

PSG COLLEGE OF ARTS & SCIENCE
(AUTONOMOUS)

PG DEGREE EXAMINATION DECEMBER 2023
(Third Semester)

TRANS DISCIPLINARY COURSE
(Common to PG Programmes)

DIAGNOSTICS AND PLANT THERAPEUTICS

Time: Three Hours

Maximum: 50 Marks

SECTION-A (5 Marks)

Answer ALL questions

ALL questions carry EQUAL marks

(5 x 1 = 5)

- 1 Which of the following anticoagulant is commonly used for collecting blood samples for hematology tests?
(i) Sodium citrate (ii) Sodium chloride
(iii) Potassium sulfate (iv) Calcium carbonate
- 2 Which substance is typically tested in urine to check for diabetes mellitus?
(i) Urea (ii) Acetone
(iii) Albumin (iv) Bilirubin
- 3 Which secondary plant product is commonly found in the bark of trees and is used in the treatment of fever and pain?
(i) Tannins (ii) Alkaloids
(iii) Flavonoids (iv) Terpenoids
- 4 Which plant is known for its potential to lower blood sugar level?
(i) Lavender (ii) Cinnamon
(iii) Eucalyptus (iv) Chamomile
- 5 Which natural antioxidant compound is commonly found in green tea and is known for its health benefits?
(i) Resveratrol (ii) Quercetin
(iii) Catechins (iv) Curcumin

SECTION - B (15 Marks)

Answer ALL Questions

ALL Questions Carry EQUAL Marks

(5 x 3 = 15)

- 6 a Discuss the ethical considerations when handling patient data in a clinical laboratory.
OR
b Why is proper specimen preservation is crucial in a clinical lab? How can it be achieved effectively?
- 7 a What is the primary function of urea in urine? How does it relate to kidney function?
OR
b What does the enzyme AST indicate when measured in blood, and which organ is primarily associated with it?
- 8 a Explain the principle behind High-Performance Thin-Layer Chromatography (HPTLC) and its significance in plant drug analysis.
OR
b Discuss the importance of screening techniques in the identification of potential medicinal properties in plant extracts.

Cont...

- 9 a How does green tea (*Camellia sinensis*) exhibit potential anti-cancer effects, and which active compounds are responsible?
OR
- b Explain how fenugreek (*Trigonella foenum-graecum*) and cinnamon (*Cinnamomum verum*) exert their hypoglycemic effects, including their active components and mechanisms of action.
- 10 a List and briefly explain three key parameters addressed by WHO guidelines for quality standardization of herbal products.
OR
- b Describe the primary method of preparing an herbal decoction, and provide an example of a situation where it might be used.

SECTION -C (30 Marks)

Answer ALL questions

ALL questions carry EQUAL Marks

(5 x 6 = 30)

- 11 a Describe the process of specimen collection, preservation, storage, and transport in a clinical laboratory.
OR
- b Discuss on two common biological hazards that laboratory personnel may encounter.
- 12 a Determine the role of bilirubin in the body and its significance in assessing liver function. How do elevated bilirubin levels relate to liver diseases?
OR
- b A patient's liver function tests reveal elevated levels of Aspartate Transaminase (AST) and Alanine Transaminase (ALT). Explain the potential implications of these findings on liver health. What conditions or factors could contribute to elevated AST and ALT levels?
- 13 a Explain the principle and applications of Gas Chromatography-Mass Spectrometry (GC-MS) in the analysis of volatile compounds in plant materials. Provide an example of a volatile compound.
OR
- b Elaborate the concept of bioassay-guided fractionation in the isolation of active components from plant extracts. Provide a step-by-step overview and its relevance in the pharmaceutical industry.
- 14 a Describe the hepatoprotective mechanisms of any two medicinal plants and its potential applications in liver health.
OR
- b Provide the names of three medicinal plants recognized for their potential anti-cancer properties and briefly describe a key mechanism through which they exert their anti-cancer effects.
- 15 a Construct on the concept of synergy in herbal formulations and how it can enhance the effectiveness of herbal remedies.
OR
- b Describe the process of making herbal oil extracts and provide an example of an herb commonly used for this purpose.