VCE BIOLOGY 2009

YEAR 12 TRIAL EXAM UNIT 3

Time allowed: 90 minutes
Total marks: 75

25 Multiple Choice Questions
7 Short Answer Questions

An Answer Sheet is provided for Section A.
Answer all questions in Section B in the space provided.

Learning Materials *by Lisachem*
PO Box 2018, Hampton East, Victoria, 3188
Ph: (03) 9598 4564 Fax: (03) 8677 1725
Email: orders@learningmaterials.com.au or orders@lisachem.com.au
Website: www.learningmaterials.com.au

Student Name....…….....

VCE Biology 2009 Year 12 Trial Exam Unit 3

Student Answer Sheet

Instructions for completing test. Use only a 2B pencil. If you make a mistake erase and enter the correct answer. Marks will not be deducted for incorrect answers.

Write your answers to the Short Answer Section in the space provided directly below the question. There are 25 Multiple Choice questions to be answered by circling the correct letter in the table below.

Question 1	A	B	C	D	*Question 2*	A	B	C	D
Question 3	A	B	C	D	*Question 4*	A	B	C	D
Question 5	A	B	C	D	*Question 6*	A	B	C	D
Question 7	A	B	C	D	*Question 8*	A	B	C	D
Question 9	A	B	C	D	*Question 10*	A	B	C	D
Question 11	A	B	C	D	*Question 12*	A	B	C	D
Question 13	A	B	C	D	*Question 14*	A	B	C	D
Question 15	A	B	C	D	*Question 16*	A	B	C	D
Question 17	A	B	C	D	*Question 18*	A	B	C	D
Question 19	A	B	C	D	*Question 20*	A	B	C	D
Question 21	A	B	C	D	*Question 22*	A	B	C	D
Question 23	A	B	C	D	*Question 24*	A	B	C	D
Question 25	A	B	C	D					

VCE Biology 2009 Year 12 Trial Exam Unit 3

Multiple Choice Questions – Section A

Question 1
Which of the following would be regarded as a monomer? All
A. enzyme molecules.
B. carbohydrate molecules.
C. glucose molecules.
D. sugar molecules.

Question 2
Another term that has a similar meaning to 'anabolic reaction' would be
A. respiration.
B. endergonic reaction.
C. energy releasing reaction.
D. exergonic reaction.

Question 3
Lysosomes are organelles that are responsible for the
A. removal of waste products that accumulate during photosynthesis.
B. process of endocytosis to occur when foreign micro-organisms enter the cell.
C. digestion of material that is found in food vacuoles by enzymes.
D. synthesis and repair of cell structures such as the cell membrane when they no longer perform their usual function.

Use the following information to answer questions 4 and 5.
Figure 1 below is a graph representing the relationship between increasing substrate concentration and the increasing rate of reaction for a biochemical activity in humans.

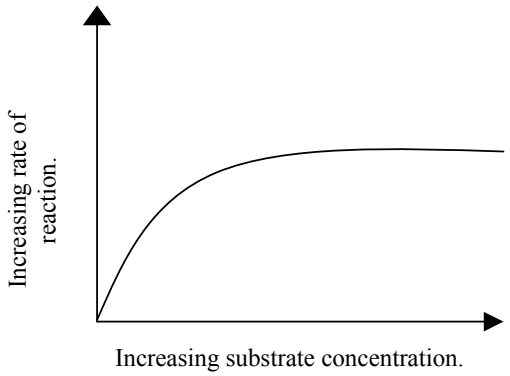

Figure 1

Question 4
From your own knowledge and the information provided in **Figure 1**, one can conclude that the rate of reaction increases initially and then remains constant because

A. there have been changes in the active site of the enzyme.
B. all the products of the biochemical activity have been used.
C. the pH at which the enzyme operates changed, making it unable to form a peptide bond.
D. the concentration of the enzyme in this biochemical reaction remains constant during this biochemical activity.

Question 5
The optimum temperature at which this enzyme is most likely to operate is

A. normal room temperature.
B. normal human core body temperature.
C. dependent on the type of biochemical activity.
D. unable to be determined from the information provided.

Question 6
The atoms that are absent in phospholipid molecules but present in enzyme molecules are

A. carbon.
B. oxygen.
C. hydrogen.
D. nitrogen.

Question 7
Figure 2 below shows the results of an experiment in which four identical celery sticks were weighed and one celery stick was placed in each of the four salt solutions.

