

一、選擇題（共50分；每題1分；均為單選；1-25題為單一式選擇題；26-50題為組合式選擇題）※ 本大題請於試卷內之「選擇題作答區」依序作答。

1. Which of the following descriptions about mast cells is **not** correct ?
 - a. Present around blood vessels, particularly in the skin and respiratory tract
 - b. Playing a major role in the initiation of acute inflammation
 - c. Containing receptors for the Fc portion of IgE and complement components of C3a and C5a
 - d. Playing an important role in anaphylaxis
 - e. All of the inflammatory mediators released from mast cells are via degranulation.
2. Which of the following locations is the major target responsible for the histamine-induced increase in vascular permeability during acute inflammation ?
 - a. Arterioles
 - b. Capillaries
 - c. Post-capillary venules
 - d. Lymphatics
 - e. All blood vessels.
3. Which of the following pathological terms will you use when the major component of an inflammatory lesion is a mixture of lymphocytes, plasma cells, macrophages, fibroblasts, and neovascularization along with a significant number of neutrophils ?
 - a. Granulomatous inflammation
 - b. Pyogranulomatous inflammation
 - c. Suppurative inflammation
 - d. Subacute non-suppurative inflammation
 - e. Chronic active inflammation.
4. Which of the following descriptions about exudate is **not** correct ?
 - a. Could be liquid or semi-liquid
 - b. Formed as a result of increased hydrostatic pressure
 - c. Formed as a result of increased vascular permeability
 - d. Leukocytes are one of the important constituents
 - e. Often contains a significant amount of protein.
5. Which of the followings is the best indicator to differentiate chronic inflammation from acute inflammation ?
 - a. Lymphocytes
 - b. Fibrosis
 - c. Fibrinous exudate
 - d. Endothelial cell hypertrophy
 - e. Plasma cells.
6. Which of the following inflammatory mediators is **not** present in the plasma ?
 - a. Kinins
 - b. Plasmin
 - c. Thrombin
 - d. Complement
 - e. Thromboxane A₂.
7. Which of the following molecules is the most potent oxygen radical produced by all activated phagocytic leukocytes during phagocytosis ?
 - a. OH[•]
 - b. O₂⁻
 - c. HOCl
 - d. NO
 - e. H₂O₂.
8. Which of the following descriptions about eosinophils is **not** correct ?
 - a. Essential in the damage of helminths
 - b. Cytoplasmic granules contain lysosomal enzymes, histamine, and serotonin
 - c. In close association with anaphylaxis as a negative feedback control mechanism
 - d. Containing receptors for IgE, IgG, and complement components of C3b and C3bi
 - e. The most important chemotactic factor for eosinophils is the eosinophil chemotactic factor of anaphylaxis released by mast cells.

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9. Which of the following events is **not** associated with complement activation ?
- a. Altered cell membrane leading to cell lysis b. Chemotaxis of leukocytes and expression of adhesion molecule c. Mast cell activation d. Opsonization e. Induction of fever and pain.
10. Which of the following terms means inflammation of stomach ?
- a. Stomatitis b. Typhilitis c. Gastritis d. Colitis e. Glossitis.
11. Which of the following pathological terms will you use when the major component of an inflammatory lesion is macrophages mixed with a significant number of neutrophils ?
- a. Granulomatous inflammation b. Pyogranulomatous inflammation c. Suppurative inflammation d. Catarrhal inflammation e. Chronic active inflammation.
12. Which of the following statements about complement is **not** correct ?
- a. C3b and C3bi function as opsonins b. C3a and C5a, also called anaphylatoxin, can increase vascular permeability and induce smooth muscle contraction c. C3a can induce chemotaxis and adhesion molecule expression in leukocytes d. C5b-9 can cause cell lysis e. C5a is also an important chemotaxin for various leukocytes.
13. Which of the following descriptions about respiratory burst is **not** correct ?
- a. Occurs only when the phagocytic inflammatory cells are activated b. The formation of oxygen radicals occurs in the membrane of phagolysosome of activated cells c. It will generate various toxic oxygen radicals d. Oxygen free radicals play an important role on killing bacteria e. The formation of oxygen radicals also takes place in the cytoplasm of activated cells.
14. Which of the following chemicals is induced by endogenous pyrogens such as interleukin-1 (IL-1) in the hypothalamus and results in "Fever" ?
- a. Prostaglandin E2 (PGE2) b. Lipoxins c. Leukotrienes d. Lysozyme e. Tumor necrosis factor α (TNF- α).
15. Which of the following terms means a directional movement of a cell from the lower concentration toward the higher concentration of an attracting chemical ?
- a. Opsonization b. Pavement c. Margination d. Chemotaxis e. Immigration.
16. Why are reptiles and birds unable to form pus while suffering from bacterial infection ?
- a. The number of neutrophils is too low to form pus b. They do not have neutrophils or other inflammatory cells with similar function as neutrophils c. Because they are cold blood d. Because their heterophils do not contain myeloperoxidase e. Because the heterophils can not perform proper chemotaxis.

