Temple University School of Medicine
Department of Pathology and Laboratory Medicine
Pathology (D305) Lecture Examination I
September 22, 2008

IMPORTANT: Read the following instructions.

1. Fill in your name and the last four digits of your Temple identification number on your answer sheet and darken the corresponding circles with a #2 pencil.

2. There are fifty (50) items (questions) on this examination. There is only one answer to each item. Choose the best correct answer to a question or response to finish the statement of each item.

3. Use a #2 pencil to mark your answers on your answer sheet. Mark your answer right after you chose one. There is no extra time at the end of the examination. The examination time is one hour.

4. Keep your eyes on your own examination paper and answer sheet. Place your own examination paper and answer sheet on your table top and prevent them from being exposed to others.

5. Students are not allowed to bring electronic devices or other miscellaneous items to the examination.

6. Proctors are not allowed to explain questions during examination.

1. What mode do myocardial cells adapt to hypertension?

A. Hypertrophy
B. Hyperplasia
C. Atrophy
D. Metaplasia
E. Anaplasia

2. How do prostate glandular cells adapt to estrogen and androgen stimulation?

A. Aplasia and agenesis
B. Metaplasia and dysplasia
C. Dyscrasia and neoplasia
D. Atrophy and lipofuscin pigmentation
E. Hypertrophy and hyperplasia

3. Which type of cells is most sensitive to ischemic/hypoxic injury?

A. Myocardial cells
B. Epidermal cells
C. Fibroblasts
D. Salivary gland duct cells
E. Neurons

4. Which of the following are frequently observed in hepatocytes of chronic alcoholics?

A. Mallory bodies and fatty change
B. Lipofuscin pigment and fatty ingrowth
C. Intracytoplasmic accumulations of immunoglobulins
D. Lysosomal storage of glycogen
E. Hypertrophy with increased numbers of organelles

5. Which of the following microscopic features is the most reliable indicator of cell death?

A. Karyorrhexis
B. Hyperchromasia
C. Pleomorphism
D. Metachromasia
E. Inclusion bodies

6. What is the critical morphologic change in injured cells that determines the injury is irreversible?

A. Shrunk mitochondria
B. Breakage of cell membrane
C. Autophagy of endoplasmic reticulum
D. Storage of mucopolysaccharides in lysosomes
E. Aggregation of ribosomes

7. How does radiation energy cause cell injury?

A. By direct binding to DNA
B. By indirect binding to glycogen
C. By ionizing water molecules to generate free radicals
D. By direct binding to the sulfhydrial group of enzymes
E. By modification of neural conductivity

8. What is dystrophic calcification?

A. Calcification of osteoid tissue in bone cancer
B. Calcification of normal stromal tissue of the kidney
C. Bone formation in inflamed gingival tissue
D. Calcification of necrotic cell debris
E. Calcification of cartilage in arthritis

9. In which disease is dystrophic calcification most often observed?

B

A. Arthritis
B. Atherosclerosis
C. Viral pneumonitis
D. Allergic gingivitis
E. Acute pulpitis

10. Hypoxic cell death in all types of tissues/organs reveals coagulative necrosis except one organ that shows liquefactive necrosis. What is this organ?

A. The heart
B. The lung
C. The brain
D. The kidney
E. The spleen

11. A malnourished adolescent showed hypoproteinemia, anasarca, and an enlarged liver. What is the principal pathogenic mechanism of anasarca in this case?

A. Increased hydrostatic pressure
B. Decreased plasma osmotic pressure
C. Lymphatic obstruction
D. Sodium and water retention
E. Increased vascular permeability

12. Why the liver is enlarged in this malnourished adolescent?

C

A. Hyperplasia of hepatocytes
B. Congestion of liver sinusoids
C. Fatty change of hepatocytes
D. Hypertrophy of hepatocytes
E. Fatty ingrowth in the liver stroma

13. What is the most common cause of chronic passive congestion?

A. Aortic aneurysm
B. Fibrosis of the spleen
C. Acute tubular necrosis of the kidney
D. Right heart failure
E. Chronic peptic ulcer with continued loss of blood

14. Which of the following is the most likely cause of petechial hemorrhages in the gingiva?

A. Coronary atherosclerosis
B. Essential hypertension
C. Vitamin C deficiency
D. Chronic ulcerative colitis
E. Hyperparathyroidism