Solutions of salt.	Weight at start of experiment (grams).	Weight 24 hours after start of experiment (grams).
A	100.0	105.5
B	100.0	94.5
C	100.0	90.0
D	100.0	110.0

Figure 2

From the information provided in **Figure 2** and your own knowledge, one could conclude that the most concentrated salt solution is salt solution

A. D
B. C
C. B
D. A

Question 8
Which one of the following statements explains how immunisation against infectious diseases helps to limit their spread in the human population? Immunisation

A. enables complement protein and interferon to be released into the bloodstream.
B. decreases the ability of pathogens to increase their numbers in the immunised host, which then reduces the chance of other individuals becoming infected.
C. decreases the chance of other individuals in the population becoming infected, because the immunised host stops antibodies being released into their surroundings.
D. results in the immunised host developing barriers on the surface of their skin, which reduces the chance of the pathogen being transmitted to other individuals.

Figure 3 below is a flow chart illustrating how core body temperature is regulated in homeotherms when there is an increase in core body temperature.

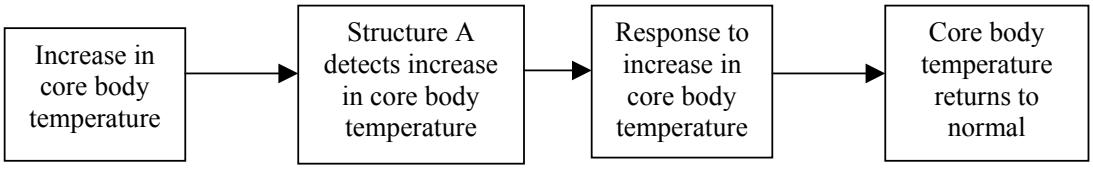

Figure 3

Question 9
From the information above in **Figure 3** and your own knowledge, one could conclude that the response to an increase in core body temperature would be an increase in

A. the metabolic rate and an increase in sweating.
B. shivering and vasoconstriction.
C. the metabolic rate and an increase in shivering.
D. sweating and vasodilation.

Question 10
The activation energy for a biochemical reaction can best be described as the energy that is

A. needed to form the enzyme which will speed up the biochemical reaction.
B. needed to break the chemical bonds that exist in the reactant molecules.
C. released during the biochemical reaction.
D. required and helps to form the new chemical bonds in the product molecules.

Question 11
Which one of the following is the correct sequence of events that brings about a specific immune response?

A. B-cells activated, antigen detection, plasma cells formed, agglutination and antibodies produced.
B. Antigen detection, antibodies produced, agglutination, B-cells activated and plasma cells formed.
C. Antigen detection, B-cells activated, plasma cells formed, antibodies produced and agglutination.
D. Antigen detection, agglutination, B-cells activated, plasma cells formed and antibodies produced.

Question 12
Which one of the following statements enables us to distinguish between how the nervous and endocrine systems function?

A. The nervous system tends to bring about their responses slowly to stimuli, while the endocrine system response time is much faster.
B. The endocrine system's response lasts a relatively short time, while the nervous system's response is longer lasting.
C. In both the nervous and endocrine systems, the responses to stimuli and the length of time the responses last are similar.
D. The response time to stimuli is quicker, and the length of time a response lasts is less, in the nervous system than the endocrine system.

Question 13
Which one of the following combinations should be included in a properly designed experiment?

A. Single variable and controls.
B. Multiple variables and large sample.
C. Multiple variables and controls.
D. Single variable and small sample.

Question 14
A major role of the smooth endoplasmic reticulum is the synthesis of

A. polysaccharides such as glycogen in plants.
B. proteins.
C. phospholipids.
D. enzymes.

Use the following information to answer Questions 15 and 16.
Figure 4 below is a table showing the results obtained by four students who were investigating the concentration of oxygen and carbon dioxide in test tubes that contained the same freshwater plants under different light conditions.

