

<b>ANSWER KEY</b>	<b>Chapter 13 Test Answer Key</b>	<b>BLM 13.5.1A</b>
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### Answers to **Multiple Choice** Questions

1. d
2. a
3. c
4. b
5. b
6. d
7. a
8. b
9. a
10. c
11. a
12. b
13. c
14. d
15. c
16. a
17. d
18. d
19. a
20. b
21. a
22. b

### Answers to **Numerical Response** Questions

1. 1, 6, 3, 2, 1
2. 1, 2, 5, 2 or 1
3. 4, 2, 5, 2, 2

### Sample Answers to **Written Response** Questions

1. a) GHR-15 is a protein (made up of amino acids). These would be digested by enzymes in the stomach or the small intestine before they could be absorbed into the bloodstream. (1 mark)  
  
b) Students could identify hyperthyroidism from the text excerpt provided (1 mark). The symptoms of hyperthyroidism include anxiety, insomnia, heat intolerance, an irregular heartbeat, and weight loss (accept any 4 symptoms).

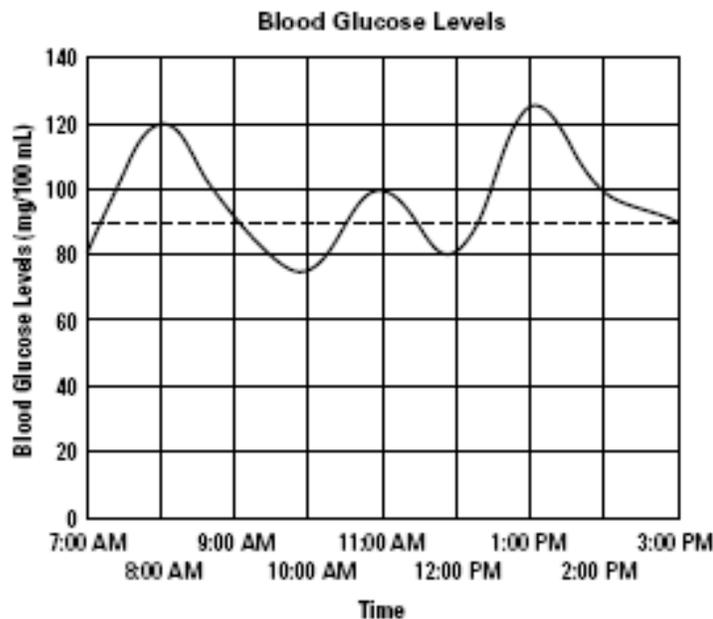
OR

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Students could identify acromegaly (1 mark). The excess hGH from the supplements can no longer cause an increase in height, and so the bones and soft tissues of the body widen. Over time, the face widens, the ribs thicken, and the feet and hands enlarge. Some of the effects of acromegaly include cardiovascular disease, sugar intolerance leading to diabetes, breathing problems, muscle weakness, and colon cancer (accept any 4 symptoms).

(5 marks total)

- c) Synthetic or natural hormones that enter the water system can act as endocrine disruptors (1 mark). Endocrine disruptors can affect reproduction, metabolism, or development of animals (including humans). (2 marks)
- d) Student should provide any two reasonable answers. Possible answers are that these products may not have been properly tested; there could be long-term side effects that won't show up for years; the general public should be warned of potentially harmful substances that are being sold via the Internet; people are wasting money. (2 marks)
- e) Human growth hormone stimulates the growth of muscles, connective tissue, and the growth plates at the end of the long bones, which causes the elongation of the long bones. hGH works with other growth factors to promote protein synthesis and the metabolic breakdown and release of fats stored in adipose (fat) tissue. (4 marks. Accept any 4 of the points above.)
- f) hGH is a water-soluble, amino-acid based hormone (1 mark) → binds to a receptor protein on the surface of the target cell (1 mark) → a cascade of chemical reactions starts inside the target cell (1 mark). (3 marks total)
2. a) The graph should look similar to the one shown below.



Assign marks for the graph as follows:

- 1 mark for the title
- 1 mark for correct labels on the  $x$ -axis
- 1 mark for correct labels on the  $y$ -axis
- 1 mark each for using suitable scales for each axis
- 1 mark for drawing a smooth curved line through the points rather than a jagged line
- 1 mark for showing the approximate blood glucose level of a healthy individual.

- b)** First time—Students should select a time somewhere between 7:00 A.M. and 8:00 A.M. (1 mark) This would be shortly after the person had breakfast. Blood glucose levels would rise, stimulating the pancreas to release insulin to lower blood glucose levels. (1 mark)

Second time—Students should select a time somewhere between 12:00 P.M. and 1:00 P.M. (1 mark) This would be shortly after the person had lunch. Blood glucose levels would rise, stimulating the pancreas to release insulin to lower blood glucose levels. (1 mark)

(4 marks total)

- c)** The muscle cells would use increased amounts of glucose for cellular respiration. (1 mark) As a result, blood glucose levels would start to drop. (1 mark) In response to lower blood glucose levels, the pancreas would secrete glucagon into the bloodstream. Glucagon would stimulate the liver to convert glycogen back into glucose, which would be released into the blood to raise blood glucose levels. (1 mark) (3 marks total)
- d)** This individual is healthy, at least in terms of blood glucose levels. (1 mark) If blood glucose levels of 90 mg/100 mL are considered “healthy,” then fluctuations above and below that level are to be expected. (1 mark) To maintain homeostasis, organisms actually must make constant changes. That is why homeostasis is often referred to as maintaining a “dynamic” equilibrium. (1 mark) (3 marks total)