

2006/2007 RAIN SEMESTER EXAMINATION

COURSE CODE: BCH 308 COURSE TITLE: BIOENERGETICS

TIME ALLOWED: 1 HOUR DATE: 13TH MARCH, 2008

INSTRUCTION: ANSWER ONE QUESTION EACH FROM EACH SECTION

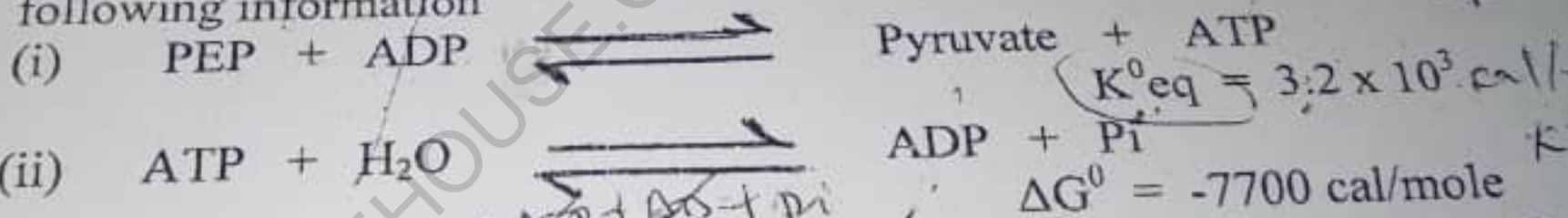
SECTION A

1. An amino acid binding protein (presumably involved in membrane transport) was isolated from E.Coli. Equilibrium dialysis measured at 28 and 40°C yielded K_s value of 8.5×10^{-5} and 2.5×10^{-3} M, respectively (K_s is the dissociation constant of the protein substrate complex).

Calculate (a) ΔG^0 for the binding reaction at 28 and 40°C

(b) ΔH for the binding reaction and (c) ΔS for the binding reaction at 28°C (d) ΔG at 28 and 40°C.

2. Calculate the ΔG^0 of hydrolyse of PEP to Pi and pyruvate given the following information



SECTION B

- 3(a) Write a short note on ATP-Synthase of the mitochondria.

- (b) What is the yield of ATP from the complete oxidation of 3-phosphoglycerate.

- 4(a) What are the differences between F_1 - F_0 -complex and complex III of the mitochondrial respiratory chain?

- (b) What is the relationship between Ubiquinone Cytochrome C Oxidoreductase and Cytochrome C_1 ?

- (c) What is the yield of ATP from the complete Oxidation of Decanoic acid (C_{10})?