17. Which of the following descriptions about plasmin is **not** correct ?
- a. Can induce fibrinolysis to produce fibrin-split product b. Can induce the formation of fibrin from fibrinogen c. Can activate Hageman factor d. Can activate complement system via alternative pathway e. Derived from plasminogen by the action of kallikrein.
18. Which of the following inflammatory mediators is central to the interactions among the kinin, complement, clotting, and fibrinolytic systems ?
- a. Bradykinin b. Complement c. Plasminogen d. Hageman factor e. Fibrin-split products.
19. Which of the following descriptions about oxygen free radicals is **not** correct ?
- a. Can cause cell damage through oxidizing membrane lipids b. Can cause damage to the endothelial cells c. Can oxidize DNA d. O_2^- is generally considered as the final most stable and toxic oxygen free radical e. Can cause cell damage through inactivating many important enzymes:
20. Which of the following descriptions about granulation tissue is **not** correct ?
- a. An exposed connective tissue forming within a healing wound b. Grossly, often red, hemorrhagic, and having a granular appearance c. In granulation tissue, fibroblasts and connective tissue fibers grow perpendicularly to the wound surface and are arranged parallel to the proliferating capillaries d. Excessive granulation leads to a hypertrophic scar called "proud flesh" e. Proud flesh means a large cauliflower-like mass of overgrowing connective tissue that cannot be covered by epithelium, most commonly seen in the distal limbs of horses.
21. Which of the following descriptions about metaplasia is **not** correct ?
- a. It occurs when wounds do not heal properly and stem cells may continually attempt to cover or fill wound defects and with time they may covert to another cell or tissue type b. Constant smoke exposure may induce stratified squamous metaplasia in the pseudostratified epithelium of airways c. Continual exposure to gastric acid may induce squamous metaplasia in the epithelium of lower esophagus d. Osseous and chondroid metaplasia may occur in persistent wounds e. Metaplasia is generally permanent and when the initiating stimulus is removed, cells often cannot revert to the original phenotype.
22. Which of the following molecules is the final product of the H_2O_2 -myeloperoxidase-halide system ?
- a. O_2^- b. $OH\cdot$ c. H_2O_2 d. NO e. $HOCl$.
23. Which of the following stage classification of inflammation will you choose when there are neutrophils, macrophages, and lymphocytes but no fibroblasts and/or fibrosis in the lesion ?
- a. Peracute b. Acute c. Subacute d. Chronic e. Chronic active.

