Robbins Review Questions - Chapter 3

1. Which pathway of macrophage activation (classical or alternative) features angiogenesis?
2. In the alternative pathway of macrophage activation, the wound repair process is driven by:production of mediators that cause fibroblast proliferation
    a. production and proliferation of additional macrophages
    b. inhibition of cytokine release
    c. clearance of exudate through local lymphatic vessels
3. Acute inflammation is characterized by predominantly what type of leukocyte?
    a. T cells
    b. B cells
    c. Neutrophils
    d. Basophils
    e. Eosinophils
4. Complete tissue reconstitution is _____ (regeneration/repair) while a return to normal structure with some deficits is _____ (regeneration/repair).
5. Which of the following is not one of the three major components of acute inflammation?
    a. Increased permeability of microvasculature to facilitate plasma proteins and leukocytes to leave the circulation
    b. Decreased permeability of microvasculature to allow leukocytes to accumulate in the circulation surrounding the injured area
    c. Dilation of small vessels leading to an increase in blood flow
    d. Emigration of leukocytes from microcirculation , their accumulation in the focus of injury and activation to eliminate the offending agent
6. A Kupffer cells is a macrophage located in
    a. Liver
    b. Spleen
    c. Lung
    d. Brain
    e. General circulation
7. The escape of fluid, proteins and blood cells from the vascular system into the interstitial tissue or body cavities is _____ (transudate/exudate).
8. In an injured area, histamine functions to directly cause
    a. Vasoconstriction
    b. Vasodilation
    c. RBC stasis in blood vessels
    d. All of the above
9. The excessive deposition of collagen and other ECM components following wound repair is known as what?
10. The immediate transient response is
    a. The most common mechanism of vascular leakage which typically occurs rapidly after exposure and is usually short lived (15-30 min)
    b. The most common mechanism of vascular leakage which typically occurs slowly after exposure and is usually long lived (2hrs+)

    c. An uncommon mechanism of vascular leakage and injury following massive histamine release in allergic reactions
    d. An uncommon mechanism of vascular leakage and injury following sepsis
11. Chronic inflammation is characterized by the infiltration of what cell type?
12. Which of the following is not one of the classic signs of inflammation?
    a. Heat
    b. Redness
    c. Swelling
    d. Palor
    e. Pain
13. Toll-like receptors recognize the presence of what type of pathogen?
14. What type of fluid leakage (out of blood vessels) contains protein within the fluid?
15. What type of inflammatory fluid has a low protein content?
    a. Exudate
    b. Transudate
    c. Pus
    d. None of the above
16. What are the 3 changes in blood vessels that occur during acute inflammation?
17. Stasis/congestion in the vessels surrounding an acutely inflamed area allow what initial cells to accumulate along vessel endothelium?
18. Increased vascular permeability around a site of inflammation is caused by what mechanical change?
19. The period of increased vascular leakage is called the _____ _____ _____ because it occurs rapidly and is short lived (typically 15-30 minutes).
20. This type of injury can cause prolonged vascular leakage (from 2 hours up to days).
21. Lymphadenitis is characteristically recognized by inflammation and swelling of what tissue(s)?
    a. Lymphatic tracts along arms or legs
    b. Site around primary injury
    c. Teeth and gums
    d. Lymph nodes in the neck
22. The presence of red streaks on the skin near a wound is known which follows the course of lymphatic channels is known as
    a. Lymphedema
    b. Lymphoma
    c. Lymphadenitis
    d. Lymphangitis
23. The reaction and recruitment of leukocytes to the site of an acute inflammatory response is known as?
    a. Diapedesis
    b. Extravasation
    c. Chemotaxis
    d. Margination
24. Migration of leukocytes through the endothelium is
    a. Diapedesis
    b. Extravasation

    c. Chemotaxis
    d. Margination
25. After exiting circulation, movement of leukocytes through the tissues toward the site of injury by a process called
    a. Diapedesis
    b. Extravasation
    c. Chemotaxis
    d. Margination
26. When lymphatics become secondarily inflamed following a skin wound and this inflammation involves the draining lymph nodes it is known as
    a. Lymphedema
    b. Lymphoma
    c. Lymphadenitis
    d. Lymphangitis
27. What is the correct order for recruitment of leukocytes to an injured site?
    a. Rolling, migration, adhesion, margination
    b. Margination, migration, rolling, adhesion
    c. Adhesion, margination, rolling, migration
    d. Margination, rolling, adhesion, migration
28. Migration of leukocytes through the endothelium into tissue is known as transmigration or _____.
29. During an inflammatory response, neutrophils predominate over macrophages in which time period
    a. 6-24 hours
    b. 24-48
    c. 3-7 days
    d. 1 week-1 month
30. The primary opsonizing antibody is
    a. IgE
    b. IgM
    c. IgA
    d. IgG
31. Degranulation of mast cells releases predominantly what?
    a. Serotonin
    b. Histamine
    c. Reactive oxygen species
    d. Complement proteins
32. Pain and fever as a reaction are associated with the release of what?
    a. Histamine
    b. Leukotrienes
    c. Interleukin-1
    d. Prostaglandins
33. TNF and IL-1 are two of the major _____. Their production is mainly from this cell _____.
    a. Chemokines, neutrophils
    b. Vasodilators, vessel endothelium

