

NAME: \_\_\_\_\_

SCHOOL: \_\_\_\_\_

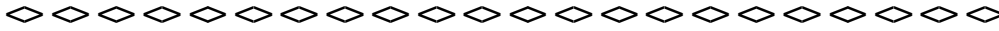
**PATHOLOGY 135  
MIDTERM EXAMINATION**

8:00 to 9:00 AM  
Cole Hall

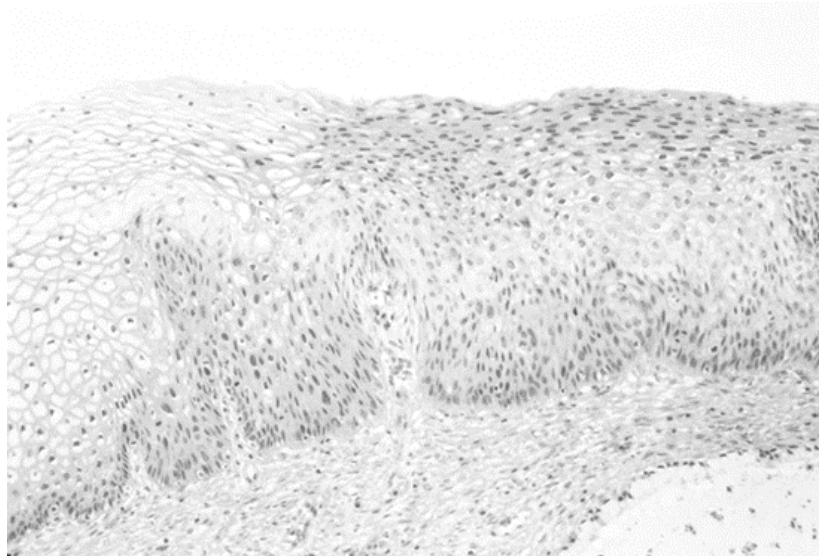
- A. Print your NAME AND SCHOOL on the answer sheet.  
**(DO NOT FILL IN THE I.D. NUMBER BOXES)**
- B. Only use a No. 2 pencil.
- C. Make no stray marks on your answer sheet.
- D. Turn in your test, answer sheet and borrowed pencils to the proctor. Make sure your NAME and SCHOOL (i.e., Pharmacy, Physical Therapy) are on your answer sheet and test.
- E. Your test will be returned to you in one to two weeks.

PATHOLOGY 135

Directions: Please place a mark in the space on the answer sheet corresponding to the single best answer.



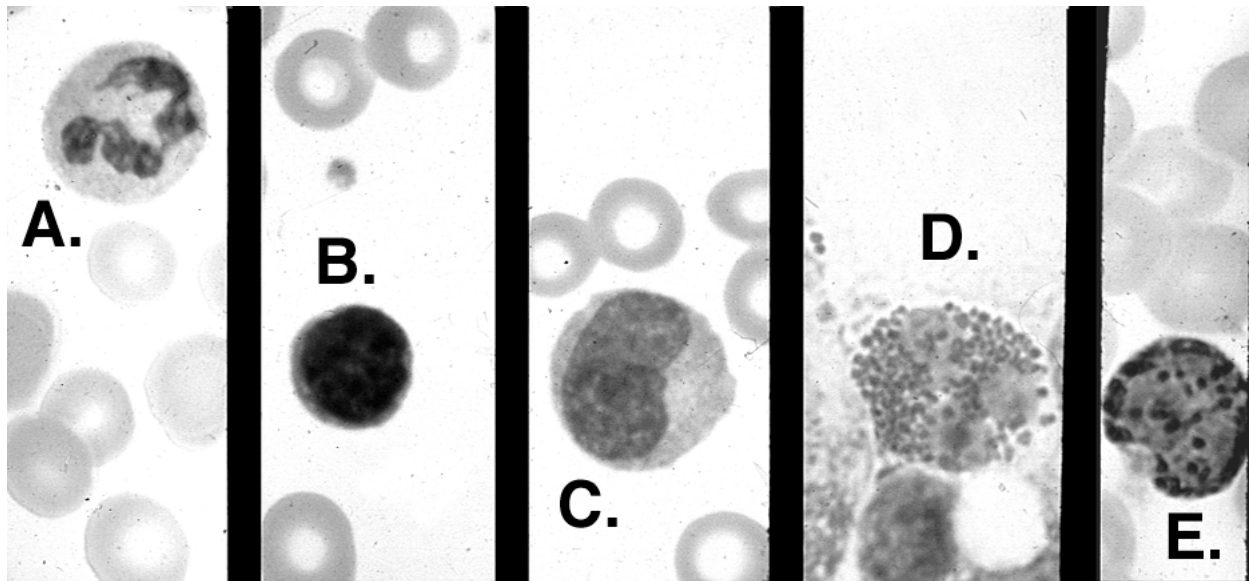
1. Which of the following is the **BEST** example of coagulative necrosis?
  - A. central area of granulomas in tuberculosis
  - B. degranulated mast cells in anaphylactic shock
  - C. endothelial cells in Goodpasture's disease
  - D. infarcted myocardial cells
  - E. infected CD4 positive lymphocytes with HIV
2. What type of cellular change has occurred in this patient's cervix who has human papillomavirus type 16?