Student	O_2 levels during daylight	O_2 levels during night time	CO_2 levels during daylight	CO_2 levels during night time
W	**HIGH**	**LOW**	**LOW**	**HIGH**
X	**LOW**	**HIGH**	**LOW**	**HIGH**
Y	**LOW**	**HIGH**	**HIGH**	**LOW**
Z	**HIGH**	**LOW**	**HIGH**	**LOW**

Figure 4

Question 15
From the information shown in **Figure 4** and your own knowledge, which student obtained the correct results when doing the investigation on the freshwater plants? Student

A. W
B. X
C. Y
D. Z

Question 16
Which one of the following statements would be the correct explanation for the processes that are involved in the investigation on freshwater plants in **Figure 4**? During daylight hours oxygen is

A. produced in the stroma of chloroplasts and respiration provides for the freshwater plant's energy needs.
B. made from water molecules and some of this oxygen may be used by the plant during respiration.
C. produced by chlorophyll molecules as a result of the Calvin cycle and respiration is not required.
D. made in the grana of chloroplasts from carbon dioxide molecules and respiration is needed for the plants to function at their optimal rate.

Question 17
Which one of the following molecules is required for anaerobic respiration to proceed normally?

A. Pyruvate.
B. Carbon dioxide.
C. FAD.
D. Acetyl CoA.

Use the following information to answer questions 18 and 19.
Figure 5 below is a diagrammatic representation of a fish that normally lives in seawater, showing the body fluids of the fish and seawater.

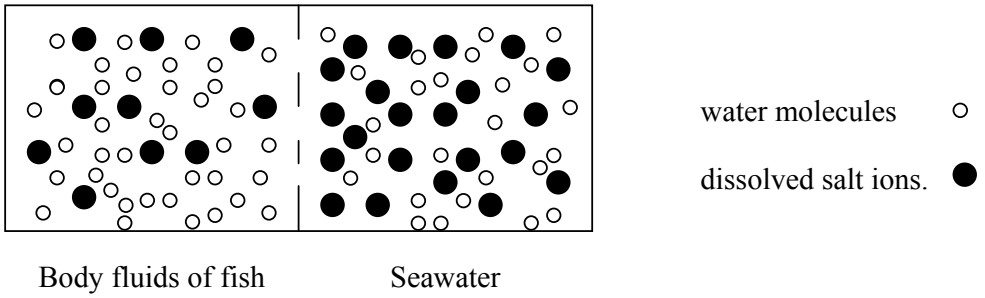

Figure 5

Question 18
From your own knowledge and the information provided in **Figure 5,** one could conclude that tissues of the fish could
A. gain both water and salt ions.
B. lose both water and salt ions.
C. lose water and gain salt ions.
D. gain water and lose salt ions.

Question 19
Fresh water fish are unlikely to survive when placed in seawater because
A. there is not enough oxygen present in seawater that would allow freshwater fish to survive.
B. seawater is hypotonic relative to the body fluids of freshwater fish, which means the freshwater fish will lose water.
C. freshwater fish do not have any salt ions in their body fluids and this will result in a build up of osmotic pressure.
D. water will move out of the freshwater fish due to the differences in salt ion concentration between the seawater and the body fluids of the freshwater fish.

Question 20
Active transport refers to the movement of substances
A. passively along a concentration gradient from low to high levels of concentration.
B. actively along a concentration gradient from low to high levels of concentration.
C. passively against a concentration gradient from low to high levels of concentration.
D. actively against a concentration gradient from low to high levels of concentration.

Question 21
Which one of the following statements best describes the structure and function of the cell membrane? Cell membranes are
A. made up mainly of phospholipid receptors which enable the immune system to detect foreign antigens.
B. a phospholipid bilayer in which are embedded protein channels, and this structure enables the membrane to control what enters and leaves the cell.
C. always surrounded by a carbohydrate layer so that the cell has a firm structure and doesn't dry out.
D. composed of a protein bilayer throughout which there is a phospholipid channel for water soluble molecules to pass through.

Question 22
When an individual is given an injection of a particular vaccine against a specific disease, the vaccine may contain
A. attenuated cells.
B. plasma cells.
C. only antibodies.
D. B-lymphocytes.

Question 23
Which one of the following organelles found in both plant and animal cells is not a membrane bound organelle?
A. Vacuole.
B. Ribosome.
C. Endoplasmic reticulum.
D. Golgi body.

Question 24
Which one of the following is the correct sequence of structures that a protein molecule, which will be released from a cell, moves along and through when it is made in a cell?
A. Ribosome, endoplasmic reticulum, golgi body, vesicle and cell membrane.
B. Vesicle, endoplasmic reticulum, golgi body, ribosome and cell membrane.
C. Endoplasmic reticulum, golgi body, ribosome, vesicle and cell membrane.
D. Golgi body, endoplasmic reticulum, ribosome, vesicle and cell membrane.

