MULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question.

1) Which of the following best explains the process of osmotic diuresis associated with hyperglycemia?
   A) Glucose in the urine lowers osmotic pressure inside the kidney tubule, preventing water reabsorption.
   B) Glucose in the urine raises osmotic pressure inside the kidney tubule, drawing water into the tubule from the surrounding tissues.
   C) Elevated blood glucose levels result in increased ADH secretion.
   D) Decreased insulin levels result in decreased ADH secretion.

2) A 68-year-old female is supine in bed at a rehabilitation hospital. She is unresponsive and has gurgling respirations. Staff reports that the patient is at the facility recovering from right hip replacement surgery performed 14 days prior and has had a worsening infection at the surgery site over the past 7 days. Staff also reports that the patient had a slightly altered mental status yesterday and was found unconscious this morning. Physical exam reveals an accumulation of secretions in her airway, lung sounds clear and equal bilaterally, and skin and mucus membranes warm and dry. You also note erythema and a purulent discharge from a surgical incision on her right hip. HR = 119 and irregular, BP = 86/58, RR = 10 and shallow, blood glucose = 864 mg/dL. Which of the following is the best treatment for this patient?
   A) Suction the airway, initiate BVM ventilations with 100% oxygen and an oropharyngeal airway, intubate, cardiac monitor, IV of NS 1-2 L, 50% dextrose IV, rapid transport.
   B) Suction the airway, oxygen 15 lpm via nonrebreather mask, cardiac monitor, IV of NS 1-2 L, rapid transport.
   C) Suction the airway, initiate BVM ventilations with 100% oxygen and an oropharyngeal airway, intubate, cardiac monitor, IV of NS 1-2 L, rapid transport.
   D) Suction the airway, initiate BVM ventilations with 100% oxygen and an oropharyngeal airway, cardiac monitor, IV of NS KVO, rapid transport.

3) Which of the following would you expect to see immediately after the ingestion of a large meal?
   A) Increase of blood glucagon and blood glucose levels
   B) Increase of blood glucose and blood insulin levels
   C) Increase of blood glucagon levels and a decrease of blood glucose levels
   D) Decrease of blood glucose levels followed by an increase of blood insulin levels

4) Your patient is a 56-year-old male who is conscious and exhibits slurred speech, irritability, and cool, clammy skin. Blood glucose is 54 mg/dL. Proper treatment for this patient could include all of the following EXCEPT:
   A) administration of oral glucose if the patient is able to swallow.
   B) 5-10 mg of glucagon IM.
   C) IV of NS.
   D) consideration of D50 IV if the patient cannot follow simple commands.
5) It is noon, and you are presented with an unconscious 56-year-old male lying on his couch. His
daughter states that he is a type I diabetic and confirms that he ate breakfast and took his insulin
this morning. She also states that he has had a "chest cold" and a low-grade fever for the past 3
days. His heart rate is 118, BP is 112/84, and respirations are 12 and regular. Blood glucose is 24
mg/dL. What is the most likely cause of this patient's hypoglycemia?
A) The patient's recent illness  B) Too little insulin
C) The patient's excessive breakfast  D) A myocardial infarction

6) A 32-year-old female presents conscious and alert, sitting at her kitchen table complaining of
dizziness and near-syncope with exertion. She describes a 4-day history of fever (104°F orally)
nausea, vomiting, and diarrhea unrelied with over-the-counter medications. Physical
examination reveals dry skin and mucus membranes, lung sounds clear and equal bilaterally. HR =
131 and regular, BP = 84/60, RR = 20 and regular, SaO2 = 98%, blood glucose is 48 mg/dL. She
states a history of colitis for which she takes prednisone. Further questioning reveals that she has
been noncompliant with her prednisone therapy for a week because of financial hardship. The
treatment for this patient should include:
A) endotracheal intubation, cardiac monitor, 12-lead ECG, IV of NS with fluid resuscitation, 50%
dextrose IV.
B) oxygen via nasal cannula at 4 lpm, cardiac monitor, IV of NS KVO, 50% dextrose IV.
C) oxygen via nasal cannula at 4 lpm, cardiac monitor, 12-lead ECG, IV of NS with fluid
resuscitation, 50% dextrose IV.
D) oxygen via nonrebreather mask 15 lpm, cardiac monitor, IV of NS with fluid resuscitation,
50% dextrose IV.

7) Your patient is a 45-year-old type I diabetic complaining of a 5-day history of abdominal pain,
nausea/vomiting, and increased urination and thirst. His skin and mucus membranes are warm
and dry. HR =112 bpm and regular, BP = 94/60, RR = 12 and regular. Your treatment for this patient
would most likely include:
A) IV of NS KVO, nitroglycerin 0.4 mg SL, every 3-5 minutes.
B) IV of NS 1-2 L.
C) IV of NS KVO, 50% dextrose IVP.
D) IV of D5W KVO, 50% dextrose IVP.

8) Which of the following is NOT a modifiable risk factor for Type II diabetes?
A) Obesity  B) Poor diet  C) Heredity  D) Lack of exercise

9) Damage resulting in inactivity to _______ pancreatic cells would result in hyperglycemia.
A) beta  B) islet  C) alpha  D) delta

10) Prehospital management of an unconscious patient with hypoglycemia should NOT include:
A) administration of glucagon IM.
B) BVM ventilations with 100% O2 and an OPA.
C) administration of oral glucose.
D) administration of D50 IV.

