Name_____ Date: _____ Pd. ____

Regents Review Assignment #8 Living Environment 2

Part A Questions

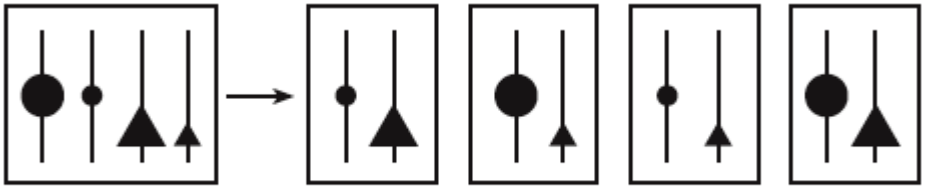
_____1. A student notices that fruit flies with the curlywing trait develop straight wings if kept at a temperature of 16°C, but develop curly wings if kept at 25°C. The best explanation for this observation is that

(1) wing shape is controlled by behavior
(2) wing shape is influenced by light intensity
(3) gene expression can be modified by interactions with the environment
(4) gene mutations for wing shape can occur at high temperatures

_____2. Which row in the chart below contains an event that is paired with an appropriate response in the human body?

Row	Event	Response
(1)	a virus enters the bloodstream	increased production of antibodies
(2)	fertilization of an egg	increased levels of testosterone
(3)	dehydration due to increased sweating	increased urine output
(4)	a drop in the rate of digestion	increased respiration rate

The diagram below represents the genetic contents of cells before and after a specific reproductive process.



Before After

_____3. This process is considered a mechanism of evolution because it

(1) decreases the chance for new combinations of inheritable traits in a species
(2) decreases the probability that genes can be passed on to other body cells
(3) increases the chance for variations in offspring
(4) increases the number of offspring an organism can produce

_____4. The females of certain species of turtles will sneak into a nest of alligator eggs to lay their own eggs and then leave, never to return. When the baby turtles hatch, they automatically hide from the mother alligator guarding the nest and go to the nearest body of water when it is safe to do so. Which statement best explains the behavior of these baby turtles?

(1) More of the turtles' ancestors who acted in this way survived to reproduce, passing this behavioral trait to their offspring.
(2) The baby turtles are genetically identical, so they behave the same way.
(3) Turtles are not capable of evolving, so they repeat the same behaviors generation after generation.
(4) The baby turtles' ancestors who learned to behave this way taught the behaviors to their offspring

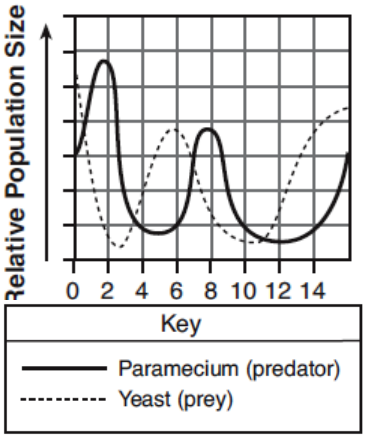
_____5. Plants such as the Venus flytrap produce chemical compounds that break down insects into substances that are usable by the plant. The chemical compounds that break down the insects are most likely

(1) fats (2) minerals
(3) biological catalysts (4) complex carbohydrates

Name_____ Date Due_____

Regents Review Assignment #8-A08 Living Environment: Comet 2010-2011

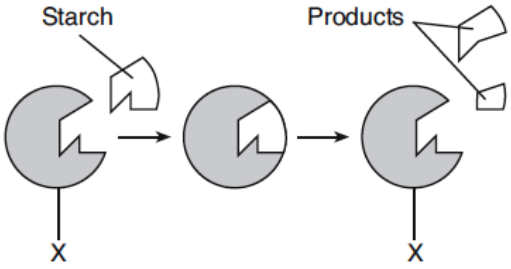
Part B-1 Questions



_____6. The graph represents a predator-prey relationship. What is the most probable reason for the increasing predator population from day 5 to day 7?

