

Duration: 3 Hours

Total marks: 75

- N.B.:** 1. All questions are compulsory
2. Figures to right indicate full marks

Q. I Choose appropriate option for following multiple choice based questions. 20

- 1 In the Acetate pathway, which of the following is a primary building block for the synthesis of secondary metabolites such as fatty acids and polyketides? **1M**
- HMG-CoA
 - Pyruvate
 - Shikimic acid
 - Oxaloacetate
- 2 Which of the following radioactive isotopes is commonly used in studying DNA replication in biogenetic studies? **1M**
- Carbon-14 (^{14}C)
 - Phosphorus-32 (^{32}P)
 - Nitrogen-15 (^{15}N)
 - Cobalt-60 (^{60}Co)
- 3 Which class of flavonoids is most commonly found in Ruta plant, contributing to its medicinal properties? **1M**
- Anthocyanins
 - Chalcones
 - Isoflavones
 - Flavonols
- 4 Which of the following structural features is common in lignans type of phenylpropanoid? **1M**
- A single phenylpropane unit with a hydroxyl group
 - Two phenylpropane units linked by a β - β' bond
 - A tricyclic ring system with one oxygen atom
 - A tetrahydropyran ring with multiple hydroxyl groups
- 5 What is the mandatory procedure in isolation of diosgenin, from Dioscorea? **1M**
- Acid hydrolysis
 - Steam distillation
 - Curing
 - None of the above
- 6 Which secondary metabolite from clove has significant antimicrobial properties and is widely used in dental care products? **1M**
- Linalool
 - Eugenol
 - Cinnamaldehyde
 - Anethole

- 7 What is the main chemical class of secondary metabolites found in *Coriandrum sativum*? **1M**
 a Flavonoids
 b Lignans
 c Terpenoids
 d Saponins
- 8 Which reagent is typically used in the qualitative analysis of tannins during extraction from Catechu? **1M**
 a Benedict's reagent
 b Molisch's reagent
 c Wagner's reagent
 d Ferric chloride
- 9 *Pterocarpus marsupium*, a source of tannins, is commercially utilized for which medicinal application? **1M**
 a Skin whitening products
 b Fertility enhancement
 c Treatment of diabetes
 d Weight loss supplements
- 10 Which chemical test is commonly used to identify the presence of asafetida? **1M**
 a Bromine Water Test
 b Ferric Chloride Test
 c Salkowski Test
 d Combined Umbelliferon test
- 11 Which secondary metabolite derived from Guggul is primarily known for its use in lowering cholesterol levels? **1M**
 a Guggulosterone
 b Benzyl benzoate
 c Curcumin
 d Eugenol
- 12 Bitter Almond contains amygdalin, a compound that belongs to _____ class of secondary metabolites **1M**
 a Terpenoids
 b Glycosides
 c Phenolics
 d Alkaloids
- 13 Which of the following chemical tests is commonly used to identify the presence of anthraquinones in Senna? **1M**
 a Frothing Test
 b Bornträger's Test
 c Fehling's Test
 d Biuret test

1M

14 What is the key secondary metabolite produced by *Artemisia annua* (Sweet Wormwood)? **1M**

- a Berberine
- b Taxol
- c Artemisinin
- d Gentianine

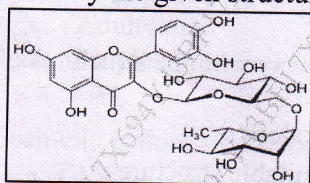
1M

15 What is the primary purpose of curing *Curcuma longa* in boiling water? **1M**

- a To reduce the drying time by gelatinization of starch
- b To enhance the flavour of the turmeric
- c To increase the nutritional value
- d To improve the colour of the turmeric

1M

16 Identify the given structure? **1M**



- a Cyanidin
- b Quercetin
- c Kemferol
- d Rutin

1M

17 Which of the following phytoconstituent is eliminated by treatment of sodium carbonate solution in the isolation of caffeine? **1M**

- a Thebaine
- b Tannins
- c Resin
- d Tropane

1M

18 Which of the following is not the use of Forskolin? **1M**

- a Antibiotic agent
- b Antidepressant agent
- c Vasodilating agent
- d Antiasthmatic agent

1M

19 Which type of method is commonly used for the separation of proteins and peptides in crude drug analysis? **1M**

- a HPTLC
- b HPLC
- c Gel electrophoresis
- d Tandem mass spectroscopy

1M

20 Which of the following modern extraction methods utilizes high pressure and temperature to extract phytoconstituents from plant materials? **1M**

- a Steam Distillation
- b Pressurize extraction
- c Maceration
- d Supercritical Fluid Extraction

- Q. Answer any TWO of the following** **20**
- II A** **M**
- 1** Answer the following **10**
- a Write a short note on preparation and introduction of radioactive precursors in plant matrix. **M**
- b Write a note on biological source, chemical constituents, chemical tests uses of colophony.
- 2** Write a short note on source, industrial production, estimation and uses of the Digoxin? **10**
- M**
- 3** Write a short note on the following **10**
- a. HPLC chromatography **M**
- b. Electrophoresis in drug identification
- Q. Answer any SEVEN of the following** **35**
- II B** **M**
- 1** Illustrate amino acid (Tyrosine) biosynthetic pathway with the structures of 4 major intermediate product. **5M**
- 2** Discuss source, chemistry and uses of tropane alkaloid. **5M**
- 3** Illustrate pathway for biosynthesis of GPP with suitable structures. **5M**
- 4** Classify triterpenoid glycosides. Write a note on source and chemistry of Liquorice with suitable structures. **5M**
- 5** Discuss phytochemistry of C-glycosides of aloe with appropriate structures, mention the chemical test for identification. **5M**
- 6** Discuss the extraction and isolation of Quinine **5M**
- 7** Write a note on the isolation and analysis of following phytoconstituents: **5M**
- a. Menthol b. Citral
- 8** Write a short note on modern methods of extraction. **5M**
- 9** Write a note on principle, procedure and applications of gel electrophoresis in crude drug analysis. **5M**
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