



KENYATTA UNIVERSITY

UNIVERSITY EXAMINATIONS 2011/2012

SECOND SEMESTER EXAMINATION FOR THE DEGREE OF BACHELOR OF SCIENCE IN FORENSIC SCIENCE

SBC 237: FORENSIC EVIDENCE

DATE: Friday 30th March, 2012

TIME: 11.00 a.m. – 1.00 p.m.

SECTION A: ANSWER ALL QUESTIONS (20 MARKS)

1. Evidence of a defendant's past wrongdoings that suggest the defendant had inclination to commit the crime is called

- A) Associative evidence
- B) Propensity evidence
- C) Transient evidence
- D) Victim impact evidence
- E) Indirect evidence

2. Which one among the following is not likely a transfer evidential material?

- A) Paint
- B) Hair
- C) Saliva
- D) Semen
- E) Skin

3. During an investigation of a crime scene, the forensic expert noticed the following diameter pattern of blood stains on the smooth floor towards the door: 5 mm → 6.6mm → 7.5mm →

14mm → 20mm → 19.8mm and 18.9mm. What would be the likely conclusion from this evidence?

- A) The victim was cut or wounded in the room
- B) The victim walked or was brought in the room when already cut or wounded
- C) The victim was wounded with a weapon that dropped the blood towards the door
- D) The assailant escaped through the door with cut wounds
- E) There was a violent scene in the room

4. Which one among the following can NOT be used to determine the directionality of a bloodstain?

- A) Point of divergence
- B) Satellite spatter
- C) Point of origin
- D) Size and shape of the stain
- E) Impact angle

5. What would be the fingerprint pattern of a person who has whorls on the right thumb and right index but loops and arches on the rest of the fingers?

- A) 32/32
- B) 17/17
- C) 16/16
- D) 1/1
- E) 34/34

6. One of the following features can NOT be used to define caliber in ballistics

- A) Bullet size
- B) Bullet shape
- C) Bullet weight
- D) Barrel diameter
- E) Cartridge

7. If a 20-gauge shotgun has a diameter of 15.6 mm meaning that one pound of pure lead can make up 20 identical balls of a diameter of 15.6 mm each. What is expected of a 26-gauge shotgun?

- A) It has 26 identical lead balls of a similar diameter
- B) It has 26 identical lead balls of a smaller diameter
- C) It has 26 identical lead balls of a larger diameter
- D) It has 20 identical lead balls of a higher diameter
- E) It has 20 identical lead balls of a smaller diameter

8. What causes ballooning at a gunshot wound?

- A) When the gases from the bullet explosion enter the body
- B) When the bullet size is large
- C) When the barrel of the gun is large
- D) When the barrel of the gun is small
- E) When the shooting range is long

9. Which of the following metals constitute a relevant composition of a bullet lead?

- A) Antimony, arsenic, copper, bismuth, silver, titanium, and cadmium
- B) Antimony, arsenic, copper, bismuth, silver, tin, and cadmium
- C) Antimony, sodium, arsenic, copper, bismuth, silver and cadmium
- D) Antimony, arsenic, copper, bismuth, silver, cadmium, and potassium
- E) Antimony, arsenic, copper, bismuth, magnesium, silver and cadmium

10. Which among the following plant material cannot help determine the season and time of death of an exhumed body?

- A) Pollen
- B) Leaves
- C) Flower petals
- D) Fruits
- E) Seeds

11. If eggs are found in a corpse, it suggests death occurred

A) Less than 24 hours before discovery

B) Three days before discovery

C) One week before discovery

D) More than 24 hours before discovery

E) More than 48 hours before discovery

12. Two dead bodies were found lying near each on the roadside. Forensic entomology found one with maggots and the other without. What does this fact suggest?