Question 25
In order to treat people who have been bitten by venomous snakes, antivenoms have been developed by scientists injecting low doses of snake venom into horses. After some time small volumes of blood are collected from the horses and the antivenom made. Which one of the following is the best explanation as to why antivenoms are given to snake bite victims? The antivenom contains the
A. B and T cells which are needed for the production of antibodies against the snake venom.
B. antibodies which will specifically bind with the antigens from the snake venom.
C. antigens from the snake venom which will bring about the necessary specific immune response.
D. antigens as well as antibodies so that the snake venom antigens can be completely neutralised.

End of Section A

VCE Biology 2009 Year 12 Trial Exam Unit 3

Short Answer Questions – Section B

Question 1
The nervous system in humans has nerve cells known as neurons, of which there are three major types. Information travels along a neuron as a nerve impulse after the neuron has been stimulated in some way. **Figure 6** below is a diagrammatic representation of a neuron in its resting state.

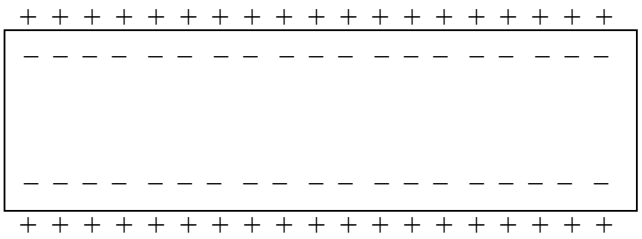

Figure 6

a. Name the biological term that refers to a change in the electrical potential in the cell membrane of a neuron during the passage of a nerve impulse.

_____

(1 mark)

b. What name is given to the process that results in changes to the distribution of charges on each side of a membrane in a neuron as a nerve impulse passes through it?

_____

(1 mark)

c. Explain the changes that occur in the cell membrane of a neuron during the passage of a nerve impulse.

_____

_____

_____

_____

_____

_____

_____

(2 marks)

After reading a textbook on nerve impulses, a student suggested that the strength of a stimulus did not influence whether a nerve impulse in a neuron is generated or not.

d. Do you agree or disagree with the student who suggested that the strength of a stimulus did not matter in generating a nerve impulse in a neuron? Explain.

_____

_____

_____

_____

_____

_____

(2 marks)

e. Name the term that is used when a neuron cannot respond immediately to another stimulus after a nerve impulse has passed.

_____

(1 mark)

f. How are stimuli of different strengths distinguished from one another by the nervous system?

_____

_____

_____

_____

(1 mark)

Figure 7 below shows the junction between two neurons **A** and **B** in the nervous system.

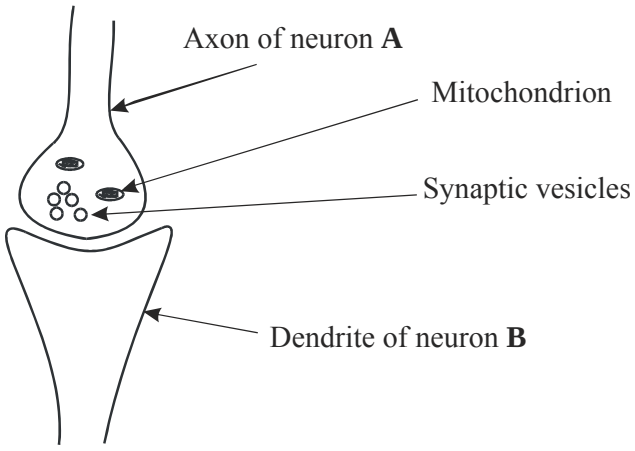

Figure 7

g. Explain how a nerve impulse can travel from neuron A to neuron B in the nervous system.

_____

_____

_____

_____

_____

_____

_____

(2 marks)

Total = 10 marks

Question 2

Enzymes are organic catalysts which speed up the rate at which biochemical reactions can occur. A particular enzyme called maltase is involved in the breakdown of the sugar maltose to two glucose molecules. Maltase functions at its optimum when the pH is 6.8.

a. Name the organelle in a cell that would be responsible for the synthesis of maltase.

_____

(1 mark)

b. Even though both maltose and sucrose are disaccharides, explain why maltase breaks down maltose but not sucrose.

_____

_____

_____

_____

_____

_____

_____

(2 marks)

c. What is likely to happen to the breakdown of maltose if the pH levels at which maltase has to function is reduced to 1.8? Explain.

