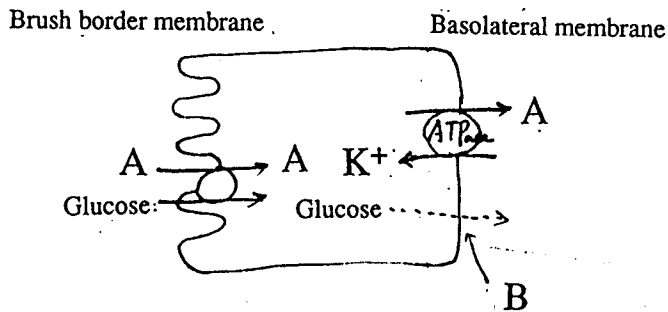


1. 失血 (Hemorrhage) 情況下, 身體如何反應以維持血壓? 對局部器官之血流有何影響? (10%)
2. 簡述血液中氧與二氧化碳之輸送 (O_2 and CO_2 transport). (10%)
3. 簡述 Surfactant 之生理作用. (5%)
4. 簡述控制人體平衡之器官系統. (5%)
5. 簡述味覺之神經徑路. (5%)
6. 簡述溫度覺之神經徑路. (5%)
7. 簡述視丘 (Thalamus) 之生理功能. (5%)
8. 試述 GFR 的定義, 並舉例說明如何測量. (9%)
9. 有關 Glucose 在腎臟的再吸收情形, 依下圖來解釋:

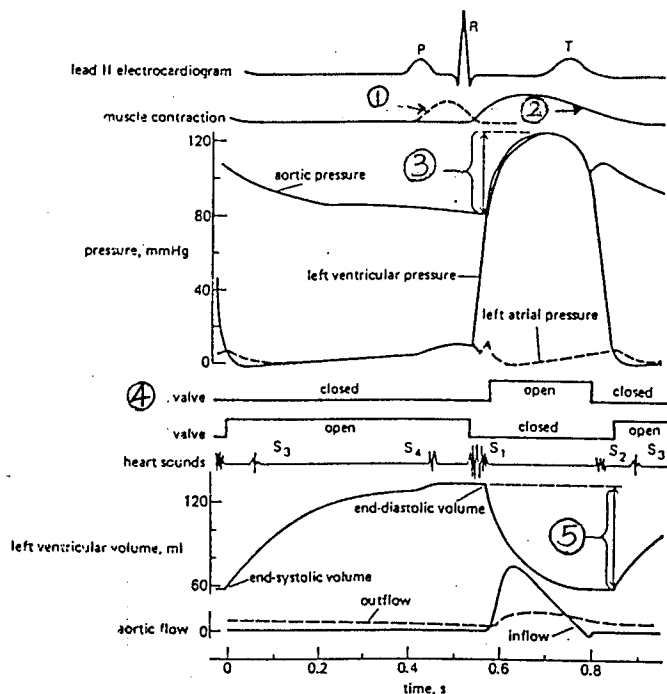


請問這是腎元中那一段細胞? _____ (2%)

請問 A 代表那一種離子? _____ (2%)

請問 B 處 Glucose 通過此膜是靠什麼機制? _____ (2%)

10. 下圖是於心臟週期在左心室所測得的心電圖, 心肌收縮, 壓力(血壓及心房, 心室壓), 瓣膜的開關, 心音, 及左心室容積的變化偵測結果, 請仔細看過圖形, 並寫下 ①, ②, ③, ④, ⑤ 所代表的意義。(每格 2 分)



- ① 及 ② 代表 _____ 及 _____ 收縮曲線。
 ③ 代表 _____ (什麼名詞, 可以英文作答)。
 ④ 代表 _____ valve 的開關變化。
 ⑤ 代表 _____ (什麼名詞, 可以英文作答)。

11. Please read these five questions carefully and choose three of them to answer. Each question is 5% of total grade and the maximal grade in this section is 15%.

- Identify the basic classes of organic molecules in cell membranes and describe the major contribution of each to membrane function.
- What factors can alter the opening and closing of protein channels in a membrane?
- List three examples about homeostatic control system in our body.
- Draw a simple cell to indicate i) where the concentrations of Na^+ and K^+ are high and low, and ii) the resting membrane potential as predicted by these ionic distributions.
- Describe in broad terms what makes a nerve cell different from a muscle cell even though they both contain the same genes.

12. What are the functions of the human fetal adrenal cortex? (5%)

13. Discuss renal 1α -hydroxylase and its regulation. Why is this enzyme of great importance in the production of healthy bone? (5%)

14. What is goiter? Why do people who eat large amounts of cabbage sometimes develop goiters? (5%)