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24. Which of the following mechanisms cannot be used by macrophages to kill bacteria ?
a. Lysozyme b. Toxic oxygen radicals c. H_2O_2 -myeloperoxidase-halide system d. Competition for bacterial iron by lactoferrin. e. Nitric oxide (NO).
25. Which of the following infections will induce a diffuse (lepromatous) type granulomatous inflammation ?
a. *Mycobacterium bovis* b. *Mycobacterium tuberculosis* c. Deep fungal infection such as coccidioidomycosis d. *Nocardia* spp. e. *Mycobacterium avium-intracellulare paratuberculosis*.
26. Which of the following substances (a to e) make eosinophils more effectively against helminth parasites than other inflammatory cells ?
I. Ig E II. Major basic protein III. Leukotriene IV. Eosinophilic cationic protein V. Eosinophilic myeloperoxidase.
a. II, V b. I, II, III c. II, III, IV d. II, IV, V e. II, III, IV, V.
27. Which of the following combinations (a to e) about myofibroblasts is more accurate ?
I. Myofibroblasts are specialized fibroblasts with contractile activity II. Formed within wound in response to tissue plane stress and TGF- β secreted by platelets and macrophages III. Function to contract the wound due to the presence of a membrane attached to collagen to provide contractility VI. Different from fibroblasts due to containing stress fibers, actin and myosin fibers, and a fibronexus which do not exist in fibroblasts V. The fibronexus interconnects intracellular actin fibers with extracellular proteins such as fibronectin to provide an anchor point during myofibroblast contraction.
a. I, II, III b. II, III, V c. I, II, IV, V d. I, II, III, IV e. I, II, III, IV, V.
28. Which of the following descriptions (a to e) about foreign body type multinucleated giant cells (MGC) are correct ?
I. Their nuclei are distributed in the cell in a haphazard manner or aggregated in the center of the cytoplasm II. They can only be seen in foreign body-induced granulomatous inflammation III. Their nuclei are arranged in a horseshoe-like semicircle at the periphery of the cell IV. They can only be seen in intracellular bacterial infection-induced granulomatous inflammation V. They may co-exist with Langhans' MGC in any type of granulomatous inflammation.
a. I, V b. II, III c. III, IV d. I, III e. III, V.
29. Which of the following items (a to e) will determine the outcomes of an acute inflammation ?
I. The agent or substance causing injury II. The type of tissue III. The severity of tissue damage IV. The density of vasculature V. The cell regenerating ability
a. I, II, III, V b. I, II, IV c. II, IV, V d. I, III, V e. I, II, IV, V.

30. Which of the following morphological changes (a to e) belong to the characteristic lesions of the diffuse (lepromatous) type granulomatous inflammation ?
- I. Consisting of numerous macrophages with relatively few lymphocytes and plasma cells
II. Having only a few intracellular bacteria III. Widespread distribution with poorly defined borders and no distinct capsule IV. Often having caseous necrosis and calcification V. Having a heavy intracellular bacterial burden.
- a. I, II, IV b. I, III, V c. II, III, IV d. I, III, IV, V e. I, II, III, IV.
31. Which of the followings (a to e) are the underlying mechanisms of chronic Inflammation ?
- I. Persistence and resistance of the pathogen II. Isolation the pathogen from effective innate and adaptive immune responses and antimicrobial drugs III. Certain foreign materials indestructible and unresponsive to phagocytosis and/or enzyme breakdown IV. Autoimmunity and leukocyte defects in free radical formation and oxidative killing allowing persistence of microbes or internalized materials V. Unknown mechanisms.
- a. I, II, IV b. II, IV, V c. I, II, IV, V d. II, III, IV, V e. I, II, III, IV, V.
32. Which of the following chemicals will induce fibroblast to synthesize collagen ?
- I. PGE II. TGF- β III. IFN- γ IV. IL-1 V. TNF
- a. I, IV b. II, IV c. I, II, V d. II, IV, V e. II, III, IV, V.
33. Which of the following inflammatory mediators (a to e) will induce fever ?
- I. IL-1 II. Prostaglandin III. IL-6 IV. TNF- α V. Bradykine
- a. I, III, IV b. I, II, IV c. II, IV, V d. I, II, III, IV e. I, II, IV, V.
34. Which of the following combinations (a to e) can fully represent the "clinical signs" of inflammation ?
- I. Heat II. Red III. Swelling IV. Pain V. Loss of function
- a. I, II, III, V b. I, III, IV c. II, IV, V d. I, II, III, IV e. I, II, III, IV, V.
35. Which of the following mediators (a to e) are produced by inflammatory cells ?
- I. Thromboxane A₂ II. Lysosomal enzymes III. Tumor necrosis factor (TNF) IV. Kinin V. Thrombin VI. Reactive oxygen species.
- a. I, II, III, IV, V b. I, II, IV, V c. I, III, IV, V d. II, IV, V, VI e. I, II, III, VI.
36. Which of the following combinations (a to e) belongs to the process of acute inflammation ?
- I. Hemodynamic and vascular changes II. Cell proliferation III. Inflammatory cell infiltration IV. Neovascularization V. Generation of inflammatory mediators.
- a. I, III, V b. I, II, III c. II, III, V d. I, III, IV e. I, II, III, V.

