

**MAHATMA GANDHI UNIVERSITY, KOTTAYAM**  
**MGU-UGP (HONOURS), REGULAR EXAMINATION, OCTOBER 2026**  
**THIRD SEMESTER**  
**DISCIPLINE SPECIFIC ELECTIVE (DSE) MG3DSEZGYA02- FORENSIC TOXICOLOGY & MEDICO-LEGAL APPLICATIONS**  
**(2025 ADMISSION ONWARDS)**

**Duration: 2 hrs**

**Max. Mark: 70**

**PART A- MCQ**

**Answer all questions**

**Each question carries 1 mark**

1. Recognize the principle that requires a toxicologist to remain free from personal and external bias. [K][CO2]  
A. Objectivity and impartiality                      B. Competence  
C. Confidentiality                                      D. Quality control
2. The foundation of forensic science primarily lies in the: [K][CO1]  
A. Collection, preservation, examination, and interpretation of evidence                      B. Interrogation of suspects  
C. Study of criminal behaviour alone                      D. Use of eyewitness testimony
3. Identify the category of poisons that are used to induce abortion or miscarriage. [K][CO3]  
A. Suicidal poisons                                      B. Abortifacient poisons  
C. Cattle poisons                                      D. Homicidal poisons
4. Drugs and toxic substances are primarily examined using: [K][CO1]  
A. Forensic anthropology                                      B. Forensic toxicology  
C. Forensic psychology                                      D. Digital forensics
5. Which of the following can cause degradation of toxicological specimens? [K][CO3]  
A. Bacterial growth                                      B. Enzymatic activity  
C. Evaporation                                      D. All of the above
6. Identify the principle that means “avoiding harm” to research participants. [K][CO2]  
A. Justice                                      B. Beneficence  
C. Non-maleficence                                      D. Confidentiality
7. Determine which evidence can link a suspect to a particular crime scene. [K][CO1]  
A. Hair, fibres and footwear impressions                                      B. Personal assumptions  
C. Rumours                                      D. Unverified statements
8. Identify which of the following is a possible legal consequence of serious ethical misconduct [K][CO2]  
A. Promotion                                      B. Professional award  
C. Criminal prosecution                                      D. Increased funding
9. Identify the system introduced by Alphonse Bertillon for criminal identification. [K][CO1]  
A. Fingerprint classification                                      B. Anthropometry  
C. DNA profiling                                      D. Blood grouping
10. What is the primary purpose of maintaining chain-of-custody records during transportation? [K][CO3]  
A. To increase sample volume                                      B. To prevent evaporation  
C. To document uninterrupted custody of the specimen                                      D. To increase toxicant concentration

(1 X 10= 10)

**PART B- Short Answer**  
**Answer any 10 questions**  
**Each question carries 3 mark**

11. Explain the importance of the Chemical Examiner's Laboratory established at Madras in 1849.  
[U][CO1]
12. Discuss the importance of maintaining clean work areas and properly sealing specimen containers during toxicological investigations. [U][CO3]
13. Explain how good animal husbandry practices can improve both animal welfare and research quality. [U][CO2]
14. Differentiate between contamination and degradation of toxicological specimens, giving suitable examples. [U][CO3]
15. Describe how Locard's Exchange Principle is related to crime scene security. [U][CO1]
16. Explain the role of solvent extraction in the analysis of organic non-volatile poisons and give two suitable examples. [U][CO3]
17. Describe the types of information that should be documented during the handling of toxicological specimens. [U][CO3]
18. Define accidental poisoning and give one example. [U][CO3]
19. Explain how hematotoxicants affect blood or its oxygen-carrying capacity, with two examples. [U][CO3]
20. Explain how a shortage of trained forensic personnel can affect the quality and efficiency of forensic investigations. [U][CO1]
21. Describe particulates (aerosols) and classify them into major types. [U][CO3]
22. Identify three industrial toxicants and state one major health effect associated with each. [U][CO3]

(3 X 10= 30)

**PART C- Short Essay**  
**Answer any 6 questions**  
**Each question carries 5 mark**

23. Explain the principle of forensic ballistics and its importance in firearm-related investigations.  
[U][CO1]
24. Compare blood and urine as toxicological specimens with respect to collection, detection period, applications, advantages, and limitations. [U][CO3]
25. Describe the ethical challenges associated with genetic testing in toxicological investigations.  
[U][CO2]
26. Classify and explain the major health effects caused by toxicant exposure, including organ toxicity, carcinogenicity, reproductive toxicity, neurotoxicity, and immunotoxicity. [U][CO3]
27. Describe the clinical features of asphyxiant poisoning and identify common examples of asphyxiants. [U][CO4]
28. Explain how the classification of occupational poisoning differs from that of homicidal poisoning in forensic investigation. [U][CO3]
29. Explain why toxic gases are considered an important toxicological threat. [U][CO4]
30. Explain the role of the Insecticides Act, 1968 in preventing pesticide poisoning. [U][CO3]

(5X 6=30)