15. What is the most important initiator for blood coagulation?

B

A. Platelet
B. Thromboplastin
C. Von Willibrand factor
D. ADP
E. Tissue plasminogen activator

16. What is the most important predisposing factor for thrombus formation in arteries?

A. Stasis of blood flow in dilated vessels
B. Traumatic injury to arteries
C. Turbulence of blood flow in aneurysms
D. Genetic mutation of prothrombin
E. Endothelial injury due to atherosclerosis

17. Where do vegetations most commonly occur?

A. Descending branch of the left coronary artery
B. Varicose veins of the leg
C. The pulmonary artery of a patient with pneumonia
D. Inflamed cardiac valves
E. End arteries in the brain

18. How does a thrombus cause infarction besides occlusion of the vessel at the site of formation?

A. Giving rise to thromboembolism
B. Dissolution of the thrombus by plasmin
C. Organization by granulation tissue
D. Recanalization by endothelial cells
E. Liquefaction by leukocytes

19. What is the most common cause for pulmonary thromboembolism?

A. Coronary atherosclerosis
B. Lobar pneumonia
C. Infarct in the left ventricular wall
D. Aortic aneurysm
E. Phlebothrombosis

20. What type of necrosis occurs in a brain infarct?

A. Liquefactive necrosis
B. Caseous necrosis
C. Fat necrosis
D. Gangrenous necrosis
E. Coagulative necrosis

Autosomal Dom

21. What is the hereditary transmission pattern of Marfan syndrome?

A. Only males are affected.
B. Only homozygous females are affected.
C. Both males and females are affected with an equal chance.
D. Males and females are affected with a ratio of 1:2.
E. Males and females are affected with a ratio of 2:1.

22. Why patients with Ehlers-Danlos syndrome have periodontal disease at an early age?

A. The presence of a mutant Actinobacillus actinomycetemconcomitans
B. Defective collagen of the periodontal ligament
C. Developmental anomaly of tooth crowns with an abnormal CEJ
D. Retrovirus infection with severe periodontal destruction
E. Deficiency of catalase with free radical destruction of the periodontal ligament

23. Which glycogen storage disease involves muscles and the patient manifests muscle cramps after exercise?

A. Tay-Sachs disease
B. Gaucher disease
C. Von Gierke disease
D. Von Recklinghausen disease
E. McArdle disease

24. What is the hereditary transmission pattern of galactosemia?

A. Autosomal dominant
B. Autosomal recessive
C. X-linked dominant
D. X-linked recessive
E. Mitochondrial gene transmission

25. In familial hypercholesterolemia, what is the basic problem that causes excess cholesterol in the blood?

A. Increased absorption of low-density lipoprotein from the intestine
B. Decreased production of high-density lipoprotein by the coronary artery
C. Increased re-absorption of very-low-density lipoprotein by renal tubules
D. Defects in the receptor for low-density lipoprotein in hepatocytes
E. Hypersensitivity reaction to high-density lipoprotein in the myocardium

26. How do patients with Down syndrome get an extra chromosome 21?

A. Mitosis with no cellular division
B. Mitotic translocation
C. Meiotic deletion
D. Meiotic nondisjunction
E. Mitotic inversion

27. How many Barr bodies does a man with the karyotype 48,XXXY have?

A. 0
B. 1
C. 2
D. 3
E. 4

28. What is the transmission pattern of Leber hereditary optic neuropathy?

A. Autosomal dominant
B. Autosomal recessive
C. X-linked recessive
D. Trinucleotide repeats
E. Maternal inheritance

29. What are the prominent clinical manifestations of Turner syndrome?

A. Amenorrhea and short stature
B. Testicular atrophy and gynecomastia
C. Mental retardation and macro-orchidism
D. Ataxic gait and inappropriate laughter
E. Mental retardation and hypotonia

30. What characterize DiGeorge syndrome?

A. T-cell immunodeficiency and hypocalcemia
B. B-cell hyperplasia and eosinophilia
C. Langerhans cell hyperplasia and destruction of the periodontium
D. Hyperthyroidism and muscle wasting
E. Hyperparathyroidism and osteoporosis

31. Which of the following molecules is the most important chemotactic agent?

A. Nitric oxide
B. C3a
C. Thromboxane A_2
D. Leukotriene B_4
E. Lipoxins

32. Following a biopsy of the buccal mucosa, the incision is sutured. The sutures are removed one week later. Which of the following statements best describes the wound site at the time of suture removal?

A. Neutrophils are beginning to enter the incision site.
B. Wound strength is 80% of normal tissue.
C. No more wound strength will be gained.
D. Granulation tissue is still present.
E. Scar tissue without inflammatory cells is present.

