1. Which of the following statements is false?
   a) most mutations are corrected
   b) scientists are concerned when changes go undetected by repair mechanisms
   c) apoptosis is an abnormal process
   d) neoplasm is not synonymous with cancer

2. Any substance that can induce a heritable change of the genotype in a cell as a consequence of alterations or loss of genes or chromosomes can be referred to as a:
   a) Mutagen
   b) Genotoxic Carcinogen
   c) Protooncogene
   d) Metabolite

3. What is the Ames assay used for?
   a) To breed more potent antibiotics
   b) Screen for mutagenicity
   c) Separate colonies of monoclonal cell lines
   d) Test new drugs for tumor suppression

4. All mutagens are also carcinogens True/False

5. Of the following, which carcinogen is not mutagenic
   a) asbestos
   b) diethylstilbestrol
   c) aflatoxin
   d) all of the above

6. Mutations can be
   a) spontaneous
   b) induced
   c) acquired
   d) all of the above

7. A poorly differentiated cancer is best described in appearance as:
   a) close to normal cells
   b) far from normal cells
   c) having poorly defined nuclei
   d) having large areas where apoptosis is occurring
8. Excess risk of cancer by exposure to a chemical is defined by the USEPA as one additional incidence of cancer per what population?
   a) 1,000
   b) 10,000
   c) 100,000
   d) 1,000,000

9. What is a term used to describe a secondary growth from the primary neoplasm?
   a) Metabolism
   b) Mutation
   c) Metastases
   d) Biotransformation

10. Choose the correct progression of carcinogenesis:
    a) Metastasis > promotion > initiation > progression > angiogenesis
    b) Initiation > promotion > progression > metastasis > angiogenesis
    c) Initiation > progression > promotion > metastasis > angiogenesis
    d) Initiation > promotion > progression > metastasis > angiogenesis

11. Which of the following are characteristic of a malignant tumor cells?
    a) Invasive
    b) Rapidly Growing
    c) Non-encapsulative
    d) All of the above

12. Carcinogenesis is a multistep process. Which term best describes a stepwise increase towards malignancy?
    a) initiation
    b) progression
    c) inhibition
    d) promotion

13. Which of the following functions is provided by the immune system?
    a) elimination of viruses and bacteria
    b) recognition and removal of mutated cells
    c) recognition of some adverse chemicals
    d) all of the above

14. All responses of the immune system to chemicals involve only stimulation of normal immune responses. True/false

15. The movement of cells of the immune system and their communication with each other and with other body tissues occurs primarily through
    a) lymph
    b) blood
    c) nerves
    d) all of the above
16. An anaphylactic response is an example of a
   a) Type I hypersensitivity reaction
   b) Type II hypersensitivity reaction
   c) Type III hypersensitivity reaction
   d) Type IV hypersensitivity reaction

17. There are essentially no metals that have the ability to produce alterations of immune function. True/False

18. Occupational asthma has been linked to exposures from
   a) toluene diisocyanate
   b) red cedar
   c) Baker's flour
   d) all of the above

19. Polyaromatic hydrocarbons have been linked to
   a) depression of humeral immunity
   b) depression of cell mediated immunity
   c) changes in tumor resistance
   d) all of the above

20. Which types of chemical has been linked to experimental immunosuppression
   a) corticosteroids
   b) PAHs
   c) TCDD
   d) all of the above

21. Lymphocytes include all of the following except
   a) natural killer cells
   b) B-cells
   c) T-cells
   d) monocytes

22. Which of the following layers of the skin is primarily responsible for the biotransformation of xenobiotics?
   a) Dermis
   b) Hyperdermis
   c) Hypodermis
   d) Epidermis

23. What is the most important step in treating irritant contact dermatitis?
   a) Reducing the amount of exposure
   b) Reducing the time of exposure
   c) Alternating sites of exposure
   d) Removal from the exposure
24. What is the most common cause of skin cancer in the U.S.?
   a) sunlight
   b) high fat diet
   c) smoking
   d) coal mining

25. Which of the following statements is False?
   a) Of all occupational skin disease, contact dermatitis accounts for over 90 percent of reported causes.
   b) Allergic contact dermatitis is a delayed hypersensitivity reaction.
   c) Allergic contact dermatitis is a nonimmune related response caused by the direct action of an agent on the skin.
   d) Chloracne, one of the most disfiguring forms of acne in humans, is caused by exposure to halogenated aromatic hydrocarbons.

26. The phases of Allergic dermatitis from the First phase to the last one are:
   a) Induction, refractory period, eliciting phase and persistence
   b) Refractory periods, eliciting phase, induction and persistence.
   c) Refractory period, induction, eliciting phase and persistence.
   d) Persistence, eliciting phase, refractory period and induction.

27. Which of the following statements is true?
   a) The dermis is superficial to the epidermis.
   b) There are no blood vessels in the epidermis.
   c) The epidermis provides the structural strength of skin.
   d) Sweat glands originate in the epidermis.

28. Regarding allergic contact dermatitis, which of the following is true?
   a) The extent of the response is always dose dependent.
   b) The extent of the response is generally not dose dependent.
   c) Allergic contact dermatitis is more common than irritant contact dermatitis.
   d) Allergic contact dermatitis is usually not associated with erythema (redness).

29. Which of the following is not true regarding the skin:
   a) it is an important route of exposure
   b) the thickness is not the same over the entire body
   c) to produce a systemic effect a chemical must reach the dermis
   d) it is a good barrier to lipophilic compounds

30. Which of the following biological factors affecting percutaneous absorption
   a) Condition of the skin
   b) Anatomical site
   c) All of the above
31. Which type of injury to the liver is referred to as "fatty liver"?
   a) Necrosis  
   b) Cirrhosis  
   c) Steatosis  
   d) Tuberculosis

32. Which of the following conditions is true about liver cirrhosis?
   a) Damage is reversible  
   b) Increases bile formation  
   c) Leads to scar tissue formation  
   d) First stage of chronic liver injury

33. The most important anatomical/physiological feature optimizing the role of the liver as an interceptor of xenobiotics is:
   a) Proximity to the stomach  
   b) Production of bile as an emulsifier  
   c) Circulatory links to the lungs  
   d) The portal circulatory system

34. (T/F) Renal toxicants generally do not produce injury to the renal artery

35. Heavy metals are generally not considered as nephrotoxicants (T/F)

36. The long-term use of therapeutic agents such as ibuprofen can be damaging to the kidney (T/F)