(1) increasing food supply from day 5 to day 6
(2) predator population equal in size to the prey population from day 5 to day 6
(3) decreasing prey population from day 1 to day 2
(4) extinction of the yeast on day 3

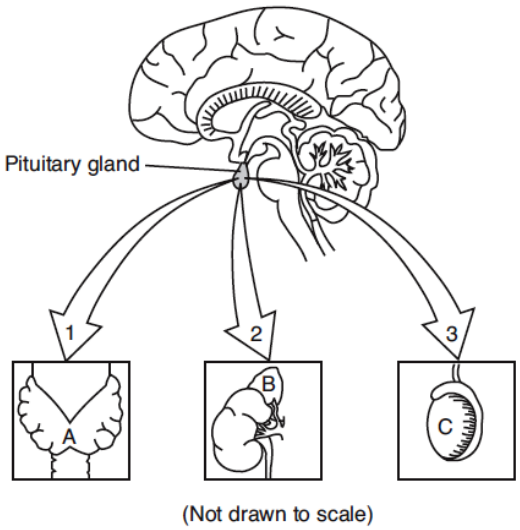
Base your answers to questions 7 and 8 on the diagram, which represents stages in the digestion of a starch, and on your knowledge of biology.



_____7. The products would most likely contain
(1) simple sugars (3) amino acids
(2) fats (4) minerals

_____8. The structure labeled *X* most likely represents
(1) an antibody (3) an enzyme
(2) a receptor molecule (4) a hormone

Base your answers to questions 9 through 10 on the diagram below and on your knowledge of biology. Each arrow in the diagram represents a different hormone released by the pituitary gland that stimulates the gland indicated in the diagram. All structures are present in the same organism.



_____9. The pituitary gland may release hormone 2 when blood pressure drops. Hormone 2 causes gland *B* to release a different hormone that raises blood pressure which, in turn, stops the secretion of hormone 2. The interaction of these hormones is an example of
(1) DNA base substitution
(2) manipulation of genetic instructions
(3) a feedback mechanism
(4) an antigen-antibody reaction

_____10. What would most likely occur if the interaction is blocked between the pituitary and gland *C*, the site of meiosis in males?
(1) The level of progesterone would start to increase.
(2) The pituitary would produce another hormone to replace hormone 3.
(3) Gland *A* would begin to interact with hormone 3 to maintain homeostasis.
(4) The level of testosterone may start to decrease.

Name_____ Date Due_____

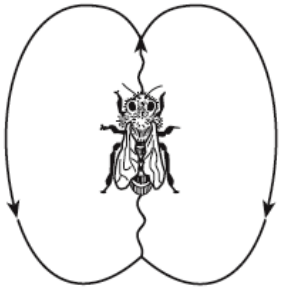
Regents Review Assignment #8-A08 Living Environment: Comet 2010-2011

Part B-2 Questions

Base your answers to questions 11 through 13 on the information below and on your knowledge of biology.

Honeybees have a very cooperative way of living. Scout bees find food, return to the hive, and do the "waggle dance" to communicate the location of the food source to other bees in the hive. The waggle, represented by the wavy line in the diagram below, indicates the direction of the food source, while the speed of the dance indicates the distance to the food. Different species of honeybees use the same basic dance pattern in slightly different ways as shown in the table below.

Number of Waggle Runs in 15 Seconds		Distance to Food (feet)
Giant Honeybee	Indian Honeybee	
10.6	10.5	50
9.6	8.3	200
6.7	4.4	1000
4.8	2.8	2000



11. State the relationship between the distance to the food source and the number of waggle runs in 15 seconds. [1]

_____

_____

12. Explain how waggle-dance behavior increases the reproductive success of the bees. [1]

_____

_____

_____13. The number of waggle runs in 15 seconds for each of these species is most likely due to

(1) behavioral adaptation as a result of natural selection
(2) replacement of one species by another as a result of succession
(3) alterations in gene structure as a result of diet
(4) learned behaviors inherited as a result of asexual reproduction

14. Two cultures, each containing a different species of bacteria, were exposed to the same antibiotic. Explain how, after exposure to this antibiotic, the population of one species of bacteria could increase while the population of the other species of bacteria decreased or was eliminated.

