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TERM END EXAMINATIONS (TEE) – December 2021- January 2022

Programme	B.Tech. Computer Science and Engineering with (Specialization in Cyber security and Digital Forensics)	Semester	Fall 2021-22
Course Name	Forensic Chemistry and Applications	Course Code	CHY1007
Faculty Name	Dr. Saurabh Bhargava	Slot / Class No	B11+B12+B13/0685
Time	1½ hours	Max. Marks	50

Answer ALL the Questions

Q. No.	Question Description	Marks
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PART - A (30 Marks)

- | | | |
|----|--|----|
| 1. | (a) Compute and express each answer in scientific notations with the proper number of significant figures, rounding as necessary.
I. $(2 \times 10^{18}) \times (4.63 \times 100) = ?$
II. $(5.63 \times 10^2) \times (7.4 \times 10^3) = ?$
III. $14.98 + 27,340 + 84.7593 = ?$
IV. $28.0 \div 13.483 = ?$
V. $(28.7 - 0.0483) \div 3,310 = ?$ | 10 |
|----|--|----|

OR

- | | | |
|----|--|----|
| | (b) 'Column of a chromatogram is the heart of the instrument' - justify this phrase with appropriate examples of different types of columns used in GC and HPLC instruments. | 10 |
| 2. | (a) Differentiate between the mechanism of action and signs & symptoms caused by cocaine and barbiturate. Using a flow chart describe the process of cocaine analysis. | 10 |

OR

- | | | |
|----|--|----|
| | (b) Justify the role of sweat and sebaceous secretions in fingerprints. Evaluate whether powdering methods are still relevant in development of latent fingerprints: if yes, why? If no, why? | 10 |
| 3. | (a) Apply your understanding of Thin Layer Chromatography (TLC) for analysis of seized drugs of abuse. Enumerate various mobile phases and visualizing agents that can be used for separation of drugs in TLC. | 10 |

OR

- (b) Based on your knowledge about various accelerants that are frequently used in arson cases, justify what methods are most suitable for extraction of accelerants from fire debris? Why Solid Phase Micro Extraction (SPME) is most commonly used for arson analysis? 10

PART - B (20 Marks)

4. A person has been arrested on charges of homicide by firearm. Gun Shot Residue (GSR) have been collected from his wrist. You have to use your understanding of GSR to prove whether the accused is linked to the crime or not. Justify what technique/s you'll be using to analyse the GSR and explain the working mechanism of that technique. 10
5. Draw a flow chart depicting the schematics of post-blast crime scene management. Evaluate the role of primary high explosives in ammunition of firearms and justify why they are still not used in terror activities. 10

