

MSc Sem.-2 Examination

410

Forensic Science

Time : 2-30 Hours]

May-2025

[Max. Marks : 70

Instructions: Illustrate your answers with neat diagrams wherever necessary.

Que 1 Write the following.

- (i) What are stimulant drugs? How are they abused? Explain giving any two (7 Marks) examples.
- (ii) Give the classification of drugs. (7 Marks)

OR

- (i) Explain the systematic approach followed in the preliminary screening and presumptive tests during the inorganic analysis of forensic samples. (7 Marks)
- (ii) Write a detailed note on Drugs of abuse in sports. (7 Marks)

Que 2 Write the following.

- (i) Discuss the working principles of any two types of breath alcohol analysers. (7 Marks) Include chemical reactions or detection principles wherever applicable.
- (ii) Discuss about chemistry, physical form, pharmacology, mode of use and analysis of Cannabis. (7 Marks)

OR

- (i) During a raid in a village, police recover a hidden distillation unit suspected to be used for illicit liquor. As part of the forensic team, explain how you would locate, collect, and analyze samples to confirm the presence of spurious or methylated alcohol. (7 Marks)
- (ii) Explain how bribe trap cases are handled in forensic investigations. Describe the role of detection dyes used to establish the presence of a bribe. (7 Marks)

Que 3 Write the following.

- (i) What are the key steps in the scientific investigation of arson cases? Discuss how clue materials are collected and evaluated. (7 Marks)
- (ii) Give a Detailed Classification of Pesticides. (7 Marks)

OR

- (i) What are the common types of petroleum products used as accelerants in arson? Describe the methods used to analyze these substances in a forensic laboratory. (7 Marks)
- (ii) Give a detailed note on the examination of Tobacco. (7 Marks)

Que 4 Write the following.

- (i) Discuss the size-dependent optical, electrical, and magnetic properties of nanomaterials. How do these properties differ from bulk materials? (7 Marks)
- (ii) Describe Bottom-up Approach and explain any two methods. (7 Marks)

OR

- (i) Explain how the morphological classification of nanomaterials (spheres, rods, tubes, wires, etc.) influences their physical properties and forensic utility. (7 Marks)
- (ii) Explain Quantum dots and its applications. (7 Marks)

Que 5 Attempt any seven out of twelve. (14Marks)

- (i) What is excise duty? Who is liable to pay excise duty?
- (ii) What is Aqua-regia? Explain with ratio.
- (iii) What is gene doping?
- (iv) Explain the medical uses of morphine and how it differs from heroin in terms of its potential for abuse.
- (v) What are anabolic steroids? Name any two.
- (vi) What is the primary purpose of the World Anti-Doping Agency (WADA)?
- (vii) What are the three essential components of the fire triangle?
- (viii) Name one instrumental technique commonly used to detect ignitable liquid residues.
- (ix) Give the physiological symptoms of chronic toxicity caused by nicotine.
- (x) Name two properties that change when a material is reduced to the nanoscale.
- (xi) What are 0D nanomaterials? Give one example.
- (xii) What is a core-shell nanostructure?
