Feedback Loop Practice Problems Name \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

1.     The body senses that the level of substance C is high in the bloodstream.  The brain sends a signal to organ D that causes it to make less substance C until the level of substance C is within normal limits.
A.    This is a positive feedback loop
B.    This is a negative feedback loop
C.    This is not a feedback loop

2.     Feedback is seen in protein digestion, where the presence of partially digested protein in the stomach triggers the secretion of hydrochloric acid and pepsin, the enzyme that digests protein. Pepsin digests proteins, casing more HCl and pepsin to be released.
A.    This is a positive feedback loop
B.    This is a negative feedback loop
C.    This is not a feedback loop

3.     If blood glucose levels rise, the beta cells of the pancreas respond by secreting insulin. Insulin has several notable effects. These effects collectively cause a decrease in blood glucose levels back to normal levels.
A.    This is a positive feedback loop
B.    This is a negative feedback loop
C.    This is not a feedback loop

4.     The body senses that substance A is low in the bloodstream.  The brain sends a signal to organ B that causes it to make more hormone A until the level of A is within normal limits.
A.    This is a positive feedback loop
B.    This is a negative feedback loop
C.    This is not a feedback loop

5.     If blood glucose levels fall below normal levels, insulin secretion is inhibited and, at the same time, the alpha cells of the pancreas respond by secreting glucagon, a hormone that has several important effects. These effects collectively cause an increase in blood glucose levels back to normal levels.
A.    This is a positive feedback loop
B.    This is a negative feedback loop
C.    This is not a feedback loop

6.     Another example of feedback is seen in childbirth, where stretching of the uterus triggers the secretion of a hormone, oxytocin, which stimulates uterine contractions and speeds up labor.
A.    This is a positive feedback loop
B.    This is a negative feedback loop
C.    This is not a feedback loop

7.     The kidneys sense that the oxygen levels in the blood are low.  The kidney sends a hormone signal to the bone marrow to make more red blood cells.  The number of red blood cells increases, so more oxygen is carried in the blood.
A.    This is a positive feedback loop
B.    This is a negative feedback loop
C.    This is not a feedback loop

8.     An example of feedback is body temperature regulation. If blood temperature rises too high, this is sensed by specialized neurons in the hypothalamus of the brain. They signal other nerve centers, which in turn send signals to the blood vessels of the skin. As these blood vessels dilate, more blood flows close to the body surface and excess heat radiates from the body. If this is not enough to cool the body back to its set point, the brain activates sweating. Evaporation of sweat from the skin has a strong cooling effect, as we feel when we are sweaty and stand in front of a fan.
A.    This is a positive feedback loop
B.    This is a negative feedback loop
C.    This is not a feedback loop

9.     The body senses that there is too much substance X in the blood.  The brain sends a message to organ Y to metabolize (breakdown) substance X.  The brain keeps sending this signal until the levels of substance X is within normal limits.
A.    This is a positive feedback loop
B.    This is a negative feedback loop
C.    This is not a feedback loop

10.     If the blood temperature falls too low, this is also sensed by the hypothalamus and signals are sent to the cutaneous arteries (those supplying the skin) to constrict them. Warm blood is then retained deeper in the body and less heat is lost from the surface. If this is inadequate, then the brain activates shivering. Each muscle tremor in shivering releases heat energy and helps warm the body back toward its 37 degrees Celsius set point.
A.    This is a positive feedback loop
B.    This is a negative feedback loop
C.    This is not a feedback loop