

**Study guide for chapter 6**  
**From page: 103**

**I-The WORKING CELL:**

- Define the following: energy, kinetic energy, potential energy, conservation of energy, calories, metabolism
- Can energy be destroyed? Which kind of energy is heat?
- How can food molecules provide energy to our body?
- What is the structure of ATP molecule, the role of ATP, and how it can derive cellular work?
- How a cell can recycle ATP molecules?
- What is an enzyme? activation energy?
- What is the structure of the enzyme?
- How an enzyme can work? and what is an enzyme inhibitor and its types?
- Plasma membrane consists of phospholipid bilayer with embedded proteins, what is the major functions of these proteins?
- *Passive transport*: meaning, why passive?
- What is Diffusion, Facilitated diffusion, and Concentration gradient?
- Osmosis (meaning), solute, solution, hypertonic, hypotonic, isotonic
- How animal and plant cells behave differently in different osmotic environment?
- Active transport (meaning), why active?
- How a cell can transport large molecule in and out of the cell? Endocytosis, phagocytosis and exocytosis

**II- CELLEULAR RESPIRATION:**

- What is the difference between aerobic and anaerobic? What is the aerobic capacity?
- Define the following: photosynthesis, autotrophs, heterotrophs, producers, consumers, cellular respiration.
- What is the chemical cycling between photosynthesis and cellular respiration?  
Energy flow and chemical cycling.
- What is the relationship between breathing and cellular respiration?
- What are the stages of cellular respiration? Explain  
**First stage: glycolysis**
- It means ..
- Location, Input, Output

- How ATP can be produced?
- What is the link between glycolysis and the next stage? Input, output

**Second stage: The citric acid cycle**

- Location, Input, Output
- What are the similarities between stage 1 & 2?

**Third stage: electron transport**

- Location, Input, output
- How electrons can form ATP and water?
- How electron transport drives ATP synthase machine?
- How many ATP molecules can be generated from a glucose molecule?
- What causes muscle burn? Is it buildup of lactic acid or other ions?
- How muscle cells produce ATP anaerobically (fermentation)?
- How microorganisms produce ATP?
- How yeast produce ATP?

### **III- PHOTOSYNTHESIS:**

- What is Photoautotroph?
- What is the structure of chloroplast and function?
- Plant leaves is the main site for photosynthesis process, explain?
- What are the functions of chlorophyll and the types of chlorophyll?
- Stages of photosynthesis)

**1. Light reaction:**

- Location
- Does it require light?
- Input, output , role of NADPH.
- What is carbon fixation?
- What color of light derive photosynthesis? Which color is absorbed and which color is reflected? Why are leaves greens?
- How photosystem harvest light energy?
- How light reaction generate ATP and NADPH?
- How light reaction generate ATP in the thylakoid?

**2. Cavin cycle:**

- Input, output
- Why G3P is important in this cycle?