

**ITESM-ESBIN  
BIOLOGY, FIRST GRADE  
STUDY GUIDE FOR THE  
SECOND PERIOD  
DECEMBER, 2007**

**RELATIONSHIP BETWEEN NUTRITION AND THE  
FUNCTIONING OF HUMAN BODY'S ORGANS AND  
SYSTEMS**

- Definition of calorie
- Calorie ingestion needs
- The digestive process
  - Digestive system's organs and functions
- Nutrition and human systems
  - Respiratory system
  - Nervous system
  - Circulatory system
  - Reproductive system
  - Muscular and skeletal systems
- The main three food groups and their calorie contents per gram
  - Proteins
  - Carbohydrates
  - Fats

**THE IMPORTANCE OF A CORRECT FEEDING IN  
HEALTH: A BALANCED, COMPLETE AND HYGIENIC  
DIET.**

- The functions of different nutrients inside the human body
  - Proteins
  - Fats and carbohydrates
  - Vitamins and minerals
- The four characteristics in a complete diet
- Right ways to prepare and consume food

**MEXICO'S FOOD AND CULTURAL DIVERSITY. BASIC  
AND NON CONVENTIONAL FOODS.**

- Alimentary mixing
- Mexico's alimentary diversity and examples of typical foods
- Non conventional foods and their advantages

**PREVENTING NUTRITION-RELATED DISEASES**

- Symptoms and ways to prevent the following diseases:
  - Diabetes
  - Obesity
  - Anemia
  - Anorexia
  - Bulimia
- Body Mass Index calculations (BMI = weight (in kilograms) divided by squared height (in meters))

- Obese: BMI higher than 30
- Overweight: BMI of 25 to 29.9
- Normal: BMI of 18 to 24.9
- Malnutrition: BMI smaller than 18

**COMPARING HETEROTROPHIC AND AUTOTROPHIC  
ORGANISMS**

- Are living beings heterotrophs or autotrophs?  
Explain and name examples from all 5 kingdoms.
  - Monera
  - Protista
  - Fungi
  - Plantae
  - Animalia

**THE VALUE OF PHOTOSYNTHESIS AS AN ENERGY-  
TRANSFORMING PHENOMENON AND ITS  
IMPORTANCE IN FOOD CHAINS**

- Chloroplasts and chlorophyll
- Plant and flower diagrams and functions
- Photosynthesis phases and molecules
  - The light reactions
  - The dark reactions

**ANALYZING THE NUTRITION-RELATED ADAPTATIONS  
IN LIVING BEINGS: PREDATOR-PREY RELATIONSHIP**

- Eating and defense strategies: Grouping, risk minimizing, calls and noises, lesion avoiding, stalking, poison, decoys, armor
- Predator-prey relationships and examples: strict, parasite-host, parasitoid-host, herbivore-plant
- What is co-evolution? Name some examples

**TECHNOLOGY FOR PRODUCING AND CONSUMING  
FOODS**

- Food preservation technologies: Freezing, drying, pasteurization, lyophilization, smoking, irradiation.
- The green revolution: advantages and disadvantages
- Solar kitchens, hydroponics, cultivation rotation and sustainable development

**TEACHER'S ADVICE:**

- Answer all questions from all powerpoint presentations.
- Study the questions from your quizzes.
- Review the procedures and results from the lab practices.

Good luck!