WINTER– 2022 EXAMINATION

MODEL ANSWER

Subject Title: PHARMACOGNOSY- THEORY Subject Code: **20113**

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 the 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, the 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 the examiner of relevant answer based on the candidate's understanding.
7) For programming language papers, credit may be given to any other program based on an equivalent concept.
8) As per the policy decision of Maharashtra State Government, teaching in English/Marathi and Bilingual (English + Marathi) medium is introduced at first year of AICTE diploma Programme from academic year 2021-2022. Hence if the students in first year (first and second semesters) write answers in Marathi or bilingual language (English +Marathi), the Examiner shall consider the same and assess the answer based on matching of concepts with model answer.

Q. No.	Sub No.	Answers	Marking Scheme
1		**Answer any SIX of the following:**	**30M**
1	a	**Explain the Pharmacological Classification of Crude Drugs with Examples.** **Marking Scheme:** (Classification: 3M; Examples of each class: 2M) **Answer:** This system of classification involves the grouping of crude drugs according to the pharmacological action of their active constituents or their therapeutic uses, regardless of their morphology, taxonomical status, or chemical relationship. The drugs differing in mechanism of action but having same pharmacological effects are also grouped together, e.g., bulk purgatives, irritant purgatives, emollient purgatives etc. This classification is more relevant and is mostly followed method. Drugs like digitalis, squill and strophanthus having cardiotonic action are grouped together irrespective of their parts used or phylogenetic relationship or the nature of Phyto-constituents they contain. 1. **Drugs acting on gastro intestinal tract:** Bitter-Gentian, Quassia, Cinchona Carminative-Dill, Mentha, Cardamom Emetics-Ipecacuanha	**5M**

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Q. No.	Sub No.	Answers	Marking Scheme
		Anti-amoebic-Kurchi, Ipecacuanha Bulk Laxative-Agar, Ispaghula, Banana Purgatives-Senna, Castor oil Peptic ulcer treatment- Liqourice **2. Drugs acting on respiratory system:** Expectorant-Vasaka, Liqourice, Ipecacunha Antitussive-Opium, Bronchodilator-Ephedra, Tea, **3. Drugs Acting on Cardio vascular System:** Cardiotonic-Digitalis, squill Cardiac Depressants-Cinchona Vaso Constrictor-Ergot Antihypertensive-Rauwolfia **4. Drugs acting on Autonomic nervous system:** Adrenergic-Ephedra Cholinergic-Pilocarpine, Physostigmine Anticholinergics-Belladonna, datura **5. Drugs acting on CNS:** Central Analgesic-Opium CNS Stimulants-Coffee Hallucinogenic-Cannabis, poppy latex **6. Antispasmodic:** Smooth Muscle Relaxants-Opium, Datura, Hyoscyamus Skeletal Muscle Relaxants-Curare 7. **Anticancer:** Vinca, Podophyllum, 8. **Antirheumatics**-Aconite, Colchicum, Guggul **9. Astringents**-Myrobalan, Black catechu	
1	**b**	**Define adulteration of drugs and types of adulteration in details.** **Marking Scheme:** Definition: 1M; Types of adulteration with examples: 4M **Answer:** **Adulteration** is defined as debasement of an article or substituting original drugs partially or fully with other similar looking substance. The substance which are mixed is free from	**5M**

Q. No.	Sub No.	Answers	Marking Scheme
		or inferior in chemical and therapeutic and chemical properties or addition of low grade or spoiled drugs or entirely different drugs similar to that of original drugs substituted with an intention of enhancement of profit.	1M
		Types of Adulteration: Adulteration can be broadly classified into two types: 1) **Intentional adulteration** is mainly encouraged by traders because these original crude drugs are highly costly. So hence they use cheaper variety to reduce the cost burden and to gain profit. 2) **Accidental adulteration**: Accidental adulteration occurs without bad intention of the manufacturers or suppliers mainly it occurs during collection of drugs because of same morphological features between two plants.	1M
		A. Replacement by exhausted drugs: 1) Exhausted saffron is coloured artificially 2) Exhausted Ginger is mixed with starch	3M
		B. Substitution with superficially similar but inferior drugs: Examples 1) Adulteration of cloves by mother cloves. 2) Saffron with dried flower of Carthamus tinctorius.	
		C. Substitution by artificially manufactured substituent: Examples 1) Paraffin wax is tinged yellow & substituted for yellow bee's wax. 2) Artificial invert sugar is mixed with honey.	
		D. Substitution by sub- standard commercial varieties: Examples *1) Capsicum frutescens* (capsicum minimum), substituted by *Capsicum annum.* 2) Alexandrian senna with Arabian senna.	
		E. Presence of organic matter obtained from the same plant: 1) Clove is mixed with clove stalks. 2) Caraway & Anethum fruits are mixed with other parts of inflorescence	
		F. Synthetic chemical: 1) Benzyl benzoate to balsam of Peru. 2) Citral to oil of lemon grass.	
		G. Waste from market: 1) Limestone in Asafoetida. 2) Pieces of amber coloured glass in colophony.	

