Chapter 2: Inflammation and Healing
Instructor Test Bank

MULTIPLE CHOICE

1. Tears are considered to be part of the:
   1. first line of defense
   2. second line of defense
   3. third line of defense
   4. specific defenses
   5. nonspecific defenses
   a. 1, 4
   b. 1, 5
   c. 3, 4
   d. 2, 5

   ANS: B

2. A specific defense for the body is:
   a. phagocytosis
   b. sensitized T-lymphocytes
   c. the inflammatory response
   d. intact skin and mucous membranes

   ANS: B

3. The inflammatory response is a nonspecific response to:
   a. phagocytosis of foreign material
   b. local vasodilatation
   c. any tissue injury
   d. formation of purulent exudates

   ANS: C

4. Chemical mediators released during the inflammatory response include:
   a. albumin and fibrinogen
   b. growth factors and cell enzymes
   c. macrophages and neutrophils
   d. histamine and prostaglandins

   ANS: D

5. Which of the following result directly from the release of chemical mediators following a moderate burn injury?
   1. pain
   2. local vasoconstriction
   3. increased capillary permeability
   4. pallor
   a. 1, 2
   b. 1, 3

c. 2, 3
d. 2, 4

ANS: B

6. A granuloma is best described as:
   a. a small mass of cells with a necrotic center, which may develop as part of the immune response.
   b. an erosion through the wall of viscera leading to complications
   c. a type of adhesion
   d. a form of stenosis in a duct
   e. hypertrophic scar tissue on the skin

   ANS: A

7. Edema associated with inflammation results directly from:
   a. increased fluid and protein in the interstitial compartment
   b. increased phagocytes in the affected area
   c. decreased capillary permeability
   d. general vasoconstriction

   ANS: A

8. The warmth and redness related to the inflammatory response results from:
   a. increased interstitial fluid
   b. production of complement
   c. large number of WBCs entering the area
   d. increased blood flow into the area

   ANS: D

9. What is the correct order of the following events in the inflammatory response immediately after tissue injury?
   1. increased permeability of blood vessels
   2. dilation of blood vessels
   3. transient vasoconstriction
   4. migration of leukocytes to the area
   5. hyperemia
   a. 5, 3, 2, 1, 4
   b. 1, 2, 4, 5, 3
   c. 2, 3, 5, 4, 1
   d. 3, 2, 5, 1, 4

   ANS: D

10. The process of phagocytosis involves the:
    a. ingestion of foreign material and cell debris by leukocytes
    b. shift of fluid and protein out of capillaries
    c. formation of a fibrin mesh around the infected area
    d. movement of erythrocytes through the capillary wall

    ANS: A

11. Systemic effects of severe inflammation include:
    a. erythema and warmth
    b. loss of movement at the affected joint
    c. fatigue, anorexia, and mild fever
    d. abscess formation

    ANS: C

12. The term *leukocytosis* means:
    a. increased white blood cells in the blood
    b. decreased white blood cells in the blood
    c. increased number of immature circulating leukocytes
    d. significant change in the proportions of WBC

    ANS: A

13. Which of the following statements applies to fever?
    a. Viral infection is usually present.
    b. Heat-loss mechanisms have been stimulated.
    c. It is caused by a signal to the thalamus.
    d. It results from release of pyrogens into the circulation.

    ANS: D

14. Mechanisms to bring an elevated body temperature down to the normal level include:
    a. general cutaneous vasodilatation
    b. generalized shivering
    c. increased heart rate
    d. increased metabolic rate

    ANS: A

15. Replacement of damaged tissue by similar functional cells is termed:
    a. fibrosis
    b. regeneration
    c. resolution
    d. repair by scar tissue

    ANS: B

16. Scar tissue consists primarily of:
    a. granulation tissue
    b. epithelial cells
    c. collagen fibers
    d. new capillaries and smooth muscle fibers

    ANS: C

17. Which of the following promotes rapid healing?
    a. closely approximated edges of a wound
    b. presence of foreign material
    c. exposure to radiation
    d. vasoconstriction in the involved area

