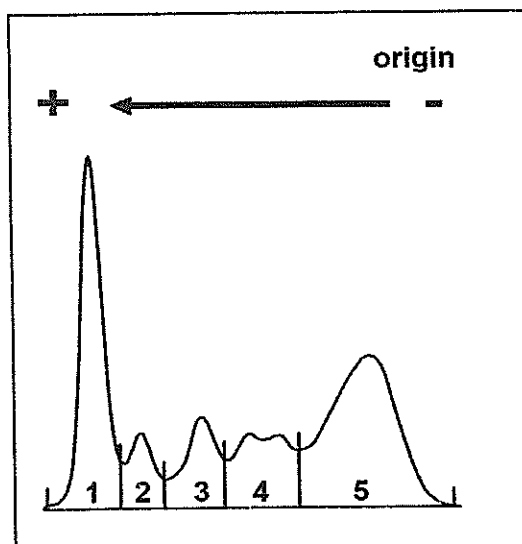


※ 注意：請於試卷內之「非選擇題作答區」作答，並應註明作答之題號。

1. 請說明糖化血色素 HbA_{1c} (1) 在人體產生的機制 (2) 在檢驗及診斷的應用 (3) 主要有那些測量的方法 (4) 測量的單位及如何判讀 (8 分)
2. 請說明體液滲透壓 Osmolality (1) 主要測量方法的原理及測量單位 (2) 檢驗血漿滲透壓的意義及應用 (3) 檢驗尿液滲透壓的意義及應用 (9 分)
3. 說明 Aspartate aminotransferase (1) 催化的生化反應, (2) 生理功能, (3) 組織器官分布, (4) 檢驗及診斷的應用 (8 分)

Short answer questions

4. Parathyroid hormone (PTH) is secreted in response to low blood serum calcium (Ca²⁺). Basically, sustained PTH secretion will result in elevated blood serum calcium. Please describe how PTH regulates or actions on the homeostasis of serum calcium? (5 分)
5. Pharmacogenetics is the study of genetics differences (SNPs, single nucleotide polymorphism, or mutations) corresponding to individual responses to drugs including both therapeutics and adverse effects. This can be applied in several fields such as metabolic diseases or cancer. Please an example of pharmacogenetics in the clinical application. (5 分)
6. Albumin is the main protein of blood plasma. According the result of serum protein electrophoresis in below, please: (5 分)
 - a. Indicate albumin is presented in which fraction (1-5)?
 - b. What is the physiological function of albumin?



7. In the mention of the establishment of diagnostic methods in a clinical laboratory, how to perform method validation? (5 分)
8. Therapeutic drug monitoring (TDM) is an important issue that specializes in the measurement of medication drug concentrations in blood. It aims to improve patient care by adjusting the dose of drugs. In below, there is a patient with TDM results, please interpret this result and what is your suggestion for this patient? (5 分)
9. 請簡述診斷下列臨床徵狀或疾病之相關檢驗時，所需採收的檢體以及運送/處理該檢體所需注意事項。(9 分)
 - (1) 庫欣症
 - (2) 急性甲醇中毒
 - (3) 新生兒蠶豆症

見背面

10. 試述人體調節酸鹼平衡的三大緩衝系統及其作用的方式。(6分)

11. 以三明治法為原則的免疫試驗法常會受 hook effect 影響。何謂 hook effect? 在設計免疫試驗法時可如何因應 hook effect 的影響?(5分)

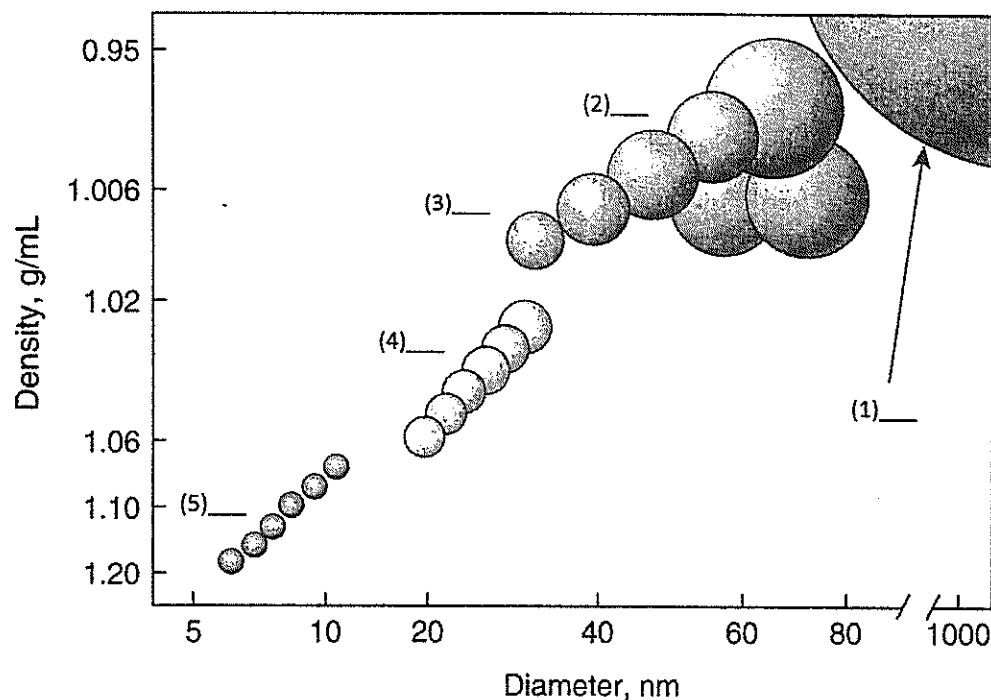
12. 請以下列選項回答下列各小題(5分)

GH	prolactin	IGF	T4	Insulin	TPO
ACTH	DHEA	Aldosterone	Cortisol	FSH	ADH

- (1) 在血液中會被特定蛋白質所攜帶
- (2) 會使血糖升高
- (3) 不是蛋白質/短胜肽
- (4) 不是荷爾蒙或其前趨物
- (5) 由腦垂腺前葉所分泌

13. 配合題：以下為五種脂蛋白 (lipoproteins)，請於答案紙上，依其體積及密度分別配對圖一 (1),(2),(3),(4),(5)的位置(每小題 2 分) 及與其相對應之描述配對(6),(7),(8),(9),(10) (每小題 3 分)。

- (A) Chylomicron (CM)
- (B) High-density lipoprotein (HDL)
- (C) Intermediate-density lipoprotein (IDL)
- (D) Low-density lipoprotein (LDL)
- (E) Very low-density lipoprotein (VLDL)



圖一

- (6) also known as pre-β lipoprotein
- (7) contains apolipoprotein A-II
- (8) provides cholesterol to peripheral tissues
- (9) carries dietary triglycerides to peripheral tissues
- (10) formed from the degradation of VLDL