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Q. No.	Sub No.	Answers	Marking Scheme
1	c	**Name antihypertensive drug. Give biological source and chemical constituents of Rauwolfia and Vinca.**	**5M**
		Making Scheme: Name antihypertensive drug: 1M; Biological Source: 2M (1M for each); Chemical constitutes: 2M (1M for each).	
		Answer:	
		Antihypertensive drug: **Rauwolfia**	**1M**
		Biological source and Chemical Constituents of Rauwolfia	
		Biological source: • It consists of dried roots of the plant *Rauwolfia serpentine* belongs to **family – Apocynaceae**	**1M** **1M**
		Chemical constituents- • Main alkaloid – Reserpine • Other alkaloids – ajmalicine, ajmaline, rauwolfinine, rescinnamine, reserpinine, yohimbine, serpentine & serpentinine. • Also contains oleo-resin, phytosterol, fatty acids, unsaturated alcohol & sugars.	
		Biological source and Chemical Constituents of Vinca:	**1M**
		Biological Source: • It is dried whole plant of *Catharanthus roseus* • Family: Apocynaceae	
		Chemical Constituents: • Alkaloids are present in entire herb but leaves and roots contain more alkaloids. About 90 alkaloids are isolated from vinca from which some like ajmalicine, serpentine, and tetrahydroalstonine are known and are present in other species of Apocynaceae. • Vincristine and vinblastine contain anticancer activity. It also contains sesquiterpene, indole and indoline glycoside.	**1M**

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Q. No.	Sub No.	Answers	Marking Scheme
1	d	**Enlist all and describe in brief about Traditional Indian System of Medicine (any two)** **Marking Scheme:** List of Traditional System of Medicines: 1M; Description of any two system: 4M (2M for each System). **Answer:** **Various Indigenous system of medicine are as follows-** 1. Ayurveda 2. Siddha 3. Unani 4. Homoeopathy 5. Naturopathy 6. Yoga **1. Ayurvedic system of medicine:** It is the oldest system of medicine in India. In Ayurveda there is a supposition that everything in universe is made up of 5 basic elements (Panchamahabhuta) like solid, liquid, air, space, and energy. These 5 elements exist in the body in combined form like Vata, Pitta, Kapha. These three forms are together called as "Tri-dosh". 1. Vata = space + air 2. Pitta = energy + liquid 3. Kapha = solid + liquid The seven forms of Tri dosh are called as 'SAPTADHATU'. These saptadhatu under goes wear and tear processes and form excretory material or mala. When this tri dosh, saptadhatu and mala are in balanced form, the condition is healthy. But if it is in imbalanced form there are pathological disorders. In Ayurveda Charak Samhita and Sushrut Samhita are two well-known treaties. In Charak Samhita descriptions of plants used as medicine are included and in Sushrut Samhita emphasis is given on surgery. **2. Siddha System of Medicine:** • The terms "Siddha" means achievement and siddhar were saintly personalities who attended proficiency in medicine through practice of bhakti and yoga. • This is the system of pre-vedic time identified with Dravidian culture. These systems believe that all object in universe is made up of five basic elements like earth, water, sky, fire, and air.	**5M** **1M** **2M for each system**

