Review Sheet Forensic Toxicology Chapter 9

1. How common is poisoning as a method of murder? What poisons are commonly used today?
   1.5% of murders; arsenic, cyanide, strychnine
2. Describe the differences between acute and chronic poisoning.
   Acute = large amount, small time period
   Chronic = small dose over a long time period
3. What are controlled substances?
   Depressants, hallucinogens, narcotics, anabolic steroids, stimulants
4. Where are most hallucinogens from?
   Usually plants
5. Describe the effects of narcotics and give some examples.
   Reduce pain by suppressing the central nervous system's ability to relay messages to the brain
6. Describe the effects of hallucinogens and give some examples.
   Affect the user's perceptions, thinking, and self-awareness
7. Describe the effects of stimulants and give some examples.
   Increase feelings of energy and alertness while suppressing appetite
8. Describe the effects of depressants and give some examples.
   Relieve anxiety and produce sleep
9. Describe the effects of anabolic steroids and give some examples.
   Promote cell and tissue growth
10. Give examples of poisonous substances that come from living organisms.
    Venom, bee stings, ricin, tetanus, botulism
11. What is botulism? What bacteria does it come from?
    a neurotoxin produced by the bacteria *Clostridium Botulinum*
12. What is anthrax? What type of exposure is most toxic?
    caused by the bacterium *Bacillus anthracis* which forms spores
13. What is ricin? Where does it come from?
    a waste product from manufacturing castor oil
14. What is carbon monoxide poisoning?
    Gas emitted from non-ventilated car-exhaust
15. In what ways can people be exposed to drugs?
    Inhale, ingest, inject, absorb
16. What factors affect toxicity of a drug?
    Dose, duration, nature of exposure, mixture with other drugs
17. What types of biological substances can be tested for drugs? What type is most accurate? Which type of test can detect drugs for the longest amount of time?
    Hair, urine, blood, saliva, sweat.
    Most accurate = blood
    Can detect for the longest amount of time = hair
18. What is an immunoassay? How does it work?
    An immunoassay is a chemical test that detects the presence of a particular chemical. It works through an antibody-antigen response.

19. What is gas chromatography/mass spectrometry? What do the results look like? How are the results used to determine the type of toxin in the sample?
    A technique used to separate, quantify, and identify an unknown chemical. The results look like a series of bars/peaks. The results are matched to a library or database of known chemicals in order to identify it.
20. Explain how to determine the identity of an unknown white powder. What tests can be used?
    Chemical tests include water, iodine, pH, HCl, NaOH, Benedict's solution. The results are compared to known samples to determine a match.

21. Using the formula and information below, determine the BAC of a 165-pound male that has had four 12-ounce beers between the hours of 8pm and 11pm.

$$\mathbf{B = -0.015t + \frac{2.84\ N}{Wg}}$$

B = percentage of BAC
N = number of "standard drinks" (*N* should be at least 1)
(A standard drink is one 12-ounce beer,
one 5-ounce glass of wine, or one 1.5-ounce shot of liquor.)
W = weight in pounds
g = gender constant, 0.68 for men and 0.55 for women
t = number of hours since the first drink

$$\boldsymbol{B = -0.015(3) + \frac{(2.84)(4)}{(165)(0.68)}}$$

B = -0.015(3) + 0.101

B = 0.056