

**2024/FYUG/ODD/SEM/
CHMSEC-201T/192**

FYUG Odd Semester Exam., 2024

**CHEMISTRY
(3rd Semester)**

Course No. : CHMSEC-201T

(Forensic Chemistry)

Full Marks : 50

Pass Marks : 20

Time : 2 hours

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

UNIT—I

1. Answer any *three* questions from the following : 1×3=3

- (a) Define Lambert-Beer law.
- (b) Name one forensic application of gas chromatography.
- (c) Name the detector commonly used in gas chromatography.
- (d) What is colorimetric analysis?

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(Turn Over)

(2)

2. Answer any *one* question from the following : 2
- (a) How is infrared spectroscopy useful in forensic science?
- (b) How does thin-layer chromatography differ from liquid chromatography?
3. Answer any *one* question from the following : 5
- (a) Briefly explain the principle and forensic application of liquid chromatography. 3+2=5
- (b) Explain the fundamental principle of UV-visible spectroscopy. Discuss its forensic application. 3+2=5

UNIT—II

4. Answer any *three* questions from the following : 1×3=3
- (a) What is latent fingerprint?
- (b) What light source is used in detection of fingerprint?
- (c) Name one physical method used for latent fingerprint detection.
- (d) What is the function of ninhydrin in fingerprint detection?

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(3)

5. Answer any *one* question from the following : 2
- (a) How do light sources help in fingerprint detection?
- (b) Explain the importance of preserving developed fingerprint.
6. Answer any *one* question from the following : 5
- (a) Discuss the constituents of sweat residue and their roles in fingerprint detection.
- (b) Describe the mechanism of detection of latent fingerprints by physical techniques.

UNIT—III

7. Answer any *three* questions from the following : 1×3=3
- (a) Define lethal dose 50 (LD50).
- (b) What is toxicology?
- (c) Define chemical intoxication.
- (d) What is meant by toxic dose?

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(4)

8. Answer any *one* question from the following : 2
- (a) Differentiate between lethal dose 50 and effective dose 50.
 - (b) What are the significances of toxicological analysis in criminal cases?
9. Answer any *one* question from the following : 5
- (a) Discuss the methods used in alcohol intoxication.
 - (b) Discuss briefly how lethal dose 50 (LD50) is determined. What are its significances?

UNIT—IV

10. Answer any *three* questions from the following : 1×3=3
- (a) Define narcotics.
 - (b) What is stimulant?
 - (c) What are designer drugs?
 - (d) Name one synthetic narcotic.
11. Answer any *one* question from the following : 2
- (a) What is meant by addiction in relation to narcotics and drugs?
 - (b) Explain the differences between narcotics and psychotropic substances.

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(5)

12. Answer any *one* question from the following : 5
- (a) Discuss the effects of addiction, tolerance and withdrawal symptoms of psychotropic substances.
 - (b) Discuss the general characteristics and examples of stimulants, depressants and hallucinogens.

UNIT—V

13. Answer any *three* questions from the following : 1×3=3
- (a) Define low explosives.
 - (b) What does RDX stand for?
 - (c) Give two examples of high explosive.
 - (d) What is blast wave?
14. Answer any *one* question from the following : 2
- (a) What are the characteristics of PETN as an explosive?
 - (b) How are low explosives different from high explosives?

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(6)

15. Answer any one question from the following : 5

(a) Carry out the synthesis of TNT. What are its characteristics? 3+2=5

(b) Discuss the scientific method used in the investigation of arson cases.

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