    c. Cytokines, macrophages
    d. Endotoxins, bacteria
34. TNF and IL-1 promote
    a. Adhesion of leukocytes and their migration through vessels
    b. Stasis and migration of leukocytes through vessels
    c. Vasodilation and chronic inflammation
    d. Vasoconstriction and acute inflammation
35. Which of the following suppresses inflammation by inhibiting the recruitment of leukocytes?
    a. Leukotrienes
    b. Lipoxins
    c. Prostaglandins
    d. Arachidonic acid
36. There are 3 pathways of complement activation. Which are they?
    a. Classical pathway
    b. Typical pathway
    c. Lectin pathway
    d. Atypical pathway
    e. Antibody pathway
    f. Alternative pathway
    g. All of the above
    h. None of the above
37. Which pathway of complement activation occurs in the absence of antibodies and is characteristic of the reaction to cobra venom?
38. Each pathway of complement activation leads directly to what?
    a. Leukocyte recruitment, specifically neutrophils
    b. Lysis of microbe
    c. Attachment and cleavage of C3 into C3a and C3b
    d. MAC complex is formed
39. This pathway of complement activation occurs when C1 binds to antibody-antigens complexes on the surface of microbes.
    a. Classical
    b. Alternative
    c. Lectin
    d. Atypical
    e. Antibody
    f. Typical
40. Circulating mannose binding lectin binds to what on the surface to microbes?
    a. Proteins
    b. Carbohydrates
    c. Lipids
    d. Antigens
41. Serous inflammation is marked by the exudation of _____ (cell poor/cell rich) fluid.
42. Phagocytosis involves 3 sequential steps. Place them in order:
    a. Killing/degradation; recognition and attachment; engulfment
    b. Engulfment; killing/degradation; recognition and attachment

    c. Recognition and attachment; engulfment; killing/degradation
43. The fibrillar mesh of nuclear chromatin containing antimicrobial peptides and enzymes that is expelled from neutrophils in order to entrap microbes are known as _____ _____ _____.
44. The outpouring of fluid transudates into peritoneal, pleural or pericardial cavities is known as an effusion and represents what type of inflammation?
    a. Fibrinous
    b. Suppurative
    c. Serous
    d. Ulcer
45. Purulent exudates (containing large amount of neutrophils, liquefactive necrosis, cell debris) are common to what type of inflammation?
    a. Fibrinous
    b. Suppurative
    c. Serous
    d. Ulcer
46. The descriptor of “buttered bread” is often used when describing
    a. Suppurative inflammation
    b. Serous inflammation
    c. Gastric ulceration
    d. Fibrinous pericarditis
47. Fibrinous exudates are often removed by fibrinolysis and macrophages. If not removed and allowed to stimulate the ingrowth of fibroblasts and blood vessels, what will develop?
48. Tissue necrosis and the resulting inflammation occurring on or near a surface results in what?
49. Acute appendicitis is an example of what type of inflammation?
    a. Suppurative inflammation
    b. Serous inflammation
    c. Gastric ulceration
    d. Fibrinous pericarditis
50. What is neutropenia?
51. Morphologic features of chronic inflammation include the following except
    a. Infiltration with mononuclear cells, which include macrophages, neutrophils and lymphocytes
    b. Tissue destruction
    c. Attempts at healing
    d. All of the following
52. Granulomatous disease results in an inflammatory reaction rich in:
    a. Macrophages
    b. Neutrophils
    c. T cells
    d. B cells
    e. Lymphocytes
53. In the alternative pathway of macrophage activation (M2) , macrophages are
    a. Directly microbicidal with potential for injury to normal tissues

b. Directly microbicidal with no potential for injury to normal tissues
c. Not actively microbicidal and primarily function in tissue repair
d. Not actively microbicidal and primarily function to stimulate the classical pathway after initial recognition of the pathogenic microbes

