1. 以形態學(肉眼病理學)觀點說明各類型肺炎之不同，並繪圖舉例說明之。(20分)

2. 病理評估之形態學診斷(morphological diagnosis)該如何描述？並請您舉例說明，說明時請使用組織病變名詞 (histopathological nomenclatures)中文及英文併列方式，依序描述該病變(10分)。

3. 請說明獸醫病理學 (veterinary pathology)與實驗病理學(experimental pathology)兩者對相同病變之診斷目的有何不同？如：豬隻臨床上因食鹽中毒之腦部病變，與實驗不明物質所引起之腦部血管周圍有嗜酸性球圍管現象，依您推測兩者病因是否相同？該如何判讀？(10分)。

4. 詳述豬隻胃潰瘍之病變及病因(8分)

5. 詳述腎臟之各種畸形(5分)

6. 詳述慢性間質性腎炎之病變及對骨骼的影響(7分)

7. 試舉例說明第二及第三類型過敏反應形成之機制。 (8分)

8. 請說明在急性炎症反應過程當中，白血球如何由血管內移出至組織中？主要影響媒介物質有哪些?又嗜中性球及單核細胞在移出時先後有所不同，其主要原因為何?(12分)

9. 腸病毒感染，可能會造成中樞神經系統之 non-suppurative encephalitis or meningoencephalitis 甚至是 diffuse type encephalomyelitis，請嘗試描述上述病病理變化之差異？而對 neuron 之傷害又為何？(10分)

10. 請以大腸桿菌及梭菌為例，說明其造成動物下痢之機制與所導致之病理變化？(10分)

1. Please explain the following terms (15 分):
    (1) Obligate anaerobes, (2) Sepsis, (3) Plasmids, (4) Bacterin, (5) Type III secretion system

2. Describe in detail the mechanisms by which *Salmonella* invades host and causes disease. (12 分)

3. Translate the following paragraph into Chinese. (8 分)

    Enterococci, generally considered as normal bowel commensals, are also recognized as opportunistic pathogens and rank among the top 3 causes of nosocomial bloodstream, surgical site, and urinary tract infections. Among enterococci, the most clinically abundant species, *Enterococcus faecalis*, accounts for approximately 5%–8% of hospital-associated bacteremia and approximately 5%–20% of all cases of endocarditis. Endocarditis is an infection of the heart's valves or inner lining that leads to valvular destruction and death without effective antibiotic therapy. The acquisition of resistance to multiple antibiotics has made enterococcal endocarditis a life- threatening clinical challenge, and this highlights the need for alternatives to current antibiotic strategies

4. 請簡要敘述病毒感染細胞後，可能造成所感染細胞的影響及不同的病毒感染型態，並簡述所引起之細胞病變效應 (cytopathic effect)。(6分)

5. 請簡要敘述病毒感染後所造成感染動物persistent infection之種類及可能之原因。(6分)

6. 請解釋viral pathogenesis及viral virulence，並簡述影響viral virulence可能之因子及病毒之virulence如何表示？(8分)

7. 請簡要敘述病毒分離、電子顯微鏡檢查、RT-PCR、ELISA及中和反應等五種方法應用於病毒診斷上之原理與臨床診斷上之優缺點。(15分)

8. 試敘述動物體之先天性(innate)及後天性(acquired)之免疫防衛能力。(10 分)

9. 試比較說明在引發 B 細胞活化及 T 細胞活化(Activation)機制上之差異。(10 分)

10. 試簡要描述 interleukin 2 (IL-2), IL-10, IL-12 及 IFN-γ在免疫調控上之主要功能。(10 分)

1. 請簡述利用大腸桿菌表現系統所分別生產之 B 與 C 型肝炎病毒表面抗原蛋白，不能做為雙價肝炎疫苗使用之原因。(15 分)

2. 請簡述下列各種物質重要之特性及功能 ：(每小題 3 分，共計 30 分)
(1) Phospholipase　(2) 3'→5' exonuclease　(3) Peptidyl transferase
(4) Taq DNA polymerase　(5) Kinase　(6) σ (sigma) factor
(7) Chitin　(8) TATA box　(9) AUG　(10) Repressor

3. Describe and compare those methods used for introduction of foreign DNA into bacteria and mammalian cells. (10%)

4. Choose one correct answer (28%)
(1) Protein has a great potential for variation of structure because
　　(A) many amino acids may combine in a number of ways
　　(B) different amino acids occur in pairs
　　(C) fatty acids may vary
　　(D) nucleotides may vary

(2) A polypeptide is an example of a(n)
　　(A) carbohydrate (B) lipid (C) protein (D) nucleic acid

(3) Cellulose is formed from glucose molecules by a process known as
　　(A) hydrolysis (B) cellular respiration (C) synthesis (D) photosynthesis

(4) Which pair of compounds could be classified as inorganic?
　　(A) nucleic acids and minerals (B) water and salt
　　(C) proteins and carbohydrates (D) proteins and water

(5) Which group of organic compounds includes the enzymes?
　　(A) carbohydrates (B) starches (C) lipids (D) proteins

(6) The complementary sequence (in the standard 5' → 3' notation) for GATCAA is
　　(A) CTAGAA (B) TTGATC (C) GATCCA (D) AACTAG

(7) Telomerase is a
　　(A) RNA-dependent DNA polymerase (B) DNA-dependent DNA polymerase
　　(C) RNA-dependent RNA polymerase (D) RNA-dependent RNA polymerase

5. Translate the following amino acid sequence into one-letter code:
Asn-Gly-Ser-Cys-Glu-Arg-Ala-Thr. (5%)

6. Compare DNA polymerase I and RNA polymerase from *E. coli* in regard to each of the following features: (a) activated precursors, (b) direction of chain elongation, (c) conservation of the template, and (d) need for a primer. (12%)