_____

_____

_____

_____

Name_____ Date Due_____

Regents Review Assignment #8-A08 Living Environment: Comet 2010-2011

Part C Questions

Base your answers to questions 15 through 17 on the information below and on your knowledge of biology.

Throughout the world, in nearly every ecosystem, there are animal and plant species present that were introduced into the ecosystem by humans or transported to the ecosystem as a result of human activities. Some examples are listed in the chart below.

15. State *one* reason why an introduced species might be very successful in a new environment.

_____

_____

16. Identify *one* action the government could take to prevent the introduction of additional new species. [1]

_____

_____

17. Identify *one* introduced organism and write its name in the space below. Describe *one* way in which this organism has altered an ecosystem in the new location. [1]

Organism:_____

_____

_____

Base your answers to questions 18 through 20 on the information below and on your knowledge of biology.

"Vaccines play an important role in the ability of the body to resist certain diseases."

18. Describe the contents of a vaccine. [1]

_____

_____

19. Identify the system in the body that is most directly affected by a vaccination. [1]

_____

20. Explain how a vaccination results in the long-term ability of the body to resist disease. [1]

_____

_____

_____

Name_____ Date Due_____

Regents Review Assignment #8-A08 Living Environment: Comet 2010-2011

Part D Questions

Base your answers to questions 21 through 23 on the Universal Genetic Code Chart below and on your knowledge of biology. Some DNA, RNA, and amino acid information from the analysis of a gene present in five different species is shown in the chart on the next page.

21. Using the Universal Genetic Code Chart, fill in the missing amino acids in the amino acid sequence for species *A* in the chart *below*. [1]

22. Using the information given, fill in the missing mRNA bases in the mRNA strand for species *B* in the chart *below*. [1]

23. Using the information given, fill in the missing DNA bases in the DNA strand for species *C* in the chart *below*. [1]

Universal Genetic Code Chart

Messenger RNA Codons and Amino Acids for Which They Code

First base	Second base: U	Second base: C	Second base: A	Second base: G	Third base
U	UUU, UUC: PHE UUA, UUG: LEU	UCU, UCC, UCA, UCG: SER	UAU, UAC: TYR UAA, UAG: STOP	UGU, UGC: CYS UGA: STOP UGG: TRP	U C A G
C	CUU, CUC, CUA, CUG: LEU	CCU, CCC, CCA, CCG: PRO	CAU, CAC: HIS CAA, CAG: GLN	CGU, CGC, CGA, CGG: ARG	U C A G
A	AUU, AUC, AUA: ILE AUG: MET or START	ACU, ACC, ACA, ACG: THR	AAU, AAC: ASN AAA, AAG: LYS	AGU, AGC: SER AGA, AGG: ARG	U C A G
G	GUU, GUC, GUA, GUG: VAL	GCU, GCC, GCA, GCG: ALA	GAU, GAC: ASP GAA, GAG: GLU	GGU, GGC, GGA, GGG: GLY	U C A G

Species A	DNA strand:	TAC	CGA	CCT	TCA
	mRNA strand:	AUG	GCU	GGA	AGU
	Amino acid sequence:	____	____	____	____
Species B	DNA strand:	TAC	TTT	GCA	GGA
	mRNA strand:	____	____	____	____
	Amino acid sequence:	MET	LYS	ARG	PRO
Species C	DNA strand:	____	____	____	____
	mRNA strand:	AUG	UUU	UGU	CCC
	Amino acid sequence:	MET	PHE	CYS	PRO
Species D	DNA strand:	TAC	GTA	GTT	GCA
	mRNA strand:	AUG	CAU	CAA	CGU
Species E	DNA strand:	TAC	TTC	GCG	GGT
	mRNA strand:	AUG	AAG	CGC	CCA
	Amino acid sequence	MET	LYS	ARG	PRO