54. The eosinophil is characteristic of immune reactions mediated by _____ and are activated in response to exposure to _____.
    a. IgG; cancer
    b. IgE; parasites
    c. IgB; bacteria
    d. IgC; viruses
55. Which of the following leukocytes produces antibodies
    a. Macrophages
    b. Monocytes
    c. Plasma cells
    d. T cells
56. Inflammation, tissue injury and repair coexist in what type of inflammation, acute or chronic?
57. Epithelioid cells are characteristic of
    a. Acute inflammation
    b. Chronic inflammation
    c. Acute on chronic inflammation
    d. Granulomatous inflammation
58. Langhans giant cells are found in?
    a. Allergic reactions
    b. Granulomas
    c. Suppurative inflammation
    d. Fibrinous pericarditis
59. A granuloma formed around a relatively inert foreign body such as an internal suture or other fibres large enough to preclude phagocytosis but do not generate any specific inflammatory or immune response is what type of granuloma?
60. The hallmark disease of immune granulomas is _____.
61. A left shift of neutrophils in the blood refers to
    a. Increased numbers of immature neutrophils
    b. Increased numbers of senescent neutrophils
    c. The decline in neutrophil numbers as they leave the circulation and enter inflamed tissues
    d. Neutrophils that have a deep love of Beyonce
62. An example of a stable tissue is
    a. Liver
    b. Brain
    c. Bone marrow (hematopoietic cells)
    d. GI epithelium
63. Regeneration of the _____ is a classic example of repair by regeneration.
    a. Skeletal muscle
    b. Cardiac muscle
    c. Liver

    d. Lung
64. After injury, the replacement of parenchymal cells in any tissue by collagen is known as _____ (repair/regeneration).
65. The most important cytokine for the synthesis and deposition of connective proteins is
    a. Vascular endothelial growth factor
    b. Growth hormone
    c. Fibrogenic factor
    d. Transforming growth factor-beta
66. Healing of a clean, uninfected surgical cut which involves only the epithelial layer occurs through _____(primary/secondary) intention.
67. A variable that can influence tissue repair is
    a. Diabetes
    b. Nutritional status
    c. Glucocorticoids
    d. Mechanical factors (local pressure/torsion)
    e. All of the above
68. A scar is much more prevalent when it is generated through _____ (primary/secondary) intention.
69. Collagen deposition is a normal part of wound healing. True or false.
70. Wound contraction generally occurs in large surface wounds and is due to the action of
    a. Myoblasts
    b. Myofibroblasts
    c. Collagenases
    d. Mixed metalloproteases
71. Wound strength increases slowly over time as collagen fibres are laid down and remodeled with the surrounding tissue. After a period of approximately 3 months wound strength has typically returned to 100%. True or false?
72. Wound dehiscence, while not common, is typically seen after _____ surgery
    a. Cardiac
    b. Abdominal
    c. Cosmetic
    d. All of the above
73. What is the main cause of wound ulceration during healing?
    a. Inadequate nutrition for tissue repair
    b. Hypoxia
    c. Inadequate vascularization
    d. Sliding/shear force across superficial surface of wound
74. Formation of excessive amounts of granulation tissue which protrudes above the surrounding flesh and blocks reepithelialization is known as?
    a. Scarring
    b. Keloid
    c. Teratoma
    d. Proud flesh

75. If a hypertrophic scar grows beyond the boundaries of the original wound without regressing it is known as
    a. Scarring
    b. Keloid
    c. Teratoma
    d. Proud flesh

1. Alternative
2. A
3. C (pg 71)
4. Regeneration. Repair
5. B (pg 73)
6. A
7. Exudate (pg 73)
8. B (pg 73-74)
9. Fibrosis
10. A (pg 74)
11. Mononuclear cells (pg 77)
12. D (pg 71)
13. Bacteria
14. Exudate
15. B (pg 73)
16. Vasodilation, increased permeability and stasis/congestion
17. Neutrophils (pg 77)
18. Contraction of endothelial cells
19. Immediate transient phase/response (pg 74)
20. Endothelial injury (most commonly burns)
21. D (pg 74)
22. D (pg 74)
23. B
24. A (pg 76)
25. C (pg 77)
26. C (pg 74)
27. D (pg 75)
28. Diapedesis (pg 76)
29. A (pg 77)
30. D (pg 78)
31. B (pg 83)
32. D
33. C
34. A (pg 86)
35. B (pg 85)
36. A, C & F (pg 88)
37. Alternative (pg 88)
38. C (pg 88)
39. A (pg 88)
40. B (pg 88)
41. Cell poor (pg 90)
42. C
43. Neutrophil extracellular traps
44. C (pg 90)
45. B (pg 91)
46. D (pg

47. Scar tissue (pg 90)
48. Ulcer (pg 91)
49. A (pg 91)
50. Decreased number of neutrophils
51. A (pg 93-94)
52. A
53. C (95)
54. B (pg 96)
55. C (pg 96)
56. Chronic (pg 99)
57. D (pg 97)
58. B (pg 98)
59. Foreign body granuloma (pg 97)
60. Tuberculosis (pg 98)
61. A (pg 99)
62. A (pg 101)
63. C (pg 102)
64. Repair (pg 103)
65. D (pg 105)
66. Primary (pg 106)
67. E (pg 106)
68. Secondary (pg 106)
69. True
70. B(pg 108)
71. False. Wound strength approaches 70-80% after 3 months and doesn't improve substantially after that (pg 108)
72. B (pg 109)
73. C (pg 109)
74. D (pg 109)
75. B (pg 109)