Return of the White Lab

Background

Miss Scarlet was found dead on the floor of the BALLROOM. Beside her body, police found a clear liquid, undoubtedly the murder weapon. Detectives were quick to ascertain that the murder weapon was one of two chemicals, barium chloride or potassium iodate. First it was known that Miss Scarlet had a violent allergic reaction to potassium iodate. Second, there was widespread use of a moderately toxic poison, barium chloride, by several members of the household. Police further discovered the following evidence.

Professor Plum, an eccentric chemistry teacher, had been working in the STUDY with barium chloride solutions of molarities in the range of 0.20 M to 0.30 M. It was naturally assumed that he was preparing for the White Lab, but now... Miss Scarlet was old Plum’s worst student, arriving to class late, being responsible for lots of broken glassware, and rarely cleaning up after her experiments. The policeman in charge, never having taught a chemistry class, did not seriously consider this to be a motive for murder.

Mrs. White, an asthmatic, has a prescription of potassium iodate in the BATHROOM. Her pharmacist assures you that her prescription is between 0.050 M and 0.15 M. That Mrs. White was presently rooming with Miss Scarlet’s exboyfriend led the police to suspect her. Neither she nor her boyfriend could be found in the LOUNGE for comment.

Mr. Green, a photographer, had solutions of barium chloride between 0.050 M and 0.15 M in the DARKROOM. Mr. Green apparently had been caught scarlet-handed at his own blackmail game. Pictures of him with Miss Scarlet were found hidden in Scarlet’s BEDROOM. Mrs. Green would be spared seeing the pictures if at all possible.

Mrs. Peacock, wearing the same dress as Miss Scarlett, was found in the STABLE, administering potassium iodate solution to her horse. When questioned, she admitted that her horse had a severe case of bronchitis. Her veterinarian informed detectives that the strength of the solution was between 0.20 M and 0.30 M. It is likely that she knew of Miss Scarlet’s violent allergy to potassium iodate because they were lab partners in Professor Plum’s chemistry class. Professor Plum recalled how angry Mrs. Peacock would get when Miss Scarlet came late to class, unprepared for the experiments, and how she invariably was sick the day lab reports were due.

Finally, there is Colonel Mustard in the CONSERVATORY. With barium chloride solutions in excess of 0.30 M, the Colonel makes fireworks. How he despised the left-wing politics of Miss Scarlet. He frequently blew up at her more vociferously than his barium chloride solutions! Colonel Mustard had been the interim assistant principal at the high school and was responsible for closing the campus when Miss Scarlet, then president of the student body, overthrew the administration and took control of the school.

You can obtain a sample of the murder weapon found at Miss Scarlet’s side by asking your teacher for it, in the CLASSROOM. If you can determine whether it is barium chloride or potassium iodate, then you can narrow the list of suspects considerably. And if you can determine the molarity of the unknown solution, then you can solve the case.

Who was the murderer? What was the murder weapon? What was its molarity? Write a lab report giving all evidence and analysis useful for the prosecution of the murderer. Your evidence will be Exhibit A at the trial and will be subjected to the scrutiny of the defense attorney. On the basis of your evidence alone, a murderer might be set free and an innocent person could be executed.

American Association of Chemistry Teachers
The Return of the White Lab Fiction Contest

Optional: Since many students feel compelled to launch into a barrage of verbiage describing their fictional exploits in this case as forensic scientists and detectives, I am awarding a 15 point bonus to the best written science fiction paper in the class. The paper should be:

1. separate from your lab report.
2. based upon the correct solution to the problem
3. based directly or indirectly upon the episode of you, a forensic chemist, in pursuit of the murderer.
4. funny enough to make your science teacher laugh at least once.
5. considered the “best” by your science teacher.