ANS: A

18. Which of the following is the best description of granulation tissue?
    a. multiple layers of collagen fibers and epithelial cells
    b. several layers of new epithelial cells
    c. white fibrous tissue
    d. fibroblasts and vascular endothelial cells

    ANS: D

19. Glucocorticoids are used to treat inflammation because they directly:
    a. promote the release of prostaglandins at the site
    b. decrease capillary permeability
    c. mobilize lymphocytes and neutrophils
    d. prevent infection

    ANS: B

20. Patients taking glucocorticoids for long periods of time are likely to develop all of the following *EXCEPT*:
    a. decreased bone density
    b. wasting of skeletal muscle
    c. opportunistic infections
    d. increased leukocyte production

    ANS: D

21. Which of the following drugs relieves fever and some types of pain but is *NOT* an anti-inflammatory agent?
    a. Acetaminophen
    b. Prednisone
    c. Aspirin
    d. Ibuprofen

    ANS: A

22. A burn area in which the epidermis and part of the dermis is destroyed is classified as:
    a. full-thickness
    b. deep partial-thickness
    c. superficial partial-thickness
    d. first-degree

    ANS: B

23. A woman has burns on the anterior surfaces of her right arm, chest, and right leg. The body surface area (BSA) or the percentage of body surface area burned is approximately:
    a. 13.5%
    b. 18%
    c. 22.5%
    d. 31.5%

    ANS: C

24. The characteristic appearance of a full-thickness burn is:
    a. painful with multiple blisters
    b. heavy bleeding
    c. red with some swelling
    d. dry, firm, charred, or hard white surface

    ANS: D

25. A major source of infection in burn areas is:
    a. the skin grafts
    b. microbes surviving in the hair follicles in the burn area
    c. circulating blood bringing microbes to the burn wound
    d. the patient's hands transferring microbes to the burn area

    ANS: B

26. A large burn area predisposes to decreased blood pressure because:
    a. bleeding occurs under the burn surface
    b. the heart is damaged by toxic materials from the burn
    c. fluid and protein shift out of the vascular compartment
    d. vasoconstriction occurs in the burn area

    ANS: C

27. During an inflammatory response, erythema is caused by:
    a. vasodilatation in the area
    b. increased capillary permeability
    c. irritation of sensory nerve endings by histamine
    d. increased leukocytes in the area

    ANS: A

28. The advantages of applying a biosynthetic skin substitute to a large area of full-thickness burns include:
    1. reduced risk of infection
    2. decreased loss of plasma protein and fluid
    3. developing stronger fibrous scar tissue
    4. more rapid healing
    5. regeneration of all glands, nerves, and hair follicles
    a. 1, 3
    b. 4, 5
    c. 1, 2, 4
    d. 2, 3, 5

    ANS: C

29. Purulent exudates usually contain:
    a. small amounts of plasma protein & histamine in water
    b. red blood cells & all types of white blood cells
    c. numerous leukocytes, bacteria, and cell debris
    d. large amounts of water containing a few cells

ANS: C

30. Isoenzymes in the circulating blood:
    a. are a type of plasma protein normally present in the circulating blood
    b. often indicate the precise location of an inflammatory response
    c. are normally released from leukocytes during the inflammatory response
    d. are pyrogens, causing low-grade fever

    ANS: B

31. A serous exudate is best described as a:
    a. thin, watery, colorless exudate
    b. thick, sticky, cloudy secretion
    c. thick, greenish material containing microbes
    d. brownish, clotted material

    ANS: A

32. Systemic manifestations of an inflammatory response include:
    a. edema and erythema
    b. area of necrosis and loss of function
    c. pain and tenderness
    d. elevated C-reactive protein and leukocytosis

    ANS: D

33. Indicators of a general inflammatory response would include:
    a. high, spiking fever and chills
    b. elevated C-reactive protein
    c. leukopenia and reduced ESR
    d. elevated ALT and CK-MB