- A. atrophy
  - B. dysplasia
  - C. hyperplasia
  - D. hypertrophy
  - E. metaplasia
3. Which type of necrosis is typically found in a granuloma?
  - A. caseous
  - B. coagulative
  - C. fat
  - D. fibrinoid
  - E. liquefactive

4. Hyperplasia is defined as:
- A. change one adult cell type with another adult cell type (e.g., Barrett esophagus).
  - B. decrease size of cells (e.g., skeletal muscle in a patient confined to bed).
  - C. increase in cell size due to increased synthesis of more structural proteins (e.g., hypertension).
  - D. increase in the number of cells (e.g., regeneration in cutaneous wound healing).
  - E. proliferation and the loss of cell size, shape and orientation to the normal maturation of epithelial or mesenchymal cells (e.g., cervix).
5. Irreversible cell injury histologically is characterized by:
- A. accumulation of glycogen
  - B. apoptosis
  - C. fatty change
  - D. hydropic change
  - E. mitochondrial swelling
6. A twenty-four-year-old physical therapy student is brought by ambulance to the emergency room complaining of fever, chills, productive cough (greenish sputum) and pleuritic chest pain for the last seventy-two hours. On physical examination, the student is febrile. He has decreased breath sounds in the right lung base. Bronchoscopy would reveal red, swollen bronchial mucosa and the lumen filled with green purulent mucus. Which of the following mediators of inflammation is **MOST LIKELY** responsible for this student's pleuritic chest pain?
- A. C3b
  - B. chemokines
  - C. histamine
  - D. leukotrienes
  - E. vascular endothelial growth factor
7. Choose the **INCORRECT** pair:
- A. atrophy – spinal cord injury
  - B. dysplasia – human papillomavirus
  - C. hyperplasia – uterus in a prepuberal girl
  - D. hypertrophy – weight lifting
  - E. metaplasia --- chronic bronchitis

8. Among these leukocytes in this peripheral blood smear, which one is a true phagocyte?



9. Which step in acute inflammation does integrins play a significant role?

- A. adhesion and migration
- B. emigration and chemotaxis
- C. intracellular degranulation
- D. opsonization
- E. phagocytosis