33. An ultrafiltrate of plasma usually due to increased hydrostatic pressure and normal permeability is called:

A. an immune response.
B. a transudate.
C. an exudate.
D. a scar.
E. diapedesis.

34. An inherited defect that results in a lack of synthesis of lysosomal myeloperoxidase means that the killing of phagocytosed bacteria must occur without the involvement of:

A. defensins.
B. superoxide free radical.
C. hydroxyl free radical.
D. HOCl (hypochlorous acid free radical).
E. H_2O_2 (hydrogen peroxide).

35. An enzyme important in synthesis of chemical mediators that is inhibited by the action of glucocorticoids is:

A. NADPH oxidase.
B. myeloperoxidase.
C. lysozyme.
D. cytochrome oxidase.
E. phospholipase A_2.

36. The increase in vascular permeability caused by histamine is due to:

A. endothelial contraction.
B. junctional retraction.
C. an increase in endothelial transcytosis.
D. leukocyte-mediated endothelial injury.
E. direct endothelial injury.

37. The chemical mediator of inflammation that causes vasodilation, fever and pain and is inhibited by non-steroidal anti-inflammatory drugs is:

A. prostaglandin E_2.
B. nitric oxide.
C. leukotriene C_4.
D. IL-1.
E. bradykinin.

38. Epithelioid macrophages are the characteristic cell of:

A. acute inflammation due to blunt force trauma.
B. abscesses due to streptococci.
C. granulation tissue.
D. granulomatous inflammation.
E. scar tissue.

39. Which of the following is a good example of a tissue that can regenerate during repair?

A. Cardiac muscle
B. Peripheral nerve cells
C. Floor of mouth epithelium
D. Skeletal muscle
E. Nerves in the central nervous system

40. Tumbling and rolling of leukocytes on the surface of activated endothelial cells during the early stages of acute inflammation is mediated by:

A. selectins.
B. C3b.
C. IL-1.
D. integrins.
E. activated factor XII.

41. In general, what is regarded as the most important factor in causing delayed wound healing?

(A) Infection
B. Fragments of metal left behind in a surgical wound
C. Vitamin C deficiency
D. Atherosclerosis of the thoracic aorta
E. Protein deficiency

42. The complement component that modulates leukocyte adhesion to endothelial cells, stimulates the release of histamine from mast cells and is a potent chemotactic agent is:

A. C1.
B. C3a.
C. C3b.
(D) C5a.
E. C5b-9.

43. Which of the following chemical mediators of inflammation is the most capable of causing tissue injury?

A. Vascular endothelial growth factor (VEGF)
B. Leukotriene B_4
C. IL-8
(D) Reactive oxygen species
E. Platelet activating factor

44. Which of the following growth factors stimulates fibroblast chemotaxis and collagen production, favoring scar formation and fibrosis in chronic inflammation?

A. Chemokines
B. Platelet derived growth factor
C. Vascular endothelial growth factor
D. Epithelial growth factor
(E) Transforming growth factor β

45. During acute inflammation, increased vascular permeability leads to slowing of blood flow in venules and this is due to:

A. antigen-antibody complexes.
B. vasoconstriction of arterioles.
C. diapedesis.
D. fibrosis.
(E) hemoconcentration and increased viscosity of blood.

46. A growth of excessive amounts of newly forming blood vessels and fibroblasts adjacent to a tooth with heavy calculus deposits is best described as a/an:

A. keloid.
B. pyogenic granuloma.
C. aggressive fibromatosis.
D. abscess.
E. scar.

47. An inherited defect in cytoplasmic microtubules that prevents fusion of lysosomes with phagosomes in neutrophils and macrophages occurs in:

A. Chediak-Higashi syndrome.
B. chronic granulomatous disease.
C. leukocyte adhesion deficiency 1 syndrome.
D. diabetes mellitus.
E. leukocyte adhesion deficiency 2 syndrome.

48. The cells most characteristic of chronic inflammation are:

A. lymphocytes and neutrophils.
B. macrophages and lymphocytes.
C. basophils and macrophages.
D. neutrophils and eosinophils.
E. neutrophils and mast cells.

49. Localized collections of purulent inflammation buried in a tissue, organ or confined space are:

A. granulomas.
B. tubercles.
C. abscesses.
D. ulcers.
E. scars.

50. Wound contraction is mediated by:

A. myofibroblasts.
B. macrophages and lysosomal enzymes.
C. vascular endothelial growth factor.
D. interferon gamma.
E. platelet activating factor.