

**M.Sc.(Forensic Sci.) Semester - 4 (CBCS) Examination****April/May-2023 (NEW COURSE)****Advance Forensic Chemistry (Core)****Time: 2:30 Hours****Marks: 70****Instructions:**

1. All questions are compulsory.
2. Figures to the right indicate marks.

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**Q.1(A) Answer the following question. (04)**

Distinguish between natural and artificially produced radioactive substances with examples.

**Q.1(B) Answer the following question. (Any Two) (10)**

1. Explain the principle and working of NAA with an illustration.
2. How are nuclear explosive devices a threat to conventional investigations?
3. Describe radioactive decay and its relation to half-life for uranium.

**Q.2(A) Answer the following question. (04)**

Write a detailed note on the toxic effects of blister agents.

**Q.2(B) Answer the following question. (Any Two) (10)**

1. Give the classification of chemical warfare agents.
2. Discuss scene management in case of sarin gas attack.
3. Explain the mechanism behind biosensors in detecting chemical warfare agents.

**Q.3(A) Answer the following questions. (04)**

1. How is smog formed in the atmosphere?
2. In what way do CFCs contribute to air pollution?

**Q.3(B) Answer the following question. (Any Two) (10)**

1. Describe the parameters studied in water quality assessment.
2. What are the factors responsible for soil pollution?
3. Write a detailed note on classes of water pollutants.

**Q.4(A) Answer the following questions. (04)**

1. What is the role and composition of aqua-regia?
2. In your opinion, is hallmarking of precious metals significant?

**Q.4(B) Answer the following question. (Any Two) (10)**

1. Explain the examination of gold in cheating cases.
2. Discuss the scope of metal and alloys in forensic science.
3. What are the common adulterants detected in precious metals?

**Q.5(A) Answer the following question. (04)**

Differentiate between pigment and dye with examples.

**Q.5(B) Answer the following question. (Any Two) (10)**

1. Describe the forensic examination of fabric and clothing and its significance.
2. How can one differentiate between natural and synthetic fibres based on physico-chemical examination?
3. In a case, an official was caught in the act of exchanging money for passing a file order. You have received the samples of wash solution and currency seized from the scene. How will you proceed with examination of the same?

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