A) The body without maggots was heavily intoxicated with drugs than the other

B) The body with maggots was fatter than the one without

C) The body with maggots was dumped or killed during the previous day while the other one during the night

D Both bodies were killed or dumped during the night

E) The body without maggots was not dead when dumped while the other was dead

13. One of the following is not a relevant forensic analysis of evidentiary fibers

A) Comparing fibers from a crime scene with those from the victim

B) Comparing fibers from the crime scene with those from the suspect

C) Comparing fibers from the victim with those from the suspect

D) Comparing fibers from the suspect, control and those from the crime scene

E) Comparing fibers from the suspect, victim, control and those from the crime scene

14. Using hair forensics, an expert deduced that one suspect was a typical addict of drugs while the other was probably a beginner. What was the basis of this argument?

A) Hair generally grows slowly and it takes several weeks to reflect body components

B) Hair composition of the drug addict is was chemically different from the novice

C) Hair of the novice was growing very slowly compared to the addict's

D) Hair of the addict was growing very slowly than hair of the novice

E) The colour of the hairs from the two individuals differed

15. Which of the following is not a setback in hair forensics?

- A) Location on the body from where the hair was removed
- B) The color of the hair collected
- C) The person's age and race
- D) Standardization of analytical methods
- E) None of the above

16. Which of the following hair characteristic is common among all races?

- A). Biochemical nature
- B) Texture
- C) Cross-section
- D) Pigmentation
- E) Cuticle thickness

17. Addition of chromium (Cr) and cobalt (Co) in glass gives the following tints respectively

- A) Green and blue
- B) Blue and green
- C) Green and purple
- D) Purple and green
- E) Blue and purple
- F) Purple and blue

18. What does pyrolysis mean in forensic evidence?

- A) Identification of chip paint composition using heat and gas chromatography
- B) Identification of polygonal samples by polymorphism
- C) Identification of tool marks using microscopy
- D) Analysis of ink paints using Raman spectrophotometry
- E) Developing comparison shoe print impressions in the laboratory

19. Matching evidence between crime scene and suspect relies on the theory of _____ that deals with determining quantitatively the frequency of occurrence of an event.

- A) Relativity
- B) Probability
- C) Statistics
- D) Bayes' Theorem
- E) Deductive and inductive reasoning

20. The following is not a major type of impression evidence

- A) Shoeprints
- B) Tire tracks
- C) Tool marks
- D) Fired bullet striations
- E) Fingerprint

SECTION B: ANSWER ALL QUESTIONS (EACH 5 MARKS)

1. Compare and contrast reconstructive, associative and *prima facie* evidence (5 Marks)

2. (a) Define the following terms as used in forensic evidence (2 Marks)

- i. Testimony
- ii. Brady material
- iii. Collateral sample
- iv. Exemplar

(b) Classify unknown comparison samples (3 Marks)

3. Describe the process of transfer and persistence of forensic evidence (5 marks)

4. (a) What is the Locard's exchange principle as used in forensic evidence? (2 Marks)

(b) Describe two ways DNA evidence is technically analyzed (3 Marks)

5. (a) Calculate the missing values in the table below (2 marks)

Sample	Blood Stain width (mm)	Blood Stain length (mm)	Impact angle(°C)
1	-?	3.57	15
2	10	-?	60

3	14	28	-?
4	22	22	-?

(b) Calculate the point of origin of four blood stains whose impact angles are 30°C, 45°C, 60°C and 75°C travelling a distance of 450cm, 300cm, 200cm and 150cm respectively from the point of convergence (3 Marks)

6. (a) Describe how a bullet causes tissue damage? (2 Marks)

(b) Compare evidences accrued from forensic anthropology and anthropometry (3 Marks)

SECTION C: ANSWER ANY TWO QUESTIONS (10 MARKS EACH)

1. A motorist strikes a pedestrian with his car and then flees the scene in the vehicle. When the pedestrian's clothing is examined, small flakes and smears of paint are found embedded in the fabric. When the automobile is impounded and examined, fibers are found embedded in an area that clearly has been damaged recently. Classify the evidence in detail.

2. Discuss the sources and classification of fingerprints.

3. Using 'relationship and context' of forensic evidence, explain the simplicity or difficulty of solving the following murder cases (Discuss any scenarios that may be of relevance)

- i. A prostitute found dead in a hotel
- ii. A worker in a nearby staff residence
- iii. An unknown body on the road side

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