CM 880 Ch 14 + 16 activity

1. Glycolysis - hexokinase, phosphofructokinase-1, pyruvate kinase
Gluconeogenesis - glucose 6-phosphatase, fructose 1,6-bisphosphatase-1, PEP carboxykinase, pyruvate carboxylase.

2. (a) isomerization
(b) $\Delta G > 0$

3. D

4. A) → b
B) → a
C) → f
D) → d
E) → c
F) → e

5. C

6. E

7. F

8. Fermentation is used to regenerate NAD^+ for use in glycolysis. In fermentation, oxygen is reduced by NADH, which generates ATP and NAD^+. In glycolysis, NAD^+ is oxidized to NADH while Glucose is reduced to Pyruvate.

9. Under aerobic conditions, pyruvate enters the citric acid cycle as Acetyl-CoA, which gets broken down to CO_2 and H_2O. Under strenuous exercise, pyruvate goes broken down into lactate which reenters the cycle as glucose.

10. Gluconeogenesis is the formation of glucose from non-carbohydrates, and is done when humans are not consuming glucose, such as fasting, starvation, low carb diets, and after vigorous exercise

11. It frees a glucose monomer from a chain and attaches a phosphate group, creating α-D-glucose-1-phosphate.

12. Carbohydrate chains from food or glycogen.

13. (1) Hexokinase
(2) phosphoglucomutase
(3) glycogen synthase

14. It is used in the glycolysis cycle and used to carry electrons in the electron transfer chain.