    ANS: B

34. Prolonged administration of glucocorticoids such as prednisone may cause:
    1. atrophy of lymphoid tissue
    2. increased resistance to infection
    3. thrombocytopenia
    4. decreased protein synthesis
    a. 1, 2
    b. 1, 3
    c. 1, 4
    d. 2, 4

    ANS: C

35. Application of ice to an injured knee reduces edema by:
    a. promoting return of lymph fluid
    b. causing local vasoconstriction
    c. increasing the rate of tissue repair
    d. causing systemic vasodilatation

ANS: B

36. Healing of large areas of skin loss (including dermis and epidermis) would be most successful through:
    a. rapid mitosis and regeneration of skin layers
    b. resolution of damaged cells in the area
    c. covering the area with biosynthetic skin substitute
    d. graft of fibrous tissue to the area

    ANS: C

37. Prostaglandins are produced from _____ and cause _____.
    a. activated plasma protein; increased capillary permeability
    b. mast cells; vasodilatation and pain
    c. platelets; attraction of neutrophils, chemotaxis
    d. mast cell granules; activation of histamines and kinins

    ANS: B

38. The number of neutrophils in the blood is increased significantly:
    a. during allergic reactions
    b. during chronic inflammation
    c. to produce antibodies
    d. in order to promote phagocytosis

    ANS: D

39. An abscess contains:
    a. serous exudate
    b. purulent exudate
    c. fibrinous exudate
    d. hemorrhagic exudate

    ANS: B

40. Nonspecific agents that protect uninfected cells against viruses are called:
    a. neutrophils
    b. macrophages
    c. interferons
    d. pyrogens

    ANS: C

41. Causes of inflammation include:
    a. direct physical damage such as cuts and sprains
    b. ischemia or infarction
    c. allergic reactions
    d. infection
    e. all the above

    ANS: E

42. In normal capillary exchange, what is net hydrostatic pressure based on?

a. the difference between the hydrostatic pressure within the capillary, as compared with the hydrostatic pressure of the interstitial fluid
b. the relative osmotic pressures in the blood and the interstitial fluid
c. the difference between the hydrostatic pressure and osmotic pressure within the capillary
d. the difference between the concentrations of blood cells, plasma proteins, and dissolved substances in the blood and the interstitial fluid

ANS: A

43. The cardinal signs of inflammation include all of the following *EXCEPT*:
a. redness
b. loss of function
c. nausea
d. swelling
e. pain

ANS: C

44. Drugs that have anti-inflammatory, analgesic, and antipyretic activities include:
1. COX-2 inhibitors (NSAIDs)
2. glucocorticoids (e.g., prednisone)
3. ibuprofen (NSAIDs)
4. acetaminophen
5. aspirin (ASA)
a. 1, 2
b. 2, 4
c. 1, 3, 5
d. 1, 4, 5
e. 2, 3, 5

ANS: C

45. Aspirin (ASA) is discouraged for treatment of viral infection in children because of:
a. decreased bone growth after puberty
b. frequent production of blood clots
c. formation of a granuloma filled with virus
d. the risk of developing Reye's syndrome

ANS: D

46. Systemic manifestations of inflammation include all *EXCEPT*:
a. pyrexia
b. malaise
c. chest pain
d. anorexia

ANS: C

47. Which of the following cellular elements found in the inflammatory response are responsible for phagocytosis?
a. macrophages

b. basophils
c. B-lymphocytes
d. T-lymphocytes
e. eosinophils

ANS: A

48. Which chemical mediator is involved in prolonging the inflammatory response?
a. bradykinin
b. histamine
c. leukotrienes
d. chemotactic factors

ANS: C

49. Potential complications after healing by scar formation include all the following *EXCEPT*:
a. lack of sensory function in the area
b. contractures and adhesions
c. increased hair growth
d. keloid formation

ANS: C

50. All of the following are correct statements regarding wound healing *EXCEPT*:
a. Resolution occurs where there is minimal tissue damage and the cells can recover.
b. Granulation tissue forms a permanent replacement for damaged tissue.
c. Regeneration occurs where the cells are capable of mitosis.
d. Scar tissue forms where the surrounding cells are incapable of mitosis.