Q. No.	Sub No.	Answers	Marking Scheme

- The identification of causative factors of disease is done through pulse reading, colour of the body, study of voice, urine examination, status of digestive system and examination of tongue.
- The literature of siddha system is mostly in Tamil. Few natural drugs which are used in siddha system of medicine are
    - Abini (*Papaver somniferous*)
    - Ethi (*Nux vomica*)
    - Gomethi (*Datura*)

3. Unani system of Medicine:

- The root of these system goes deep to the times of well-known Greek Philosopher Hippocrates.
- Aristotle made valuable contribution to the unani system of medicine. It is then carried to Persia (Iran) and then it is improved by Arabian Physician.
- Unani system of Medicine is based on two Theories:

A. Hippocrates Theory of four Humours:
    a. Blood
    b. Phylum
    c. Yellow Bile
    d. Black Bile.

B. Pythagorean theory of four Proximate qualities.
    a. The state of Human body like hot, cold, moist and dry
    b. These qualities are represented as earth, water, fire and Air
    c. The Greek ideas were put by the Arabian physicians as seven working principles, included;
        i. Temperature
        ii. Humours
        iii. Organs
        iv. Life
        v. Spirit
        vi. Energy
        vii. Action
    d. These principles are responsible for body constituents and its health as well as disease condition.

Q. No.	Sub No.	Answers	Marking Scheme
		e. In Unani system of medicine, treatment of disease is carried out by treating the cause of disease and not to its symptoms. For this purpose, the History of patient is recorded along with his pulse, urine and stool examination. f. The disease condition is due to imbalance in Humours and as per this treatment is given. g. Generally, in Unani system of medicine the Polyherbal formulation. are used as a drug. This system is also called as Arab Medicine, Islamic Medicine and oriental medicine. • Example of Unani Medicines: - Madar Fufal, kabab chini sana, etc. **4. Homeopathic System of Medicine** • As compare to other Traditional System of medicines, Homeopathy System of medicine is a new system of medicine and which are developed by German Physician chemical Samuel Hahnemann in 18th century. • According to this system of medicine it is proposed that the cause of the disease itself can be used for its treatment. German Physician shown that cinchona bark can produce the symptom of malaria. In homeopathic system of medicine, the drug treatment is not specified" but the choice of the drug is depending on symptoms and clinical condition of the patient. • During the treatment drug extract are so diluted which believe that it increases the curative effect of the drug. • The drugs an extracted in the form of mother tincture. which is further diluted in terms of decimal.	
1	**e**	**Define Antioxidant and explain its role as nutraceuticals.** **Marking Scheme:** Definition:1M; Role: 4M **Answer:** **Antioxidants:** Antioxidants are the agent which prevent the oxidation or prolong the life of oxidizable matter in the body. In general oxygen molecules circulating in the body which react with electrons of other molecules and also affect various enzyme system and damage which cause a condition such as cancer, aging, respiratory distress, rheumatoid arthritis	**5M** **1M**

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Q. No.	Sub No.	Answers	Marking Scheme
		Antioxidants play vital role in life of living system. • Antioxidants are abundant in fruits and vegetables and other foods including nuts, grains and some meats, poultry and fish. • Common antioxidants include: Green leafy vegetables, including collard green, spinach etc. beta-carotene is found sweet potatoes, pumpkins, mangoes etc. • Lycopene is a potential antioxidant found in tomatoes, watermelons, guava etc. • Some natural antioxidants like Ascorbic acid, tocopherol, Superoxide, adenosine transferrin is used therapeutically. • Vitamin E (Tocopherol) is major radical trapper in lipid membrane and clinically useful in cardiac damage. • Selenium is important dietary anticarcinogen corn oil, wheat germ oil is rich Source of vitamin. • Various plant material like Amla, lemon myrobalan Contain Antioxidant in the form of Ascorbic acid (Vitamin-C) it prevents formation of oxygen free radical.	**4M for any four role as a nutraceuticals**
1	**f**	**Give source, chemical constituents, commercial preparation, therapeutic uses and cosmetic uses of Almond oil.** **Marking scheme:** Biological source:1M; Chemical constituents:1M; Commercial preparation:1M; Therapeutic uses: 1M; Cosmetic uses of Almond oil: 1M. **Answer:** **Almond Oil** 1. **Biological Source:** Almond oil is a fixed oil obtained by expression from the seeds of *Prunus amygdalus* (sweet almonds) or *P. amygdalus* var, amara (bitter almonds). Family: Rosaceae **2. Chemical Constituents:** • Both varieties of almond contain 40-55% of fixed oil, about 20% of proteins, mucilage and emulsion. • The bitter almonds contain in addition 2.5-4.0% of the colourless, crystalline, cyanogenelic glycoside amygdalin. • Almond oil consists of a mixture of glycerides of oleic (62-86%), linoleic (17%), palmitic (5%), myristic (1%), palmitoleic, margaric, stearic and linolenic acid.	**5M** **1M** **1M**

