

19/02/22

Total No. of printed pages = 6

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2021

B.Pharm. 5<sup>th</sup> Semester (Regular) End-Term Examination

Pharmacy

PHARMACOGNOSY AND PHYTOCHEMISTRY-II (THEORY)

(New Regulations)

Full Marks – 75

Time – Three hours

The figures in the margin indicate full marks for the questions.

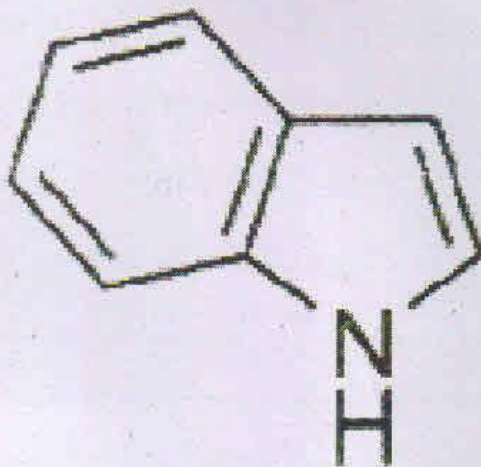
Answer ALL questions.

SECTION-A

1. Choose the correct answer from the following: (20 × 1 = 20)
- (i) Which of the following is directly involved in the normal growth, development and reproduction in plants
- (a) Primary metabolites                      (b) Secondary metabolites  
(c) Tertiary metabolites                      (d) None of the above
- (ii) In amino acid pathway 'Histidine' is produced from which of the following intermediates?
- (a) Erythrose-4-phosphate                      (b) Pyruvate  
(c) 3-phosphoglycerate                      (d) Ribose-5-phosphate
- (iii) In plant metabolic pathways, which of the following techniques is used to investigate the biogenic studies using radioactive isotopes in plants?
- (a) Spectroscopic technique  
(b) Ion exchange technique  
(c) Tracer technique  
(d) None of the above

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- (iv) Usually alkaloids are colourless in nature, but 'Betanidine' a coloured alkaloid possess which of the following colour?
- (a) Yellow (b) Red  
(c) Blue (d) Pink
- (v) Following chemical structure is a heterocyclic skeleton belonging to which classes of alkaloids?



- (a) Tropane alkaloid  
(b) Isoquinoline alkaloid  
(c) Quinoline alkaloid  
(d) Indole alkaloid
- (vi) The chief active constituents of Opium is \_\_\_\_\_
- (a) Menthol (b) Lawsone  
(c) Morphine (d) Reserpine
- (vii) Which of the following plant is NOT categorize under Volatile oil class?
- (a) Vinca (b) Clove  
(c) Coriander (d) Fennel
- (viii) Which of the following is the scientific name of Liquorice?
- (a) *Digitalis purpurea*  
(b) *Papaver somnifera*  
(c) *Atropa belladonna*  
(d) *Glycyrrhiza glabra*
- (ix) Menthol is basically extracted and isolated from which of the following plants?
- (a) Peppermint leaves (b) Dioscorea tubers  
(c) Tea leaves (d) Cinchona bark

- (x) Which of the following is the specific therapeutic use of Senna?
- (a) Anticancer
  - (b) Purgative and cathartics
  - (c) Diuretics
  - (d) CNS stimulant
- (xi) Which of the following bioactive molecule is currently used to treat malaria?
- (a) Morphine
  - (b) Atropine
  - (c) Artemisinin
  - (d) Digoxin
- (xii) Which of the following is a resin?
- (a) Menthol
  - (b) Colophony
  - (c) Vincristine
  - (d) Serpentine
- (xiii) Which of the following technique is the modern method for the extraction of plants constituents?
- (a) Supercritical fluid extraction
  - (b) Infusion and decoction
  - (c) Maceration
  - (d) Percolation
- (xiv) In the analysis of phytoconstituents, infrared (IR) spectroscopy is applicable to \_\_\_\_\_
- (a) To detect the solubility of the compounds
  - (b) To detect the melting point of the compounds
  - (c) To detect the functional groups of the compounds
  - (d) To detect the molecular weight of the compounds
- (xv) Glycyrrhetic acid is isolated from which of the following plant?
- (a) Artemisia
  - (b) Liquorice
  - (c) Bitter almonds
  - (d) Gentian

(xvi) Which of the following is the chemical identification test for Caffeine?

- (a) Van Urk's test
- (b) Vitali-Morin test
- (c) Dragendorff's test
- (d) Murexide test

(xvii) Which of the following instruments is generally used to estimate the content of bioactive constituents in plants?

- (a) High performance thin layer chromatography (HPTLC)
- (b) Ultrasonication
- (c) Infrared spectroscopy
- (d) None of the above

(xviii) Which of the following is the correct application of Mass Spectroscopy?

- (a) To determine the functional groups of a compound
- (b) To determine the molecular weight of a compound
- (c) To determine the boiling/melting point of a compound
- (d) All of the above

(xix) Chromatography is basically applied to

- (a) Determine the optical density of the mixture
- (b) Analyze the isomers
- (c) Detect the molecular weight of a mixture
- (d) Separate the active components of a mixture

(xx) Which of the following plant is used to relief tooth pain?

- (a) Digitalis
- (b) Belladonna
- (c) Clove
- (d) Clove

SECTION-B

Answer the following questions (*any seven*)

(7 × 5 = 35)

2. (a) Match the following:

(1 × 5 = 5)

Group A	Group B
(i) Volatile oil	(1) Atropine
(ii) Alkaloid	(2) Aloin
(iii) Tannin	(3) Rutin
(iv) Glycoside	(4) Catechol
(v) Flavonoid	(5) Citral

(b) Distinguish between the following (*any two*).

(2.5 + 2.5)

(i) Cardiac glycoside and Saponin glycoside

(ii) Primary and Secondary metabolites

(iii) Black Catechu and Pale Catechu

(c) Give the synonyms (*common name*) and active chemical constituents of the following (5)

(i) Belladonna

(ii) Vinca

(iii) Rauwolfia

(iv) Dioscorea

(v) Digitalis

(d) Explain in detail the Shikimic acid pathway (5)

(e) Define terpenes. Describe in detail the various methods used to produce volatile oil from plants. (1+4)

(f) Write a note on High Performance Thin Layer Chromatography (5)

(g) Classify the different method of extraction of active constituents from plants and describe any one in detail. (2.5+2.5)

(h) Describe in detail the industrial production, estimation and utilization of any one anti-cancer phytoconstituents. (5)

(i) Explain in brief the industrial production and estimation of diosgenin. (5)

(j) Define tannins. Classify tannins with examples and describe the chemical test for tannins (5)

## SECTION-C

3. Answer the following questions (*any two*): (2 × 10 = 20)
- (a) Define true, pseudo and proto alkaloids. Describe in detail the biological source (s), morphology, microscopy, chemical composition and commercial uses of Rauwolfia. (3+7)
- (b) Describe in detail the isolation process, identification and analysis of the following phytoconstituents (*any two*) (5+5)
- (i) Citral
  - (ii) Caffeine
  - (iii) Curcumin
- (c) Write a short note on the following (*any one*) (10)
- (i) Tracer techniques
  - (ii) Extraction process of alkaloids
  - (iii) Electrophoresis
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