

Reg. No.:

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Mid-Term Examinations – November 2021

Programme : **B.Tech. Computer Science and Engineering with Semester : Fall 2021-22**
(Specialization in Cyber security and Digital Forensics)
Course : **Forensic Chemistry and Applications** Code : **CHY1007**
Faculty : **Dr. Saurabh Bhargava** Slot/ Class No. : **C11+C12+C13/0279**
Time : **1 ½ hours** Max. Marks : **50**

Answer all the Questions

| Q.No. | Sub. Sec. | Question Description | Marks |
|-------|-----------|---|-------|
| 1 | (a) | Compute and express each answer with the proper number of significant figures, rounding as necessary. I. $(2 \times 10^{18}) \times (4.63 \times 10^0) = ?$ II. $(5.63 \times 10^2) \times (7.4 \times 10^3) = ?$ III. $14.98 + 27,340 + 84.7593 = ?$ IV. $28.0 \div 13.483 = ?$ | 5 |
| | (b) | With appropriate example, differentiate between precision and accuracy and justify the significance of accuracy and precision in scientific calculations. | 5 |
| 2 | | Following two items has been sent to forensic lab for examination- <ul style="list-style-type: none">Item 1: A small paint chip from hit and run accident scene.Item 2: Small amount of soil sample from a vehicle's tyres. Draw the flow charts depicting the scheme of general forensic analysis for both items. | 10 |
| 3 | | Taking an example of ethanol (C_2H_5OH), elaborate how soft ionization techniques are more suited for MS/MS analysis as compared to hard ionization techniques. Enumerate various ionization techniques used in Mass Spectrometry. | 10 |
| 4 | | Draw a well labelled diagram of instrumentation of Atomic Absorption Spectrometry (AAS), and justify the usages of different combinations of fuel and oxidation agents in atomization process in AAS. | 10 |
| 5 | | Justify with appropriate examples, how the knowledge of fingerprint residue, time interval since fingerprint residue is deposited, and type of substrate is required for accurate application of latent fingerprint development. | 10 |