10. Which type-specific collagen would be found in scar and bone?

- A. I  
B. II  
C. III  
D. IV  
E. V

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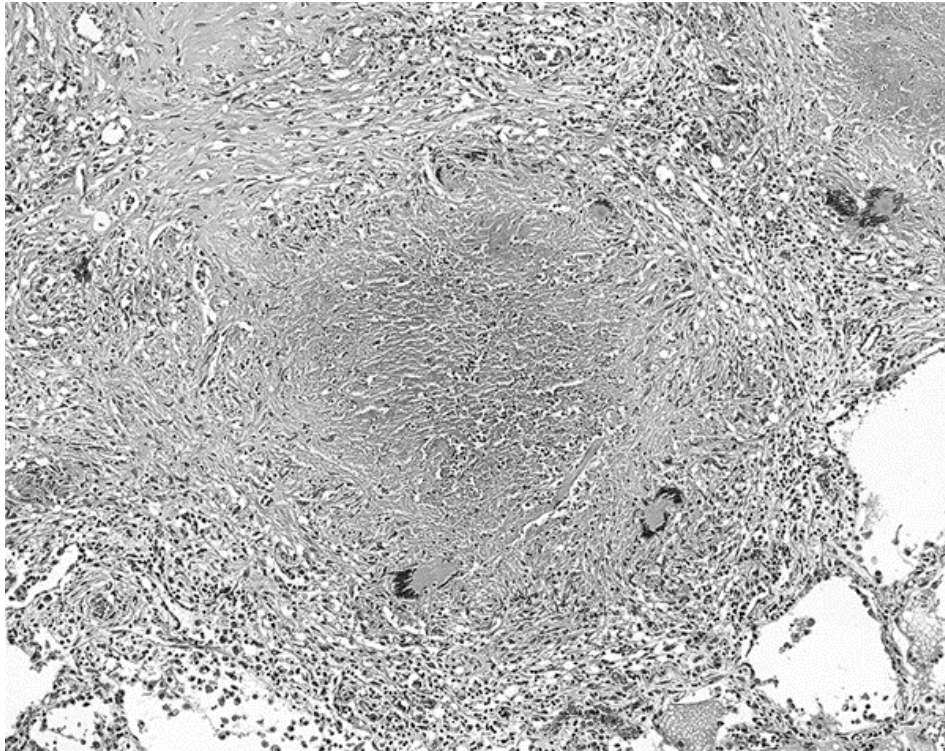
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12. A 25-year-old pharmacy student undergoes excisional biopsy of a liver lesion. Within the lesion, the surgical pathologist identifies a focal collection of polymorphonuclear cells walled off by a wall of fibrin. Among the following, the **BEST** term for this patient's lesion is **MOST LIKELY** to be:
- A. abscess
  - B. acute infarct
  - C. caseating granuloma
  - D. fibrinoid necrosis
  - E. granulation tissue
13. An example of permanent cells is:
- A. bone marrow cells
  - B. chondrocytes
  - C. endothelial cells
  - D. neurons
  - E. squamous cells
14. What mechanism would account for the **MAJORITY** of edema in congestive heart failure?
- A. endothelial injury
  - B. increased hydrostatic pressure
  - C. increased osmotic tension of interstitial fluid
  - D. lymphatic obstruction
  - E. reduced oncotic pressure
15. In **CONTRAST** to granulomas, granulation tissue:
- A. contains only lymphocytes and plasma cells
  - B. does not contain monocytes
  - C. does not involve infectious organisms
  - D. features include angiogenesis and fibroblastic activity
  - E. is structurally composed of collagen type I

16. Among the following cells, which accounts for the formation of the granuloma shown below?



- A. activated macrophage
  - B. B cell lymphocyte
  - C. eosinophil
  - D. mast cell
  - E. polymorphonuclear cell
17. Activated macrophages are functionally active in tissue for approximately:
- A. 6-18 minutes
  - B. 8-16 hours
  - C. 1-2 days
  - D. 6-8 weeks
  - E. 2-4 months

18. Which of the following are mast cells **MOST LIKELY** to secrete in an acute inflammatory response?
- A. bleach
  - B. histamine
  - C. lactoferrin
  - D. myeloperoxidase
  - E. tumor necrosis factor
19. Wound healing by secondary intention is **LEAST LIKELY** to:
- A. heal rapidly
  - B. help close infected wounds
  - C. produce more scarring compared to primary intention
  - D. produce profound wound contraction
  - E. result in large amount of granulation tissue
20. What are the main functions of an activated macrophage?
- A. antigen presentation and antibody production
  - B. antigen presentation, phagocytosis and secretion
  - C. phagocytosis, and secretion of TNF and IL-1
  - D. secretion, antigen presentation, and orchestrate acute inflammation
  - E. secretion of collagen and phagocytosis of foreign material
21. Collagen type I is predominantly found in which of the following organs/tissues?
- A. brain
  - B. cartilage
  - C. fat
  - D. heart
  - E. tendon
22. Which statement about collagen is **LEAST LIKELY** to be true?
- A. Collagen III has more tensile strength than collagen IV.
  - B. Collagen is composed primarily of three polypeptides.
  - C. Fibroblasts produce collagen.
  - D. The dense scar of a wound is comprised of type IV collagen.
  - E. Type III collagen ("reticulin") is often present in granulation tissue.