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		3. Commercial preparation: It is one of the ingredients of the preparation known as Baidyanath lal tail (Baidyanath Company), Himcolin gel, Mantat, Tentex Royal (Himalaya Drug Company) and Sage badam Roghan (Sage Herbals)	**1M**
		4. Therapeutic uses: • Almond oil is used as a laxative, emollient, in the preparation of toilet articles and as a vehicle for oily injections. • The volatile almond oils are used as flavouring agents.	**1M**
		5. Cosmetic uses: • Expressed almond oil is an emollient and an ingredient in cosmetics. • Sweet almond oil may be applied directly to the skin and hair. It may also be easily incorporated an active ingredient or an excellent carrier in skin and hair care products as it offers deep penetration and significant moisture retention together with high nourishing properties. • It can also be used directly as massage oil.	**1M**
1	**g**	**Describe method of cultivation, collection and preparation of Opium for market.** **Marking Scheme:** **Cultivation: 2.5M; Collection: 2.5M.** **Answer:** **Cultivation and Collection of Opium:** • Opium is cultivated under license from the government. Its seeds are sown in October or March in alluvial soil. • The poppy of first crop blossoms in April or May and the capsule mature in June or July. When the capsules are about 4 cm in diameter, the colour changes from green to yellow; they are incised with a knife about 1 mm deep around the circumference between midday and evening. • The knife, known as a 'nushtur' bears narrow iron spikes which are drawn down the capsule to produce several longitudinal cuts.	**5M**

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		• The latex tube opens into one another. The latex, which is white in the beginning, immediately coagulates and turns brown. Next morning it is removed by scrapping with a knife and transferred to a poppy leaf. • After collection the latex is placed in a tilted vessel so that the dark fluid which is not required may drain off. • Raw opium is the dried milky exudation obtained by incising the unripe but fully grown capsules of ***Papaver somniferum*** Family – **Papaveraceae**. • The cultivation is done in the months between September and April. A gap of 25 cm should be maintained between two consecutive plants. • Before sowing the seeds, they are mixed with sands properly. • About five to six capsules appear on each plant and it flowers in the month of May-June. • After the petals fall from the poppy, the pod, which is about the size of a golf ball, is lanced, and the opium latex is exuded. • Initially the latex is pink; later it changes to black. • Poppies are lanced in the afternoon and the latex is scraped off the next morning. • Pods ripen (soften) at different times in the field. • Each pod can be lanced from 4 to 7 times. • The lancing takes a great deal of time and attention. Several pods can be scraped before the opium is placed into a container. • So many pods to cut and scrape. • The opium collected is weighed on a daily basis before an officer of the Narcotics Department. • After the latex has been collected, all the peasants from an area take their opium to a weighment centre. • Their opium has been scraped into standard containers of known weight. One-tenth of a hectare produces small amounts of latex.	
2		**Answer any <u>TEN</u> of the following:**	**30 M**
2	**a**	**Definition of Pharmacognosy. Who coined the term Pharmacognosy. How it was coined?** **Marking Scheme:** Definition: 1M. Name of Scientist who coin term: 1M. Description of process of coined – 1M	**3M**

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Q. No.	Sub No.	Answers	Marking Scheme
		Answer: **Pharmacognosy:** Pharmacognosy is defined as the scientific and systematic study of structural, physical, chemical, and biological characters of crude drugs along with their history, method of cultivation, collection, and preparation for the market. **Seydler** coined the term Pharmacognosy While studying Sarsaparilla, it was, A German scientist, who coined the term Pharmacognosy in 1815 in his work entitled, 'Analecta Pharmacognostica' from combination of two Greek words viz., *Pharmakon*, a drug and *gignosco*, to acquire the knowledge of.	**1M** **1M** **1M**
2	**b**	**Differentiate between fixed oils and volatile oils.** **Marking Scheme: ½ Mark for each Point (0.5 x 6 = 3M)** **Answer:**	**3M**