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37. Which of the following combinations (a to e) of the descriptions regarding transmigration of circulating leukocytes into tissue is not correct ?
- I. It is an energy-required process II. The leukocytes will express certain adhesion molecules on its surface and react with the receptors on the endothelial cells but not vis versa III. The process requires the expression of adhesion molecules and corresponding receptors on both leukocytes and endothelial cells IV. No adhesion molecules and/or receptors are present in the intercellular junction of endothelium V. Specific adhesion molecules and corresponding receptors are also present in the intercellular junction of endothelium.
- a. I, IV b. III, V c. II, IV d. I, II, IV e. I, II, V.
38. Which of the following combinations (a to e) about pseudomembranous inflammation is correct ?
- I. Only occurs on the surface of mucosa II. Composed mainly of collagen III. Can occur in any organ IV. Can be a mixture of fibrin, inflammatory cells, and sloughed epithelial cells V. May be seen in chronic salmonella enteritis in pigs.
- a. I, IV b. IV, V c. I, II, IV d. I, IV, V e. II, III, IV, V.
39. Which of the following combinations (a to e) about the characteristics of epithelioid macrophages is more accurate ?
- I. They are larger than activated macrophages, polygonal to elongated shape with abundant cytoplasm II. They are generally arranged in sheets, resembling somewhat to the squamous epithelium III. They may have function of extracellular secretion IV. They contain large amounts of rough endoplasmic reticulum (RER), Golgi, vesicles, and vacuoles V. They have stronger phagocytic capacity than activated macrophages.
- a. I, II, III b. II, III, V c. I, II, III, IV d. I, III, IV, V e. I, II, III, IV, V.
40. Which of the following descriptions about catarrhal inflammation (a to e) is more accurate ?
- I. Occurs only on the mucosal surface II. Similar to pseudomembranous inflammation III. Characterized by mild suppuration and hypersecretion of mucus IV. Also called mucopurulent inflammation V. Can be used on any organ surface.
- a. I, IV b. III, IV, V c. II, IV, V d. I, III, IV e. I, III, V.
41. Which of the following sequence of events (a to e) for leukocyte participation in inflammation is correct ?
- I. Killing or degradation II. Phagocytosis and/or degranulation III. Margination and adhesion to the vasculature IV. Emigration through the vasculature V. chemotaxis to the injured focus.
- a. I→II→III→IV→V b. III→IV→V→II→I c. III→V→IV→II→I d. V→II→III→IV→I e. II→IV→V→III→I.