23. Hematemesis **BEST** defines:
- A. blood in urine
  - B. coughing-up blood
  - C. large amount of hemolyzed blood in stool
  - D. localized hemorrhage into tissue
  - E. vomiting blood
24. Which of the following clotting/fibrinolytic factors is activated by glass?
- A. Factor VII
  - B. Factor X
  - C. fibrinogen
  - D. Hageman factor (Factor XII)
  - E. prothrombin
25. Among the following, which is the **BEST** example of stable cells?
- A. cardiac myocytes
  - B. fibroblasts
  - C. germinal cells of the ovary
  - D. neurons of the central nervous system
  - E. white blood cells
26. Which of the following is **MOST LIKELY** to increase the risk of thrombus formation?
- A. anemia
  - B. prostacyclin I
  - C. thromboxane A<sub>2</sub>
  - D. thrombocytopenia
  - E. severe hemoptysis
27. Which of the following is **LEAST LIKELY** to delay tissue repair?
- A. infected wound
  - B. no necrotic tissue
  - C. old age
  - D. poor nutrition
  - E. vitamin C deficiency

28. Among the following immunologic diseases, which one involves hypersensitivity type III reaction?
- A. asthma
  - B. autoimmune hemolytic anemia
  - C. hay fever
  - D. post-streptococcal glomerulonephritis
  - E. tuberculosis
29. Which of the following would **MOST LIKELY** occur in a two-year-old male infant with x-linked infantile hypogammaglobulinemia?
- A. bacterial infections
  - B. cryptococcal infections
  - C. fungal infections
  - D. parasitic infections
  - E. viral CNS infections
30. Which statement is **MOST LIKELY** regarding type IV hypersensitivity reaction?
- A. Activated CD4 T-cells recruiting monocytes leading to tissue damage.
  - B. An example of type II hypersensitivity reaction is granulomatous inflammation due to coccidioidomycosis.
  - C. Antibody bound to a cell surface molecule on red blood cells.
  - D. IgG binds to a cell surface ligand triggering complement leading to tissue damage.
  - E. Type IV hypersensitivity reaction is caused by the binding of an antibody to a soluble antigen.
31. Stage of a malignant tumor refers to:
- A. the degree of differentiation.
  - B. the gross appearance.
  - C. the loss of polarity in epithelial cancers.
  - D. the number of abnormal mitotic figures.
  - E. the size, extent of invasion and/or metastasis.
32. Which is **LEAST LIKELY** to be involved in a hypersensitivity reaction type IV?
- A. activated macrophage
  - B. fibroblast
  - C. helper T4-cell
  - D. mast cell
  - E. monocyte

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34. Which statement is **LEAST LIKELY** regarding severe combined immunodeficiency?

- A. congenital absence of the thymus
- B. decreased T4 helper cells
- C. deficiency in plasma cells
- D. deficiency of adenosine deaminase
- E. no circulating T-cells

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39. Among the following characteristics of tumor tissue, the **MOST** reliable indicator of a malignant tumor is:

- A. cellular hyperchromasia and pleomorphism
- B. compression of surrounding normal tissue
- C. evidence of metastasis
- D. increased nuclear-to-cytoplasmic (N:C) ratio
- E. numerous mitotic figures