Sr. No.	Volatile oil	Fixed oil
1.	Evaporated at room temperature.	Does not evaporated at room temperature
2.	These do not produce permanent stain on paper	They produce permanent stain on paper.
3.	They are not saponified by alkali	They are saponified by alkali
4.	Volatile oil do not have food value	Fixed oil has food value.
5.	Volatile oil has pleasant odour, that's why used in perfumery, cosmetics, soaps, incense sticks, food and pharmaceutical industries etc	Fixed oil does not have pleasant odour
6.	They do not turn rancid on storage.	They turn rancid on storage due to free acidity
7.	e.g.Orange oil, Lemon oil	e.g. Arachis oil, Castor oil

2	**c**	**Define Stomatal Index, Vein-Islet Number and Refractive Index.** **Marking Scheme: Each definition 1 M** **Answer:** **Stomatal index:** It is the percentage which the number of stomata forms to the total number of epidermal cells, each stomata being counted as one cell.	**3M** **1M**

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<table>
<tr><th>Q. No.</th><th>Sub No.</th><th>Answers</th><th>Marking Scheme</th></tr>
<tr><td></td><td></td><td>Vein-islet number: It is defined as the number of vein islet per sq.mm of the leaf surface.

Refractive Index: Refractive index is defined as the ratio of the velocity of light in vacuum to velocity in the substance is termed as refractive index of second medium.</td><td>1M

1M</td></tr>
<tr><td>2</td><td>d</td><td>Define Laxatives. Explain “Borntrager’s Test” for Senna.
Marking Scheme:
Definition: 1M; Test: 2M

Answer:
Laxatives: Drugs that loosen the bowels (intestine)
OR
The drugs producing, increasing, and hastening intestinal evacuation.
OR
The drugs which promote defecation.
Borntrager’s test for Senna.
To 1 gm of drug add 5–10 ml of dilute dilute sulphuric acid, boil on water bath for 10 min and filter. Filtrate was extracted with CCl_4/ benzene. Separate the organic solvent layer and add equal amount of ammonia solution to filtrate and shake. Formation of pink or red colour in ammonical layer due to presence of anthraquinone moiety.</td><td>3M

1M

2M</td></tr>
<tr><td>2</td><td>e</td><td>Differentiate between organized and unorganized drugs.
Marking Scheme: ½ Mark for each Point (0.5 x 6 = 3M)

Answer:
<table>
<tr><th>Sr.No</th><th>Organized crude drug</th><th>Unorganized crude drug</th></tr>
<tr><td>1</td><td>It is obtained from definite anatomic parts of the plants such as flowers, leaves, fruits etc</td><td>It is obtained from plants or animals by means of physical process such as drying, incision, extraction such as juices, resins.</td></tr>
<tr><td>2</td><td>It is made up of definite tissue and cells.</td><td>It does not have cellular structure</td></tr>
<tr><td>3</td><td>It is solid in nature</td><td>It is solid, semi-solid and liquid in nature.</td></tr>
<tr><td>4</td><td>Microscopical characters are used for identification.</td><td>Chemical tests and physical standards are used for identification</td></tr>
<tr><td>5</td><td>Botanical and zoological terminology can be used to describe the drug</td><td>Botanical and zoological terminology is inadequate. To describe these drugs, physical characters such as solubility, optical rotation, refractive index are used.</td></tr>
<tr><td>6</td><td>Ex. Coriander, fennel, datura, etc</td><td>Ex. Aloe, bees wax, tragacanth, asafoetida etc.</td></tr>
</table></td><td>3M</td></tr>
<tr><td>2</td><td>f</td><td>Define Enzyme. Give biological source and application of shark liver oil.</td><td>3M</td></tr>
</table>

