

SI Forensics - Full Discipline Demo

Toxicology

Final Report - Answer Guide

Institution	Science Interactive University
Session	SI Forensics - Full Discipline Demo
Course	SI Forensics - Full Discipline Demo
Instructor	Sales SI Demo

Test Your Knowledge

Match each drug class with the best description.

⌘ Hallucinogens	Create relaxed feelings of sleepiness	1
⌘ Stimulants	Can cause hallucinations and affect normal thought processes	2
⌘ Alcohol	Affects thought and coordination	3
⌘ Narcotics	Pain relieving/sleep inducing	4
⌘ Anti-anxiety	Speed up the central nervous system	5
⌘ Barbiturates	Create relaxed feelings without sleepiness	6

Correct answers:

- 1 Barbiturates 2 Hallucinogens 3 Alcohol 4 Narcotics
5 Stimulants 6 Anti-anxiety

Match each sampling type with the best scenario for its use.

Sampling Types:

- Vitreous humor
- Blood
- Urine
- Hair

Scenarios:

- A suspected drunk driving incident.
- An employer wants to test a prospective hire for recent drug use with the most minimally invasive procedure possible.
- A government agency wants to test an individual up for security clearance for drug use as far back as possible.
- A forensic pathologist is performing post-mortem drug testing.

Answers:

- 1 Blood
- 2 Urine
- 3 Hair
- 4 Vitreous humor

Correct answers:

1 Blood 2 Urine 3 Hair 4 Vitreous humor

Classify each drug listed based on whether or not it would be detected using a Marquis test.

	Detectable	Not Detectable
⌘ Morphine	1	2
⌘ Cocaine		
⌘ Hydrocodone		
⌘ THC		
⌘ Heroin		
⌘ Methamphetamine		
⌘ Oxycodone		

Correct answers:

1 Morphine Oxycodone Hydrocodone Heroin Methamphetamine

2 Cocaine THC

Exploration

_____ are chemical substances that biologically affect organisms.

- ☐ Poisons
- ☐ Toxins
- ☒ Drugs



Which sample type would provide the most accurate representation of the active drugs present in a person's system at the time of sample collection?

- ☒ Blood
- ☐ Hair
- ☐ Urine
- ☐ All of the above



Presumptive tests can be used to definitively identify a specific drug and the quantity present in a sample.

☐ True

☒ False



Exercise 1

What are the most likely circumstances under which the urine samples you tested would be submitted for analysis?

In a forensics urinalysis laboratory, what would be the next steps following the testing performed in this exercise?

Data Table 1: Marquis Test Results
(SAMPLE ANSWER BELOW)

Urine Sample	Final Color	Result
Sample 1	Turned red	Positive for morphine
Sample 2	None	Negative for opiates
Sample 3	Turned light green	Positive for hydrocodone
Sample 4	None	Negative for opiates
Sample 5	None	Negative for opiates

Photo 1: Marquis Test Results
(SAMPLE ANSWER BELOW)





Data Table 2: THC Immunoassay Results
(SAMPLE ANSWER BELOW)

Urine Sample	Final Color	Result
Sample 1	Turned red	Negative for THC
Sample 2	Turned red	Negative for THC
Sample 3	Turned dark blue/green	Positive for THC
Sample 4	Turned red	Negative for THC
Sample 5	Turned dark blue/green	Positive for THC

Photo 2: THC Immunoassay Results
(SAMPLE ANSWER BELOW)



Data Table 3: Cocaine Immunoassay Results
(SAMPLE ANSWER BELOW)

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Urine Sample	Final Color	Result
Sample 1	Turned green	Negative for cocaine
Sample 2	Turned green	Negative for cocaine
Sample 3	Turned green	Negative for cocaine
Sample 4	Turned yellow-orange	Positive for cocaine
Sample 5	Turned green	Negative for cocaine

Photo 3: Cocaine Immunoassay Results
(SAMPLE ANSWER BELOW)



Competency Review

Drugs are chemical substances that biologically affect organisms but cannot result in death.

- ☐ True
 - ☒ False
- ✓

Cocaine is classified as a _____.

- ☐ Narcotic
 - ☒ Stimulant
 - ☐ Depressant
 - ☐ Hallucinogen
- ✓

Which sample type will provide the longest historical record of drug use?

- ☐ Blood
 - ☐ Urine
 - ☒ Hair
 - ☐ All of the above
- ✓

In addition to blood, urine, and hair, tissue samples for postmortem drug testing are also collected from the liver, brain, kidney, spinal fluid, and the vitreous humor.

- ☒ True
 - ☐ False
- ✓
-

An immunoassay test is a presumptive test.

- ☒ True ✓
- ☐ False

Which of the following would not show up in a Marquis test?

- ☐ Aspirin
- ☒ Alcohol ✓
- ☐ Heroin
- ☐ Oxycodone

In Exercise 1, a positive THC urine test produced a _____ color.

- ☒ dark green ✓
- ☐ red
- ☐ light blue
- ☐ orange

In Exercise 1, several confirmatory tests were performed to test for the presence of different drugs in urine samples.

- ☐ True
- ☒ False ✓

Extension Questions

Why do forensic toxicology labs run presumptive tests before running confirmatory tests? (SAMPLE ANSWER BELOW)

Confirmatory tests can be expensive and take a long time, therefore it is impractical to run a confirmatory test for every possible drug that could be present in a sample. Presumptive tests help narrow down substances to determine which confirmatory tests should be run, if any.