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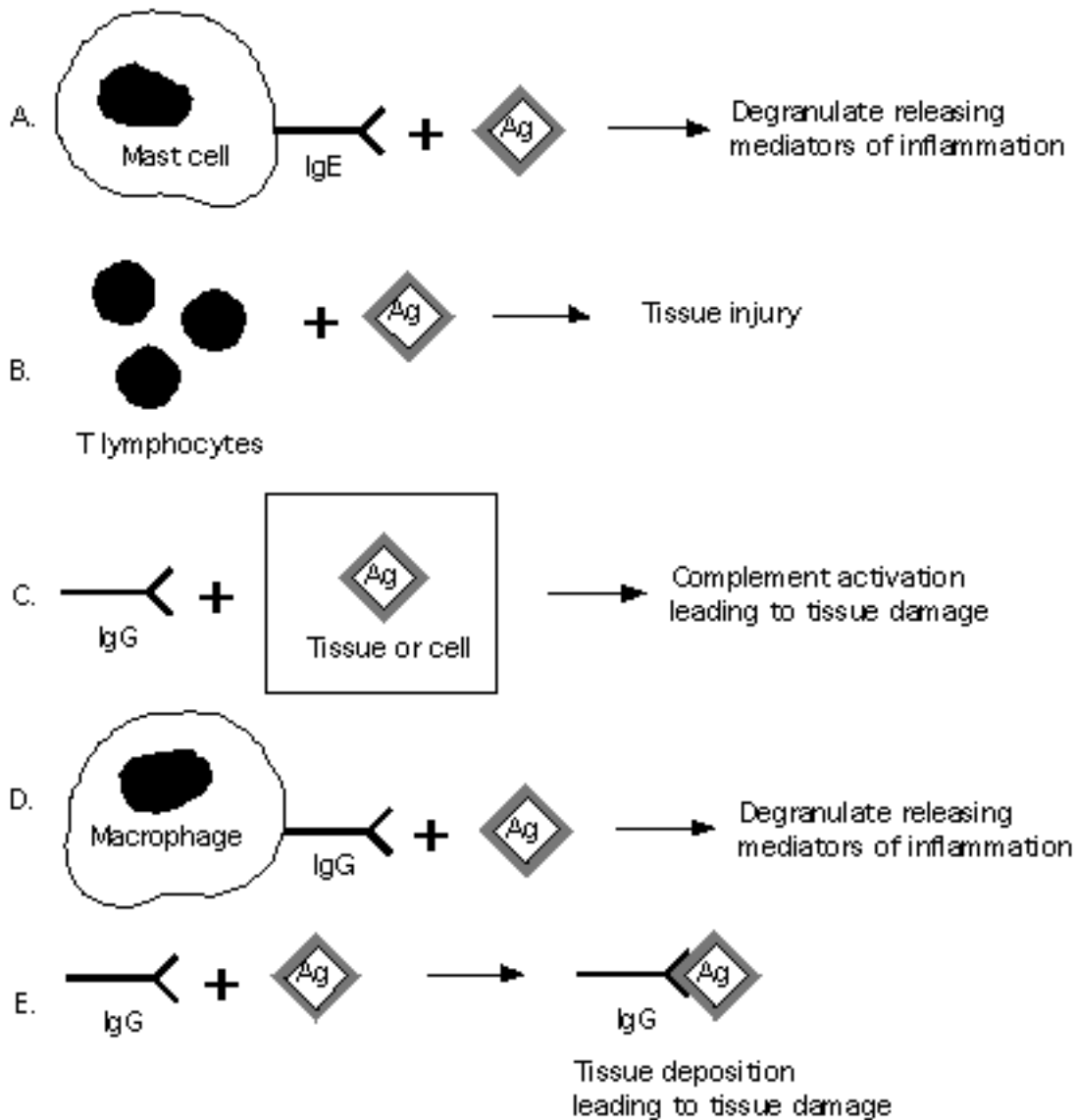
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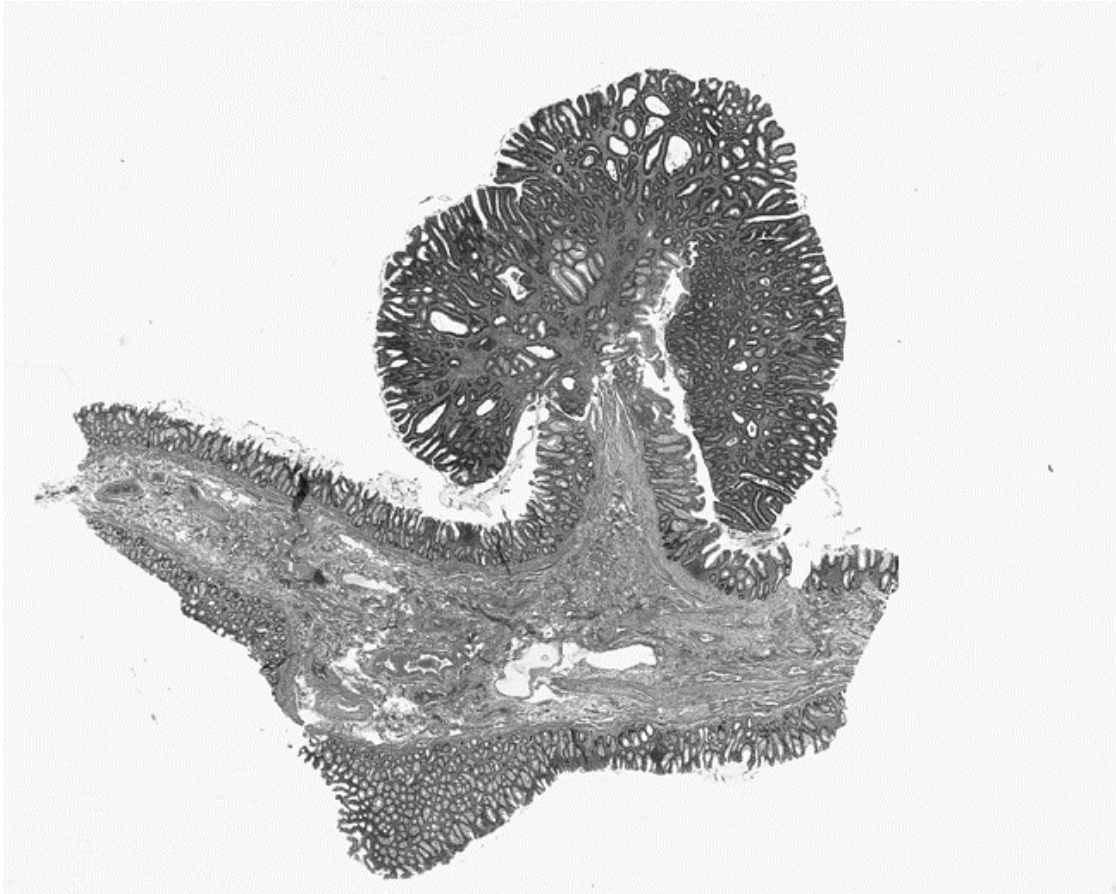
42. As related to cancer, genetic instability is **BEST** described as:

- A. ability of cancer cells to fuse and share genomic material
- B. ability of lymphocytes to change the sequence of their proto-oncogenes
- C. changes in genes involved in the maintenance of DNA and chromosomal integrity
- D. individuals born with a large number of proto-oncogenes
- E. the ability of cancer cells to increase their rate of apoptosis

43. A 23-year-old woman complains of chronic skin rash and blood in her stools for the last 4 months and now develops hematuria, decreased urine output and mild hypertension. Urine analysis confirms the presence of blood and protein in the urine. A renal biopsy is performed. The diagnosis of systemic lupus erythematosus is made when antibodies against double stranded DNA is detected in her blood. Which of the following reactions would **MOST LIKELY** explain the pathogenesis of systemic lupus erythematosus in this patient's skin, gastrointestinal tract and kidneys?



44. Which of the following statements regarding this colonic adenomatous polyp is **LEAST LIKELY**?



- A. Hyperplasia would occur.
  - B. Mitosis would be uncommon.
  - C. The nuclear/cytoplasm ratio is low.
  - D. This particular type of neoplasm would eventually become malignant.
  - E. This type of tumor probably arose from glandular epithelium.
45. Which of the following statements is **MOST LIKELY**?
- A. Cancer is the leading cause of premature preventable death in the United States.
  - B. Diagnosis of cancer requires a high resolution imaging study.
  - C. Malignant tumors often invade and/or metastasize.
  - D. Most benign tumors will become malignant.
  - E. UV radiation exposure is the most common cause of lung cancers.



### Path 135 Midterm Answers

1. D
2. B
3. A
4. D
5. B
6. D
7. C
8. A
9. A
10. A
11. ■
12. A
13. D
14. B
15. D
16. A
17. E
18. B
19. A
20. B
21. E
22. D
23. E
24. D
25. B

26. C
27. B
28. D
29. A
30. A
31. E
32. D
33. ■
34. A
35. ■
36. ■
37. ■
38. ■
39. C
40. ■
41. ■
42. C
43. E
44. A
45. C
46. ■
47. ■
48. E
49. ■
50. ■