1. Which statement is correct regarding the action of insulin?
   a. Decreases transport of glucose across the cell membrane
   b. Increases conversion of glucose into glycogen ANSWER
   c. Decreases synthesis of protein and inhibits protein breakdown
   d. Decreases lipolysis of fats into fatty acids

NOTE: It has come to my attention that you will need to know the exact action of insulin. A question similar to the one above is in the licensure review book. “Insulin lowers blood glucose” is not enough. Please review this content in the PowerPoint.

There is also a very detailed “mechanism of action” for each type insulin in the Drug Information Handbook for Dentistry by Wynn. Page 749 has a very comprehensive description of the action of regular insulin.

2. Which of the following are signs/symptoms of hypoglycemia?
   a. Diaphoresis; tremors ANSWER
   b. Tachycardia; acetone breath
   c. Abdominal pain; headache
   d. Dry, flushed skin; bradycardia

3. Which of the following would be the best treatment for an alert patient with hypoglycemia?
   a. Humalog (lispro) insulin
   b. Pepsi
   c. Glucose tablets (or gels) ANSWER
   d. 2 chocolate candy bars

4. What is the peak action time of regular insulin (Humulin R), short acting-insulin?
   a. 2-4 hours ANSWER
   b. 8-12 hours
   c. 16-18 hours
   d. 18-24 hours

5. What does HgbA₁c (glycosylated hemoglobin) measure?
   a. Blood glucose level over the past month
   b. Current blood glucose level
   c. Average blood sugar level for the past 3 months ANSWER
   d. Blood sugar levels for the past 2 weeks

6. Which signs/symptoms are typical of hyperglycemia?
   a. Tachycardia; diaphoresis
   b. Tremors; irritability
   c. Anxiety; tremors
   d. Extreme thirst; frequent urination ANSWER

7. Which activity/medication/condition would most likely not cause hyperglycemia in a diabetic patient?
   a. Exercise ANSWER
   b. Steroids
   c. Flu
   d. Pancreatitis
8. Which drug is contraindicated for a patient who is allergic to sulfonamides?
   a. Lantus® (glargine) insulin
   b. Humulin® R insulin
   c. Actos® (pioglitazone)
   d. Glucotrol® (glipizide)  ANSWER

9. The stress of tooth extraction is likely to cause a(n) ___________ in blood glucose in a diabetic patient.
   a. increase  ANSWER
   b. decrease

10. Which insulin is the longest acting and has no peak?
    ANSWER: Lantus® (glargine)

11. Which insulin is rapid acting?
    ANSWER: Humalog (lispro)

12. What is diabetic retinopathy? What is the end result if untreated?

   See the website below.
   The end result will likely be blindness if untreated.

13. What is diabetic nephropathy? What is the end result if untreated?

   ANSWER: Diabetic nephropathy is a clinical syndrome characterized by albuminuria, hypertension and renal insufficiency. It can progress to end-stage renal failure, dialysis and even death.

   See the website below.
   https://www.clinicalkey.com/topics/nephrology/diabetic-nephropathy.html

14. What is neuropathy? What is the end result if untreated?

   ANSWER: Nerve damage caused by high blood glucose. Usually affects feet and legs. If untreated the end result may be amputation.

   See website below.

15. What are the major differences between Type 1 and Type 2 diabetes mellitus?

   ANSWER: See PowerPoint and American Diabetes Association website.

16. What is the primary action of Januvia® (sitagliptin)? (Hint: See page 427 in your Woodrow text. The mechanism of action is also well-written in the Drug Handbook by Wynn.

   ANSWER: The mechanism of action is well-written in the Drug Handbook by Wynn, page 1242.)

17. Which of the following medications has the highest risk for the adverse reaction of hypoglycemia?
   a. Glucophage® (metformin)
   b. Glucotrol® (glipizide)  ANSWER
   c. Actos® (pioglitazone)
   d. Januvia® (sitagliptin)

18. What is gastroparesis? (The website below will be helpful.)
19. Are there dental implications for the following drugs? If so, what are they?
   a. Glucophage® (metformin)
   b. Glucotrol® (glipizide)
   c. Actos® (pioglitazone)
   d. Januvia® (sitagliptin)
   e. Rapid-acting insulin
   f. Short-acting insulin
   g. Intermediate-acting insulin
   h. Long-acting insulin

   **ANSWER:** According to the Drug Handbook by Wynn diabetic patients taking the medications above should have dental appointments scheduled in the a.m. to minimize the risk of stress-induced hypoglycemia.

   When caring for diabetic patients it is also important to consider the complications of the disease (ex: decreased saliva, gingivitis, periodontitis, poor or delayed wound healing, thrush, tooth decay, etc.)

   See website below.

20. What are the goals for fasting, pre-meal, postprandial and bedtime blood glucose levels according to the American Diabetes Association?

   **ANSWER:** See the American Diabetes Association website.

21. Why is the FDA conducting an ongoing study regarding the safety of Avandia® (rosiglitazone)?

   **ANSWER:**

22. What is the indication for Juvisync® (sitagliptin and simvastatin)?

   **ANSWER:** type 2 diabetes mellitus and high cholesterol

23. Farxiga (dapagliflozin), Tanzeum (algiubutide), Invokana (canagliflozin) and Nesina (alogliptin) are recently approved anti-diabetic agents. These would make good bonus questions.

   See the following website:
   http://www.centerwatch.com/