KATHMANDU UNIVERSITY
End Semester Examination
July/August, 2024

Marks Scored:

Level : B.Pharm.
Year : II
Course : PHAR 214
Semester : II

Exam Roll No. :
Time: 30 mins.
F. M. : 20

Registration No.:
Date 05 AUG 2024

SECTION "A"
[15 Q. × 1 = 15 marks]

**Choose and encircle the most appropriate option.**

1. Select a best solvent to be used at the final step during the extraction of morphine from plant source
   a. Lime water
   b. Activated charcoal water
   c. Tolune
   d. Sulfuric acid

2. Which of the following medicinal plant should be entirely harvested on second year of cultivation?
   a. Belladonna
   b. Opium
   c. Senna
   d. Digitalis

3. Which of the herb is toxic to liver upon the regular consumption of 1000 mg/kg body weight dosage for Two weeks?
   a. Vinca
   b. Taxus
   c. Nutmeg
   d. Senna

4. Select a type of stomata present in Belladonna and Digitalis leaf
   a. Anisocyatic
   b. Anomocyatic
   c. Paracyatic
   d. Anomocyatic and Anisocyatic respectively

5. A clear sheath of Calcium Oxalate Prisms to each phloem fibers is seen in the transverse section of _____
   a. Ephedra
   b. Squill
   c. Cascara
   d. Belladonna

6. Which of the following plant is propagated using offsets, and also become ready to harvest only after 2-5 years of cultivation?
   a. Squill
   b. Senna
   c. Hyoscyamus
   d. Rhubarb

7. A perennial medicinal plant which is bitter in taste _____
   a. Cascara
   b. Opium
   c. Senna
   d. Vanilla

8. A most correct information about the toxic fungi is _____
   a. Trichothecenes inhibits the salivation
   b. Fumonisin B1 inhibits the protein biosynthesis
   c. Phallotoxins destroy the CNS system
   d. Amatoxins inhibit RNA polymerase

9. Select a group of metabolites acting mainly on the nervous system
   a. Epinephrine, Caffeine
   b. Morphine, Aloin
   c. Vincristine, Caffeine
   d. Nicotine, Lutein

10. Select an appripireate group of *Aspargillus* biochemicals which are primarily harmful for human health
    a. Ochratoxin A, Citrinin
    b. Aflatrem, Secalonic acids
    c. Sterigmatocystin, Urushiol
    d. Andromedotoxin , Aflatoxin

11. The Thin Layer Chromatography is based on the principle of the _____
    a. Compounds are absorbed on an absorbent to same degrees
    b. Compounds are absorbed on plate to different degrees
    c. Compounds are adsorbed on an adsorbent to different degrees
    d. Compounds are eluted by mobile phase against gravity

12. Select a group of medicinal plants belonging to the same family
    a. Ipecac, Gambier, Digitalis
    b. Thevetia, Rauwolfia, Vinca
    c. Digitalis, Senna, Tragacanth
    d. Aloe, Colchicum, Nux-vomica

13. A plant furostanol saponin which is used to synthesis of the respective exact derivative is _____
    a. Quilija contains the lutein, which is used to synthesis of $\beta$-sitosterol
    b. Sarsaparilla contains the sarsapogenin, which is used to synthesis of antibiotics
    c. Agave contains the Hecogenin, which is used to manufacture the cortisone
    d. Dioscorea contains diosgenin, which is used to synthesis of oral contraceptive

14. Terpenoidal Glycoside and hydroxyanthraquinone glycosides are mainly present in the plants _____ and _____ respectively.
    a. Licorice and cascara
    b. Cascara and Licorice
    c. Aloe and Acacia
    d. Senna and Ephedra

15. During the biosynthesis of plant secondary metabolites, "C6C2N" building block is formed from either _____
    a. L-phenylalanine or L-tyrosine, L-tyrosine
    b. L-methionine or L-tyrosine, L-tyrosine
    c. Mevalonate, or deoxyxylulose phosphate, acetyl-CoA
    d. L-phenylalanine or malonyl-CoA, Isoprene unit

## SECTION "B"

[5 Q. × 1 = 5 marks]

**Match the best suitable pharmacological character among the following medicinal plants**

| | |
|---|---|
| (i). Antimalarial | ( ) Belladonna |
| (ii). Bronchodilator | ( ) Agar |
| (iii). Rheumatic arthritis | ( ) Cinchona |
| (iv). Bulk laxative | ( ) Sarsaparilla |
| (v). Anti-cholinergic | ( ) Ephedra |

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SECTION "C"
[5 Q. × 3 = 15 marks]

Attempt *ANY FIVE* questions.

1. Write down the chemical properties of alkaloids

2. Write down the sub-classes of monoterpenes according to the number of ring in the structure with appropriate example of each

3. Tabulate some of the differences between cultivation of opium and cultivation of vanilla

4. Draw a well labelled diagram of transverse section of ephedra stem

5. Compare the macroscopic properties of cinchona and cascara barks with their well labelled diagrams

6. Write down some toxins from Amanita, and their effects on human health

7. Highlight the role of column chromatography in pharmacognosy and phytochemistry

SECTION "D"
[5 Q. × 5 = 25 marks]

Attempt *ANY FIVE* questions.

8. Classify the carotenoids. Give their medicinal values with suitable example

9. Describe the distribution of various stomata and trichomes in leaf of some medicinal plants

10. Write down the health benefits of plant secondary metabolites related to the class of phenolics and glycosides

11. Explain the usages of plant carbohydrates as a pharmaceutical aid

12. Elaborate about the chemistry and health risks of *Aspergillus, Rhus*, and *Fusarium*

13. Write down the schematic flow diagram for the isolation of following compounds from plant samples
    a. Strychine
    b. Quinine

14. Write down the detail chemical constituents, and the phytochemical testing process of
    a. Pale catechu
    b. Black catechu

P.T.O.

## SECTION "E"

[2 Q. × 7.5 = 15 marks]

Attempt *ANY TWO* questions.

15. Briefly write down some building blocks for the plant secondary metabolites. Outline the various pathways involved in the biosynthesis of these secondary metabolites

16. Explain the chemistry of tropane alkaloid bearing medicinal plants

17. Write down medicinal plants those have anticancer property. Explain their bioactive phytochemicals, and mechanism of action to inhibit cancer cells