it & little quantity of water, filter & to filtrate add equal ammonia. A blue fluorescence is produced due to umbelliferone.

d) Rhubarb

i) By addition of ammonia, it acquires pink colour.

ii) With potassium hydroxide, blood red colouration is produced.

ii) Under UV radiation rheum-emodi gives brown colouration.

iv) Boil the drug with sulphuric acid. Filter & cool the filtrate. Add organic solvent like benzene to it. Shake test tube & separate organic solvent layer in another test tube. Add strong ammonia solution to it & keep aside ammoniacal layer shows pink/ red colour. Borntrager's test is positive.

e) Wool

i) Wool is insoluble in 66% sulphuric acid, concentrated hydrochloric acid & cuprammonium.

ii) when lead acetate is added to solution of wool in caustic soda, a black ppt is formed owing to high sulphur content.

iii) Wool hairs are stained with ammoniacal copper oxide solution.

iv) Wool hair is soluble in 1.25M sodium hydroxide solution.

v) moisten wool with N/50 iodine solution followed by drop of 8% w/w sulphuric acid solution, yellow colour is produced.

vi) Warm with picric acid solution, permanent yellow colour is produced.

vii) warm with millon's reagent, red stain is produced.



SUMMER – 13 EXAMINATION

Subject Code: 0807

Model Answer

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f) 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.



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