Chapter 21 Regulation of Metabolism Exam Study Questions

21.1 Overview of Whole Body Metabolism
The Breakdown large molecules to small molecules is called ______.  
   a. catabolism   b. anabolism

21.2 Energy Intake, Utilization, and Storage
1. The body's preferred storage sites of  
   a. glycogen: __________ and __________  
   b. triglycerides: __________  
   c. proteins: __________  
2. Brain prefers __________ as energy source. Resting skeletal muscle and Liver prefer _____ as energy source

21.3 Energy Balance
1. If energy intake is more than energy output, _____ occurs.  
   a. Energy balance  b. positive energy balance  c. negative energy balance  
2. The rate of energy expenditure of a person awake, resting, lying down, and fasted for 12 hours is called _____  
   a. metabolic rate (MR)  b. basal metabolic rate (BMR)  
3. List the factors that affect MR and BMR: ________________________________

21.4 Energy Metabolism during the Absorptive and Postabsorptive States
1. Energy metabolism during the absorptive State  
   a. The absorptive state occurs _______ hours after a meal. It is a(n) _______ (anabolic or catabolic) state. During the absorptive state, energy input _____ (>or <) output.  
2. Energy metabolism during the postabsorptive state  
   a. The postabsorptive state occurs ______ meal. It is a (n) ___________ (anabolic or catabolic) state. During the postabsorptive state, energy input _____ (>or <) output.

21.5 Regulation of Absorptive and Postabsorptive Metabolism
1. Hormonal regulation of the absorptive state  
   a. The key hormone that regulates the absorptive state is ______. The overall actions of this hormone on target tissues a(n) ______ (anabolic/catabolic) hormone. It promotes reactions associated with_________ (absorptive or postabsorptive) state. It suppresses the reactions associated with __________ (absorptive or postabsorptive) state.  
   b. Which of these factors increase insulin secretion (circle all correct answers)? (Table 21.3)  
      i. Increased plasma glucose  
      ii. Increased amino acids  
      iii. Increased activity of parasympathetic nerve
iv. Increased activity of sympathetic activity
v. Increased plasma epinephrine
vi. Increased plasma GIP

2. Hormonal regulation during the postabsorptive stage
   a. The key hormone that regulates the postabsorptive state is ________. The overall actions of this hormone on target tissues are opposite the actions of ________. It promotes ______________________________. Most of the factors that stimulate the secretion of this hormone are the same factors that inhibit the secretion of ____.

3. What is the normal blood glucose level? __________________

4. (T/F) Type I diabetes is due to the reduced function of insulin.

21.6 Thermoregulation
1. Define
   a. Thermoregulation.
   b. Hypothermia
   c. Hyperthermia

2. The thermoregulatory center is located in ________________________.

3. Matching

<table>
<thead>
<tr>
<th>Term</th>
<th>Definition</th>
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<tbody>
<tr>
<td>a. Radiation</td>
<td>___ thermal energy through contact</td>
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<tr>
<td>b. Conduction</td>
<td>___insensible water loss and sweating. This is the primary method of heat loss.</td>
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<tr>
<td>c. Evaporation</td>
<td>___ heat transfer by movement of fluid or air</td>
</tr>
<tr>
<td>d. Convection</td>
<td>___thermal energy through electromagnetic waves</td>
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21.7 Hormonal Regulation of Growth
1. The increase of the number of cell is called __________.
2. The increase of cell size is called __________.
3. List the actions of growth hormone.

4. What is the function of somatomedins?
5. Bone building is the function of __________ (osteoblasts or osteoclasts). __________ lay down new bone at __________ plates to increase the (length or width) of the bone.
6. Bone resorption is the function of __________ (osteoclasts or osteoblasts). __________ secrete acid and enzymes to release _____ and _______. 
7. (T/F) When epiphyseal plate is closed, one can still grow taller.
8. Abnormal growth hormone secretion:
   a. Decreased growth hormone secretion in children stunts growth contributes to ____________.
   b. Increased growth hormone secretion causes large stature in children is called ____________.
   c. Increased growth hormone secretion in adults contributes to disfiguration named ____________.

9. Which of these hormones regulates growth? _____
   a. GH
   b. Somatomedins (IGFS)
   c. Thyroid hormones
   d. Insulin
   e. Sex hormone
   f. Glucocorticoids
   g. All of these

10. Which hormone inhibit growth? ____________.

### 21.8 Thyroid Hormones

1. List the actions of thyroid hormones.

2. What do follicular cells synthesize? ________________

3. What do C cells or parafollicular cells secrete? ________________

4. Which element is required to synthesize thyroid hormone? ______

5. Which form of thyroid hormone is more abundant and less active:__

6. What is hyperthyroidism? And how does hyperthyroidism affect a person’s metabolism?

7. What is hypothyroidism? And how does it affect a person’s metabolism?

### 21.9 Glucocorticoids

1. Hormone of stress is ________. This hormone mobilizes __________ and suppresses __________.

2. List factors that affecting the secretion of glucocorticoid.

3. List the actions of glucocorticoids.