42. Which of the following mediators (a to e) may induce pain ?
I. Thromboxane A₂ II. Prostaglandins I₂, E₁, E₂, D₂ III. Bradykinin IV. Tumor necrosis factor (TNF) V. Leukotrienes.
a. I, II, III, IV, V b. I, II, IV, V c. III, IV, V d. III, V e. II, III.
43. Which of the following descriptions (a to e) about inflammation is more accurate ?
I. Occurs only in living organisms II. Is a specific defense system III. Closely related to blood vessels IV. Can be harmful to the individual if it is out of control V. Can not occur in a tissue without blood vessels.
a. I, II, III b. II, III, V c. I, III, IV, V d. I, II, III, IV e. I, II, III, IV, V.
44. Which of the following descriptions (a to e) about multinucleated giant cells (MGC) is more accurate ?
I. They are syncytial cells forming through membrane fusion and integration of the cytoplasm and nuclei of two or more activated macrophages via various fusinogenic molecules II. There are two types of MGC, Foreign body type and Langerhans' type, recognized III. Both types of MGC may present in the same lesion IV. The physiologic activity of both types of MGC is still poorly understood V. Formation of MGC requiring macrophages bathed within a chronic inflammatory milieu containing cytokines, pathogen factors, and other inflammatory mediators.
a. I, II, III b. II, III, V c. I, II, III, IV d. I, III, IV, V e. I, II, III, IV, V.
45. Which of the following combinations (a to e) regarding why the intracellular bacteria, deep-seated mycoses, and parasites can persist in the host, resist the host defense system, and induce a granulomatous inflammation is more accurate ?
I. They can avoid and/or resist phagocytosis by neutrophils and macrophages II. Once they are internalized by neutrophils and macrophages, they can prevent phago-lysosomal fusion or killing by lysosomes III. They can produce certain virulent factors to effectively impair host defense systems and kill inflammatory cells IV. Their presence can continually incite chronic inflammation and immune response in the host V. They usually do not produce biologic molecules causing severe tissue injury by themselves.
a. I, II, III b. II, III, V c. I, II, III, IV d. I, II, IV, V e. I, II, III, IV, V.
46. Which of the following combinations (a to e) about inflammatory mediators is not correct ?
I. All mediators are produced by inflammatory cells II. Some of the mediators can produce pain and fever III. Some of the mediators can have chemotactic effects on various inflammatory cells IV. All mediators can directly increase the permeability of blood vessels V. All mediators produced by inflammatory cells are newly synthesized after stimulation.
a. II, IV b. I, II, III c. I, IV, V d. II, III, IV e. I, II, IV, V.

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47. Which of the following mediators (a to e) are preformed and can be released from inflammatory cells by degranulation after stimulation ?
I. Prostaglandin II. Leukotriene III. Histamin/Serotonin IV. Interleukin V. Lysozyme.
a. I, III b. III, V c. I, II, III d. II, III, V e. III, IV, V.
48. Which of the following viral infections (a to e) may form intracytoplasmic inclusion bodies in the host cells ?
I. Paramyxovirus II. Parvovirus III. Classical rabies virus IV. Circovirus V. Poxvirus.
a. I, III b. III, VI, V c. I, II, III d. I, III, IV, V e. II, III, IV, V.
49. Which of the following descriptions (a to e) about fibrin is more accurate ?
I. Can be seen in acute, subacute, and chronic active inflammation II. Used mainly for tissue repair III. Produced mainly by fibroblasts IV. Produced through the coagulation system via a serial enzymatic cascades in the plasma V. Is the precursor of collagen.
a. I, II b. II, IV c. I, IV d. I, II, IV e. I, II, III, V.
50. Which of the following infections and/or substance (a to e) will induce a granulomatous inflammation ?
I. *Mycobacterium bovis* II. *Nocardia* spp. III. Suture material IV. *Aspergillus flavus* V. Keratin.
a. I, II, IV b. I, III, IV c. I, II, III, IV d. I, II, IV, V e. I, II, III, IV, V.

二、問答題：(共 50 分，每題 10 分)

1. 試述中樞神經系統病毒性感染，可能出現的組織病理變化有那些，並各舉一例病名。
2. 請列出脾臟腫大的原因，並簡略說明之。
3. 試述犬小病毒性 (Parvovirus) 感染犬可能出現的組織病理變化。
4. 試述犬感染鉤端螺旋體病 (Leptospirosis) 的致病機轉及組織病理變化。
5. 實施動物病理解剖應注意的事項有那些？

試題隨卷繳回