11) A type II diabetic with a blood glucose of 24 mg/dL would most likely be unconscious due to:
A) gluconeogenesis.  B) insulin shock.
C) diabetic ketoacidosis.  D) cerebral hypoglycemia.
12) A type I diabetic female patient presents with deep, rapid respirations and a fruity odor on her breath. Administration of which of the following medications would best help correct the underlying physiologic disturbance?
   A) Insulin  B) 100% oxygen  C) Glucagon  D) D50

13) To which of the following can osmotic diuresis, increased excretion, and ketosis be attributed in a diabetic patient with hyperglycemia?
   A) Increased flow rate through the tubules of the kidney
   B) Increased insulin excretion in the tubules of the kidney
   C) Decreased potassium concentration in the urine
   D) Increased glucose reabsorption in the tubules of the kidney

14) A 34-year-old female, conscious, alert, and oriented, is complaining of a 3-week history of increased appetite, weight loss, weakness, insomnia, and poor heat tolerance. Her husband states that over the same period she also has frequently been agitated and prone to mood swings. Based on these signs and symptoms, which of the following best describes the additional findings you could expect?
   A) Heart block and hypotension
   B) Enlarged tongue and cool, puffy skin
   C) Hyperpigmentation of the skin and hirsutism
   D) Exophthalmos and goiter

15) A type I diabetic patient who ______ is NOT likely to experience hypoglycemia.
   A) administers too much insulin
   B) starts an exercise program, exerting more than usual
   C) snacks on a candy bar between meals
   D) skips a meal and administers insulin as normal

16) Which of the following statements about the epidemiology of Graves’ disease is true?
   A) Heredity does not predispose people to Graves’ disease.
   B) Obesity and poor dietary habits increase the risk of Graves’ disease.
   C) Graves’ disease typically manifests late in adulthood.
   D) Graves’ disease is about six times more common in women than in men.

17) A 22-year-old male, unconscious after a motor vehicle collision, is being cared for by a BLS crew. He is fully immobilized, and ventilations are being provided by bag-valve-mask with an oropharyngeal airway in place. Witnesses report that the patient’s vehicle was traveling on the highway at about 55 miles per hour, then swerved for no apparent reason and drove off the shoulder, rolling over once before coming to rest on its wheels. The patient was initially found in the driver’s seat with his seat belt on. Physical exam reveals some minor abrasions to the patient’s face and shoulders; the airway is clear; the chest, abdomen, extremities, and pelvis are atraumatic; and bilateral breath sounds are clear and equal. The BLS crew is achieving adequate ventilation with the BVM. HR = 112 and regular, BP = 132/90, RR = 12 and regular, blood glucose = 42 mg/dL. Which of the following is the most appropriate initial treatment of this patient?
   A) Intubate, initiate transport, cardiac monitor and IV access while en route to trauma center.
   B) Continue BLS ventilations, cardiac monitor, IV of NS KVO, 50% dextrose IV, reassess.
   C) Continue BLS ventilations, glucagon 0.5 mg IM, reassess.
   D) Intubate, cardiac monitor, IV of NS KVO, 50% dextrose IV, reassess.
18) Which of the following pathologies would necessitate the careful preparation of an IV site due to skin fragility and increased risk of infection?

A) Addison's disease  
B) Myxedema  
C) Graves' disease  
D) Cushing's syndrome

19) Acute exacerbation of Addison's disease can lead to ECG changes and cardiovascular collapse as a result of:

A) electrolyte imbalance and low blood volume secondary to potassium retention and sodium excretion.  
B) electrolyte imbalance secondary to increased mineralcorticoid secretion from the adrenal glands.  
C) electrolyte imbalance secondary to fluid retention, potassium excretion, and sodium retention.  
D) decreased mineralcorticoid secretion resulting in increased sodium and potassium excretion.

20) Your patient is a 39-year-old type I diabetic male with a history of alcoholism who presents on the floor after taking his insulin and skipping breakfast. You note cool, clammy skin and a weak, rapid pulse of 108. BP = 128/92, RR = 12 and regular, SaO2 = 96%, blood glucose is 21 mg/dL. Your partner assists the patient's respirations with 100% oxygen and a BVM; oxygen saturation rises to 100%. You cannot initiate IV access after two attempts. Further appropriate treatment would include:

A) cardiac monitor, transport, re-attempt IV while en route.  
B) 50% dextrose IM, thiamine 100 mg IM, cardiac monitor, transport.  
C) 12.5–25 g oral glucose, thiamine 100 mg IM, cardiac monitor, transport.  
D) glucagon 1.0 mg IM, thiamine 100 mg IM, cardiac monitor, transport.
1) B
   Diff: 2  Page Ref: 1284
   Objective: 8

2) C
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   Objective: 40

3) B
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   Objective: 15

4) B
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   Objective: 28

5) A
   Diff: 2  Page Ref: 1288
   Objective: 21

6) C
   Diff: 3  Page Ref: 1293
   Objective: 70

7) B
   Diff: 3  Page Ref: 1285
   Objective: 34

8) C
   Diff: 1  Page Ref: 1284
   Objective: 9

9) A
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   Objective: 3

10) C
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     Objective: 28

11) D
    Diff: 2  Page Ref: 1288
     Objective: 21

12) A
    Diff: 2  Page Ref: 1285
     Objective: 45

13) A
    Diff: 2  Page Ref: 1284
     Objective: 17

14) D
    Diff: 3  Page Ref: 1289
     Objective: 50

15) C
    Diff: 2  Page Ref: 1288
     Objective: 21

16) D
    Diff: 1  Page Ref: 1289
     Objective: 49

17) B
    Diff: 2  Page Ref: 1288
     Objective: 29

18) D
    Diff: 2  Page Ref: 1292
     Objective: 63

19) A
    Diff: 3  Page Ref: 1293
     Objective: 67

20) D
    Diff: 2  Page Ref: 1288
     Objective: 29
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