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Q. No.	Sub No.	Answers	Marking Scheme
		Marking Scheme: **Definition: 1M, Biological source: 1M; Application: 1M (min two applications).** **Answer:** **Enzymes** Enzymes are the protein substances which serve a role of catalysing the biochemical reactions. **Shark Liver Oil** • **Biological Source** Shark liver oil is the fixed oil obtained from the fresh and carefully preserved livers of shark, mainly *Hypoprion brevirostris.* • **Application** o Shark liver oil is used to treat xerophthalmia (abnormal dryness of the surface of conjunctiva) occurring due to deficiency of vitamin A. o The oil is nutritive and used as a tonic.	**1M** **1M** **1M**
2	**g**	**Mention drugs, give biological source and chemical constituents of agents used as Anti-tussives.** **Marking Scheme:** Name of Anti-tussives Agents: 1M, *Biological Source of any of drug: 1M; Chemical Constituents of any one drug:1M.* **Answer:** **Anti-tussives Agents:** Drugs used as Anti-tussives are 1. Vasaka leaves 2. Tolu Balsam. **1. Vasaka leaves:** **Biological Source** – Vasaka consists of dried as well as fresh leaves of *Adhatoda vasica* belonging to family *Acanthaceae.* **Chemical Constituents –** Vasaka contains quinazoline alkaloids. They are Vasicine, Vasicinone and Hydroxy vasicine. It also contains Vasakin (Yellow coloring matter), resin, sugar, mucilage, beta sitosterol and vitamin C.	**3M** **1M** **1M** **1M**

Q. No.	Sub No.	Answers	Marking Scheme
		OR	**OR**
		2. Tolu Balsam **Biological Source –** Balsam of tolu is solid or semi-solid balsam obtained from the branches of *Myroxylon balsamum* belonging to family Leguminosae. **Chemical Constituents –** It contains balsamic acid mainly Cinnamic acid, Benzoic acid. Oily liquid Cinnamein. Ester is benzyl benzoate and benzyl cinnamate. Main ester is Toluresinotannol. It also contains small quantity of Vanillin.	**1M** **1M**
2	**h**	**Define sutures and ligatures. Write ideal requirements of sutures.** **Marking Scheme:** **½ mark for each definition and 2 marks for any 4 requirements** **Answer:** **Sutures:** 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. **Ligatures:** Ligatures are used for tying the tissues. **Requirements** 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 occasion only	**3M** **0.5M** **0.5M** **2M for any four requirements**
2	**i**	**Define and classify herbal formulations.** **Marking Scheme: Definition-1M and Classification-2 M** **Answer:** **Define:** Herbal formulation is a dosage form consisting of one or more herbs or processed herbs in specified quantities to provide specific nutritional, cosmetic benefits meant for use to diagnose, treat, mitigate diseases of human beings of animals, and alter the structure or physiology of human beings or animals	**3M** **1M**

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Q. No.	Sub No.	Answers	Marking Scheme
		Types of Herbal Formulations **1. Traditional Formulations** **a. Ayurvedic Formulations** **i.** Solid: Vati,Ghutika, Bhasmas **ii.** Liquid: Taila, Swarasa, Asava **iii.** Semisolid: Aveleha, Leha **b. Unani Formulations** **i.** Solid: Habb, Quars, Safoof **ii.** Liquid: Joshanda, Arq, Sharabat **iii.** Semisolid: Majoon, Jawarish, Laooq **c. Homeopathic Formulations** **i.** Mother Tinctures **ii.** Dilution of soluble and insoluble drugs **2. Conventional Formulations** Tablets, Capsules, Syrup, Suppositories, Ointment, Gel, Eye drops, Ear Drops, Powder, Granules. **3. Modern Formulations** **a.** Phytosomes **b.** Liposomes **c.** Nanoparticle	**2M**
2	**j**	**Give the role of medicinal and aromatic plants in national economy.** **Marking Scheme:** Role of MAPs in the national economy: 3M (each role = 0.5M) **Answer:** **Role of medicinal and aromatic plants in the national economy:** 1. Medicinal and aromatic plants form a numerically large group of economically important plants which provide basic raw materials for medicines, perfumes, flavours and cosmetics. 2. A recent study indicates that the herbal drug market continues to grow at the rate of 15% annually. 3. Several hundred genera are used in herbal remedies and in traditional or folklore medicines throughout the world. 4. The World Health Organisation (WHO) estimated that 80% of the population of developing countries rely on herbal medicines for their treatment. 5. Medicinal and aromatic plants and their products not only serve as a valuable source of income for small land holder farmers and entrepreneurs but also earn valuable foreign exchange by way of export.	**3M**

