



KENYATTA UNIVERSITY

UNIVERSITY EXAMINATIONS 2011/2012

SECOND SEMESTER EXAMINATION FOR THE DEGREE OF BACHELOR
OF SCIENCE IN FORENSICS SCIENCE
SBC 344: FORENSIC TOXICOLOGY

DATE: Monday, 26th March, 2012

TIME: 8.00 a.m. – 10.00 a.m.

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

SECTION A: Fill in the gaps where appropriate and answer all Questions (20 Marks)

1. Three of the poisons listed below are distillable from an acid medium except..
A) carbon tetrachloride
B) chloroform
C) nicotine
D) nitrobenzenes
2. Overdose deaths due to the ingestion of excessive quantities of alcohol are uncommon. Justify this statement
3. Identify which of the poisons below is distillable from a basic medium
A) amphetamine
B) aniline
C) phenols,
D) meperidine
4. The general evidence of poisoning is obtained from knowledge of the following aspects except
A) the symptoms displayed by the decedent before death
B) the post-mortem examination of the body
C) the isolation and identification of the poison
D) the colour of the body after death
5. Retention time is to Gas Liquid Chromatography (GLC) as is to Thin-Layer Chromatography (TLC)

6. In spectroscopy, the following wavelengths are most applicable to toxicological analysis except....
- A) Ultraviolet
 - B) Visible
 - C) X-ray
 - D) Infra-red
7. Which of the following poisons used in the middle ages is not of plant origin
- A) hemlock
 - B) aconite
 - C) Belladonna
 - D) Colchicum
8. The actual wavelength of maximum absorption of a compound depends on the following except...
- A) Chemical groups present in the molecule
 - B) Solvent in which the compound is dissolved
 - C) pH,
 - D) Pressure
9. Name the ancient scholar widely known for the statement "All substances are poisons; there is none which is not a poison. The right dose differentiates a poison from a remedy."
10. For successful prosecution of a homicide suspect, law enforcement officers must establish:
- A) that the perpetrator had access to a supply of the poison
 - B) that the suspect was aware of the lethal effects of the poison
 - C) that the suspect was leaving in the neighbourhood of the decedent
 - D) that the suspect had opportunity to administer the poison to the decedent
11. Before beginning the analysis, the toxicologist should mainly consider the following factors except..
- A) the amount of specimen available
 - B) the state of the biopsy
 - C) the nature of the poison sought
 - D) the possible biotransformation of the poison
12. Why should specimens for toxicological analyses be collected before embalming?
13. Death certificate reveals the following aspect of death except..
- A) accidental death
 - B) homicidal death
 - C) time of death
 - D) suicidal death
14. Which of the following solvents is commonly used by toxicologists?
- A) Acidic solutions
 - B) Alcoholic solutions
 - C) Basic solutions
 - D) Amphoteric solutions

15. Many people of Asian ancestry have low levels of, an enzyme that is necessary for the complete metabolism of alcohol.
16. The drug ephedrine commonly encountered in toxicological analysis possess UV absorption maxima in acidic solution at the following wavelength except.
A) 263 nm
B) 257 nm
C) 275 nm
D) 252 nm.
17. Higher concentration of a drug in the lungs compared to other visceral organs indicate which mode of administration?
A) Intravenous
B) Inhalation
C) Oral ingestion
D) Topical
18. Toxicology has now been expanded to include a wide range of the following interests except..
A) pharmaceuticals
B) pesticides
C) food additives
D) Water treatment
19. A technique which requires antibodies that bind tightly to the drug of interest and only weakly or not at all to other substances
A) enzyme multiplied immunoassay technique
B) fluorescent polarization immunoassay
C) radioimmunoassay
D) immunoassay
20. The presence of a large toxic material in the gastrointestinal tract is sufficient evidence to establish that agent as the cause of death. TRUE or FALSE. Justify your answer.

SECTION B: Answer all Questions (5 Marks each)

1. Define toxicology and demonstrate how a toxicologist differs from forensic chemist
2. With relevant example, describe five subgroups within which nonvolatile organic poisons are isolated using protein free filtrate
3. With relevant examples briefly explain the disadvantages of spectroscopy and how they are currently remedied
4. As a responsible coroner, briefly explain the significance of autopsy in examining the dead
5. Using Trinder's test as an example, briefly describe the application of colour test in forensic toxicology

6. Outline the process of material transfer between a pathologist and a toxicologist

SECTION C: Answer Any Two Questions (10 Marks each)

1. Briefly outline the contribution of the following experts to forensic toxicology

Hermann Boerhaave
Karl Wilhelm Scheele
James M. Marsh
Jean Servais Stas

(10 marks)

2. Using cocaine as an example, describe the importance of understanding the process of biotransformation to the toxicologist (10marks)

3. Toxicological analyses relating to alcohol intoxication are complex and require competent toxicologists. Qualify this statement (10marks)