1. Match each of the hormones in the left hand column with its source.

   ______ thyroxine                           a. ovary
   ______ estrogen                           b. thyroid gland
   ______ thyroid stimulating hormone (TSH)  c. pancreas
   ______ insulin                           d. pituitary gland

2. Each hormone is known to have a specific target tissue. For each of the following hormones, list its target tissue and describe its specific action.

   thyroxine
   ________________________________________________________________
   ________________________________________________________________

   estrogen
   ________________________________________________________________
   ________________________________________________________________

   thyroid stimulating hormone (TSH)
   ________________________________________________________________
   ________________________________________________________________

   insulin
   ________________________________________________________________
   ________________________________________________________________

   follicle stimulating hormone (FSH)
   ________________________________________________________________
   ________________________________________________________________

3. What is the role of the hypothalamus in the production of thyroxine and TSH?

   ________________________________________________________________
   ________________________________________________________________

4. How does thyrotropin releasing hormone (TRH) travel from the hypothalamus to the pituitary gland?

   ________________________________________________________________
   ________________________________________________________________
5. What are tropic hormones?

6. In the metabolism experiment, what was the effect of thyroxine on the overall metabolic rate of the animals?

7. Using the respirometer-manometer, you observed the amount of oxygen being used by animals in a closed chamber. What happened to the carbon dioxide the animals produced while in the chamber?

8. (a) If the experimental animals in the chamber were engaged in physical activity (such as running in a wheel), how would this change the results of the metabolism experiment?

   (b) What changes would you expect to see in fluid levels of the manometer?

9. Why didn’t the administration of thyroid stimulating hormone (TSH) have any effect on the metabolic rate of the thyroidectomized rat?

10. Why didn’t the administration of propylthiouracil have any effect on the metabolic rate of either the thyroidectomized rat or the hypophysectomized rat?

11. In the hormone replacement therapy experiment, what was the effect of removing the ovaries from the animals?
12. Specifically, what hormone did the ovariectomies effectively remove from the animals, and what purpose does this hormone serve?

______________________________________________________________________________

13. If a hormone such as testosterone were used in place of estrogen, would any effect be seen? Explain your answer.

______________________________________________________________________________

14. In the experiment, you administered seven injections of estrogen to the experimental rat over the course of 7 days. What do you think would happen if you administered one injection of estrogen per day for an additional week?

______________________________________________________________________________

15. What do you think would happen if you administered seven injections of estrogen to the experimental rat all in one day?

______________________________________________________________________________

16. In a wet lab, why would you need to wait several weeks after the animals underwent their ovariectomies before you could perform this experiment on them?

______________________________________________________________________________

17. In the insulin and diabetes experiment, what was the effect of administering alloxan to the experimental animal?

______________________________________________________________________________

18. (a) When insulin travels to the cells of the body, the concentration of what compound will elevate within the cells?

______________________________________________________________________________

   (b) What is the specific action of this compound, within the cells?

______________________________________________________________________________

19. Fill in the blanks:

   (a) The condition when insulin is not produced by the pancreas:

   _______________________________________________________________________

   (b) The condition when insulin is produced by the pancreas, but the body fails to respond to the insulin:

   _______________________________________________________________________

   _______________________________________________________________________
20. What was the effect of administering insulin to the diabetic rat?

21. What is a glucose standard curve, and why did you need to obtain one for this experiment?

22. Would altering the light wavelength of the spectrophotometer have any bearing on the results obtained? Explain your answer.

23. What would you do to help a friend who had inadvertently taken an overdose of insulin? Why?