ANS: B

51. Which of the following statements regarding inflammation is incorrect?
a. Inflammation caused by an allergen or a burn will contain a serous exudate.
b. Infection is one cause of inflammation.
c. Inflammation is the body's nonspecific response to tissue injury.
d. Disorders are named using the ending -sarcoma to indicate inflammation.

ANS: D

52. Which of the following helps to localize and contain the foreign material during an inflammatory response?
a. lymphocytes
b. increased fluid
c. fibrinogen
d. antibodies

ANS: C

53. Why is an application of cold recommended as part of the RICE first aid measures immediately following an inflammatory response due to injury? Because cold:
a. improves circulation in the area removing chemical mediators
b. causes local vasoconstriction to reduce local edema
c. draws more phagocytic cells to the area to remove debris

d. promotes immediate healing

ANS: B

54. One goal for current research in tissue engineering is to:
    a. create a functional replacement tissue when regeneration is not possible
    b. adapt cells from the injured organ to produce replacement tissue
    c. design a nonliving synthetic replacement tissue
    d. use stem cells as a temporary covering for damaged tissue

    ANS: A

55. Identify the proper sequence in the healing process.
    a. A blood clot forms; granulation **tissue** grows into the gap; new blood vessels develop; phagocytosis of foreign material and cell debris occurs; and collagen fibers form a tight, strong scar.
    b. A blood clot forms; phagocytes remove foreign material and cell debris; granulation **tissue** grows into the gap; new blood vessels form; and collagen fibers promote formation of a tight, strong scar.
    c. Collagen fibers form in the damaged area; a blood clot forms; granulation **tissue** grows into the gap; angiogenesis takes place; and foreign material and cell debris have been removed by phagocytes.
    d. Foreign material and cell debris have been removed by phagocytes; a blood clot forms; granulation **tissue** grows into the gap; new blood vessels form; and collagen fibers grow and cross-link.

    ANS: B

56. All are factors that promote healing *EXCEPT*:
    a. good nutrition: protein, vitamins A and C
    b. clean, undisturbed wound
    c. effective circulation
    d. advanced age
    e. adequate hemoglobin

    ANS: D

57. Identify the correct statement about burns:
    a. The severity of the burn depends on the temperature, and the duration and extent of the burn.
    b. Young children are less likely to suffer severe burns from immersion in excessively hot water.
    c. Burns to the palms of the hands are more damaging than burns on the face.
    d. With a major burn, excessive bleeding may cause shock.

    ANS: A

58. Which statement applies to the recommended emergency care for burns?
    a. Drop and lie completely still on your back.
    b. Call a neighbor for help if the burn appears to be extensive.
    c. Apply lotion and cover burn tightly with a sheet or towel.
    d. Cover the burn area with clean, cool, or tepid water and remove nonsticking

clothing.

ANS: D

59. Inhalation of carbon monoxide is a threat for many burn patients because this gas:
    a. causes swelling in the trachea
    b. quickly reduces the available oxygen in the blood
    c. prevents full expansion of the lungs
    d. is toxic to the nervous system

    ANS: B

60. Hypermetabolism is common with major burns because of:
    a. increased heat loss from the burn wound
    b. demand for tissue repair
    c. recurrent stress response
    d. a, c
    e. a, b, c

    ANS: E

61. How does scar tissue usually cause obstructions to develop in tube-like structures?
    a. Scar tissue continues to grow and spread, causing a blockage.
    b. Scar tissue does not stretch, but rather shrinks in time, causing narrowing.
    c. Scar tissue twists and forms knots as it develops.
    d. Scar tissue attaches to nearby normal tissue causing obstruction.

    ANS: B

62. Which of the following is a serious potential complication found only with the anti-inflammatory COX-2 inhibitor drugs?
    a. increased risk of infection at the site of inflammation
    b. Reye's syndrome developing in children and young adults
    c. increased incidence of heart attacks and strokes
    d. greatly delayed blood clotting

    ANS: C