Q. No.	Sub No.	Answers	Marking Scheme
		6. Medicinal and aromatic plants are a good resource to develop new medicines and treat the body and mind which is known as naturopathy. They are useful for improving health and life. 7. Many synthetic medicines are based on plant extracts, which are used to create new modern medicines.	
2	**k**	**Explain life cycle of ergot in detail with diagram.** **Marking Scheme: Digram-1.5M; Explanation -1.5 M** **Answer:** **Life cycle of Ergot** – Ergot is a fungal growth. The life cycle of ergot contains three stages: 1. Ascospore stage 2. Asexual stage/Honey dew stage 3. Sexual stage **1. Ascospore stage:** The sclerotia produced in late summer and fall on the ground. In damp condition these sclerotia germinate to produce small purple colour stalks(stroma), which on further growth form a flattened spherical head at the top. These head contain several flask shape cavities which are known as perithecia. **2. Asexual stage:** Each perithecium contains several elongated asci. Each ascus contains eight elongated thread like ascospores. These ascospores dispersed by air current. The dispersed ascospores entangled with the feathery stigmas of host and produce mycelia which penetrate the ovary. The mycelia give rise to conidia, produce from the surface of the ovary. The honey dew is sweet in taste and attract the insects. Along with honey dew, conidia are carried from one place to another by insects. **3. Sexual stage:** Hyphae penetrate deeply into the ovary and develop into a mass covering the entire ovary which results in the formation of elongated sclerotium. Sclerotium develops further and fall on the ground, and next cycle begins.	**3M** **1.5M (0.5M for each stage)**

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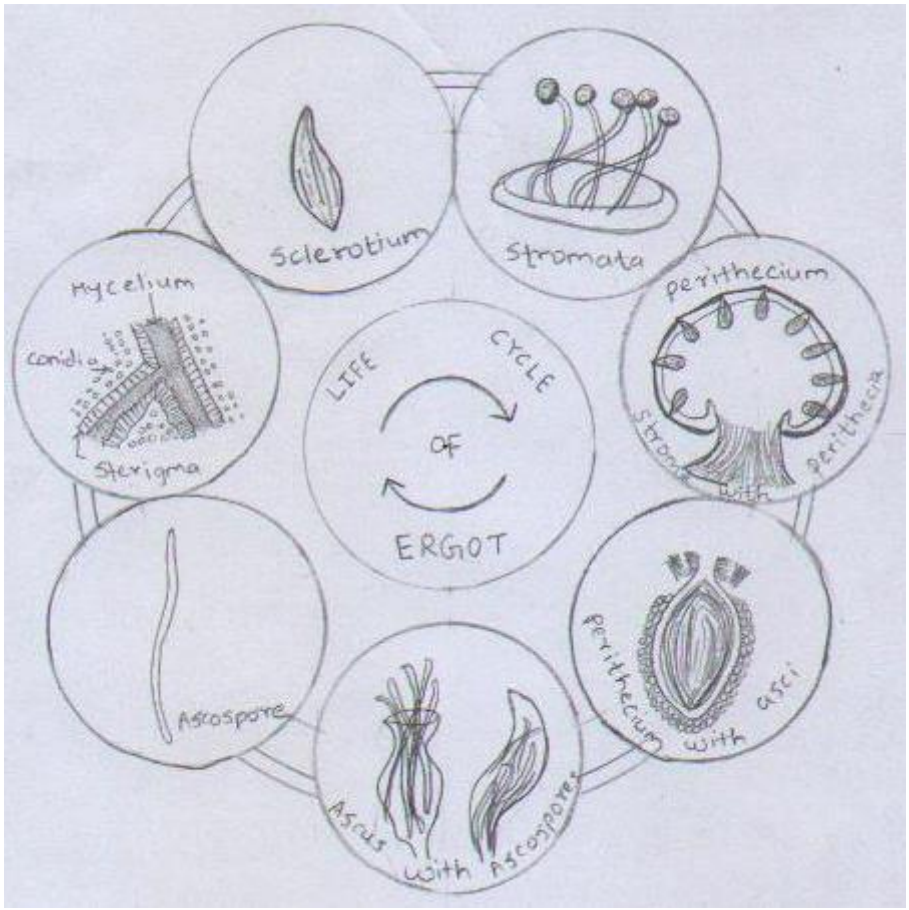
Subject Title: PHARMACOGNOSY- THEORY Subject Code: **20113**

