

大同大學 104 學年度研究所碩士班入學考試試題

考試科目:生物化學

所別:生物工程研究所(甲組)

第 1/1 頁

註:本次考試 不可以參考自己的書籍及筆記; 不可以使用字典; 不可以使用計算器。

1. What is the biological advantage to an organism that stores its carbohydrate reserves as starch or glycogen rather than as an equivalent amount of free glucose?
2. An enzyme follows Michaelis-Menten kinetics. Indicate (with an "x") which of the kinetic parameters at the left would be altered by the following factors. Give only one answer for each.

K_m	V_{max}	Neither	Both
			(a) a competitive inhibitor
			(b) a mixed inhibitor
			(c) 6 M urea
			(d) doubling [S]

3. Give the actions of the Insulin, glucagon, and epinephrine on fuel metabolism in mammals.
4. Explain the following terms: enzyme specificity; k_{cat}/K_m ; reversible inhibitors.
5. Match the compounds on the left with the important roles they play listed on the right. (Answers are used only once.)
 - (a) prostaglandins ___ blood clotting
 - (b) sphingolipids ___ necessary for sight
 - (c) thromboxanes ___ mediates pain and inflammation
 - (d) vitamin A ___ important component of myelin membranes
6. Give the role of hemoglobin and myoglobin in oxygen transport.
7. Briefly describe the major function of the proteins at the replication fork.
8. Briefly describe the initiation and elongation steps of translation by bacterial RNA polymerase.
9. Describe the nonhormonal control of glycogenolysis. (hint: structure and phosphoprotein phosphatase 1)
10. Give the major function of gluconeogenesis, pentose phosphate pathway, urea cycle.