



KENYATTA UNIVERSITY

UNIVERSITY EXAMINATIONS 2011/2012

SECOND SEMESTER EXAMINATION FOR THE DEGREE OF BACHELOR
OF SCIENCE IN FORENSIC SCIENCE
SBC 236: FORENSIC TECHNIQUES II

DATE: Thursday, 29th March, 2012

TIME: 2.00 p.m. – 4.00 p.m.

**INSTRUCTIONS: WRITE ALL YOUR ANSWERS IN THE EXAMINATION
ANSWER BOOKLET**

Section A: Answer ALL Questions (20 marks)

1. Which method separates molecules based on their ability to adhere to column adsorbent filling?
A) Thin layer chromatography
B) Gas chromatography
C) Liquid chromatography
D) All of the above
2. Which term describes the quantitative relationships among substances as they participate in chemical reactions?
A) Equilibrium molarity
B) Reaction stoichiometry
C) Analytical molarity
D) Composition stoichiometry
3. Live Scan is a technique used to get:
A) Latent prints
B) Exemplar prints
C) Patent prints
D) Plastic prints

4. Which screening test would be appropriate if codeine overdose is presumed?
 - A) The Mandelin test
 - B) The Marquis test
 - C) All of the above
 - D) None of the above
5. Which of the following statements is false?
 - A) Hair analysis can be used to determine the sex of an individual
 - B) Hairs from people of African ancestry have circular cross-sections
 - C) Hair analysis can be used to test for illegal drug abuse
 - D) Hairs from people of Asian ancestry have medium-sized pigment granules
6. In titrimetry, the point at which chemical equivalence is detected is referred to as:
 - A) Stoichiometric point
 - B) Equivalence point
 - C) End point
 - D) Equilibrium point
7. Solid-phase microextraction technology is commonly used for:
 - A) Examination of chemical trace evidence
 - B) Analysis of chemical trace evidence
 - C) Collection of chemical trace evidence
 - D) determination of the hydrocarbon content of a sample
8. Which of the following can be used as a carrier gas in gas chromatography?
 - A) Nitrogen
 - B) Helium
 - C) Hydrogen
 - D) All of the above
9. Footwear trace evidence recovered from footwear include:
 - A) Latent impressions left on different surfaces
 - B) Soil particles, dust and bodily fluids
 - C) Activity of wearer when imprint was made
 - D) All of the above
10. Accuracy describes:
 - A) The extent to which the mean of a series of readings varies from the "true" value
 - B) The agreement of one's average value with the values in a series of readings
 - C) The average deviation from the mean
 - D) How closely the data are clustered about the mean
11. Which SI unit is employed in measuring volume?
 - A) Kilogram
 - B) Mole
 - C) Meter
 - D) Liter
12. Which of the following methods can be used to examine the interior of a hair sample?
 - A) Compound microscopy

- B) InfraRed microscopy
 - C) Gas chromatography
 - D) Atomic absorption chromatography
13. Magnesium powder is useful in the recovery of:
- A) Occult fingerprints
 - B) Exemplar prints
 - C) Patent prints
 - D) Latent prints
14. Titanium oxide found in paint is:
- A) Used as a pigment
 - B) Used as an extender
 - C) Inorganic in nature
 - D) All of the above
15. In forensic paint analysis infrared spectrometry is used to:
- A) Determine the nature of the pigments
 - B) Determine the organic composition
 - C) Determine the identity of microcrystalline components
 - D) Determine the number of layers
16. Which among the following is not found in the Duquenois-Levine reagent?
- A) p-dimethylaminobenzaldehyde
 - B) Hydrochloric acid
 - C) Acetaldehyde
 - D) Ethanol
17. An electrolyte dissociates into ions in solution, which of the following is most appropriate for expressing electrolyte concentration?
- A) Percent concentration
 - B) Equilibrium molarity
 - C) Analytical molarity
 - D) Specific gravity
18. The quantity of analyte is determined by measuring the mass of a solution of known concentration; which analytical technique uses this approach?
- A) Mass spectrometry
 - B) Volumetric titrimetry
 - C) Coulometric titrimetry
 - D) Gravimetric titrimetry
19. Which of the following react with aminoacids present in fingerprints?
- A) Diazafluorenone
 - B) Magnesium powder
 - C) Ethyl cyanoacrylate
 - D) Zinc
20. A blank solution contains:

- A) Known concentrations of analyte
- B) All reagents and solvents used in the analysis and no analyte
- C) All reagents and solvents used in the analysis and known concentrations of analyte
- D) a known amount of a compound different from analyte that is added to the unknown

Section B: Answer ALL the questions (5 marks each)

1. Outline the Dille-Koppanyi test
2. a) What is a plastic print in forensic evidence?

b) Explain methods used to recover plastic impressions.
4. Explain the use a fuel cell device in testing blood alcohol concentration.
5. Describe two electroanalytical methods.
5. Glass fragments are crucial evidence in many types of crimes. Explain.
6. Discuss the role of internal standards and standard addition in chemical quantitative analysis.

Section C: Answer ONLY TWO questions (10 marks each)

1. Discuss the management and processing of a crime scene.
2. Outline the steps and considerations in doing a quantitative analysis.
3. Archaeology plays an important role in forensic investigations. Explain.