Q. No.	Sub No.	Answers	Marking Scheme
		Diagram: Life cycle of Ergot  	**1.5M for diagram**
3		**Answer all questions.**	**20 M**
		Important Instructions: In case, multiple answer options are observed for the same sub question of question No. 3, the option (Answer) appearing first in the answer book shall be treated as answer and assessed accordingly.	
3	**a**	**Which alkaloidal drug is used as antihypertensive?** **Answer:** **Rauwolfia OR Reserpine**	**1M**
3	**b**	**Define avaleha.** **Answer:** It is an ayurvedic semisolid preparation of drugs prepared with addition of jaggery or sugar candy and boiled with prescribed drug juice or decoction.	**1M**
3	**c**	**Podophyllum is used as a binding agent - True/False.** **Answer: False**	**1M**

WINTER– 2022 EXAMINATION

MODEL ANSWER

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Q. No.	Sub No.	Answers	Marking Scheme
3	d	**Define herbal cosmetics with examples.** **Answer:** **Herbal Cosmetics:** Herbal cosmetics are the preparations containing phytochemicals from a variety of herbs which influences the function of skin and provide nutrients to the body necessary for the healthy skin or hairs. **Examples:** Herbal face wash, Herbal conditioner, Herbal soap, Herbal shampoo, Herbal lipstick	**1M** **0.5M** **0.5M**
3	e	**Mention synonyms of Curcuma, Vinca** **Marking Scheme:** ½ Marks for synonym (any one) of curcuma & ½ Marks for synonym (any one) of vinca **Answer:** Synonym of Curcuma**:** • **Indian saffron,** • **Haldi,** • **Turmeric** Synonym of Vinca**:** • **Catharanthus,** • **Periwinkle,** • **Sadaphulli**	**1M**
3	f	**Write two examples of drugs belonging to family: Liliaceae.** **Answer:** o Aloe, o Colchicum, o European squill, o Indian Squill, o Garlic	**1M** (0.5M for each example; 1M for two example)
3	g	**State drug, which is the rich source of Vitamin A.?** **Answer: Shark liver oil, Cod liver oil**	**1M** (Any one drug)
3	h	**State drug, which is used as protein digestant?** **Answer: Diastase, Papaya**	**1M** (Any one drug)

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MODEL ANSWER

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Q. No.	Sub No.	Answers	Marking Scheme
3	i	**Define phytoconstituents.** **Answer:** Phytoconstituents are the chemical substances of organic nature which are formed in plants through the activity of their individual cells **OR** Phytoconstituents are chemical compounds that occur naturally in plants.	1M
3	j	**In the preparation of silk, the cocoons are heated at** **Answer: 60^0 - 80^0C**	1M
3	k	**Herbal ointments are _____ dosage forms** **Answer: Conventional OR Semisolid**	1M
3	l	**Lignified trichomes is the characteristics of** Answer: iii) Nux-vomica	1M
3	m	**Which is the identification test for cardiac glycosides.** Answer: iv) All the above	1M
3	n	**Tridosha theory is related** Answer: iii) Ayurveda	1M
3	o	**Vatika and Gutika available in following dosage.** Answer: i) Tablet and Pills	1M
3	p	**Lavender oil belongs to which family** Answer: iv) Labiate	1M
3	q	**Chemical test used for identification of Carbohydrates:** Answer: ii) Molish	1M
3	r	**Which is not the biological source of Cinchona:** Answer: iv) *Cinchona indica*	1M
3	s	**Balsams contain mainly acids:** Answer: iv) Benzoic acid + Cinnamic cid	1M
3	t	**Which part of Dill fruit contain oil.** Answer: iii) Vitte	1M