_____

_____

_____

_____

_____

_____

(2 marks)

Another enzyme called amylase, which is involved in the break down of starch, is found in human saliva.

d. Briefly explain why a very small volume of saliva in a beaker may break down all the starch in a much larger volume of starch solution that is added to the same beaker.

_____

_____

_____

_____

_____

(1 mark)

The enzyme cyclooxygenase speeds up the synthesis of prostaglandins which may result in tissues becoming painful and inflamed. To relieve this inflammation and pain, ibuprofen can be taken since ibuprofen inhibits the enzyme cyclooxygenase.

e. Explain how ibuprofen can inhibit the enzyme cyclooxygenase and therefore provide relief from pain and inflammation.

_____

_____

_____

_____

_____

_____

(2 marks)

Total = 8 marks

Question 3

Figure 8 below is a flow chart which illustrates the process of negative feedback in either the nervous or the endocrine system.

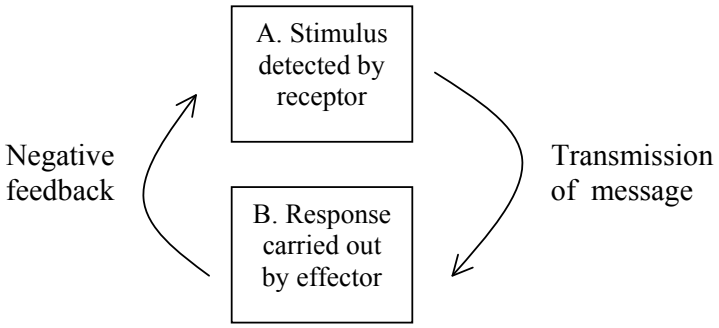

Figure 8

a. Briefly explain the process of negative feedback.

_____

_____

_____

(1 mark)

b. Explain how the action of hormones in the endocrine system and nerves in the nervous system are similar in maintaining homeostasis.

_____

_____

_____

_____

_____

_____

(2 marks)

Figure 9 below is a diagrammatic representation of how a signal molecule may interact with the cell membrane.

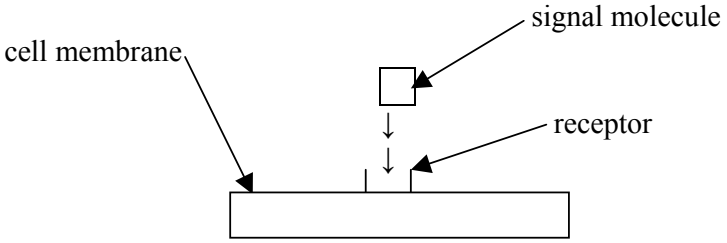

Figure 9

c. Why do signal molecules interact only with specific cells and not with any other types of cells?

_____

_____

_____

_____

(1 mark)

d. Explain two different ways that a signal molecule's message can be received by cells.

_____

_____

_____

_____

_____

_____

(2 marks)

e. What biological term is used to describe a series of sequential events that results when signal molecules interact with cells?

_____

(1 mark)

Total = 7 marks

Question 4
A group of year 12 students decided to do an experiment to see the effect oxygen had on the growth of yeast cells. Yeast cells grown in solution X had a constant supply of oxygen, while yeast cells in solution Y were grown in an environment with no oxygen present. All other conditions in solutions X and Y were the same.

a. Name the process that provides the energy for yeast cells to grow in solution Y.

_____

(1 mark)

b. What is the name of the specific organic compound or molecule that must be present so that energy can be obtained from the process in ***Question 4a*** above?

_____

(1 mark)

c. In which solution would the electron transport chain pathway be used by yeast cells to facilitate more energy release? Explain.

_____

_____

_____

_____

(1 mark)

d. Explain how the electron transport chain functions in yeast cells when this biochemical pathway is used.

_____

_____

_____

_____

_____

(2 marks)

e. Name the ultrastructure found in yeast cells where the electron transport performs its function.

_____

(1 mark)

f. Name the gas that is produced in solution Y as the yeast cells grow.

_____

(1 mark)

Total = 7 marks

Question 5

Dracunculiasis or guinea worm disease is a parasitic infection caused by a particular species of roundworm. Humans and copepods are the host organisms. **Figure 10** below is a diagrammatic representation that shows the life cycle of this parasitic worm. Individuals who are treated and recover completely from the disease are never immune from the disease in the future.

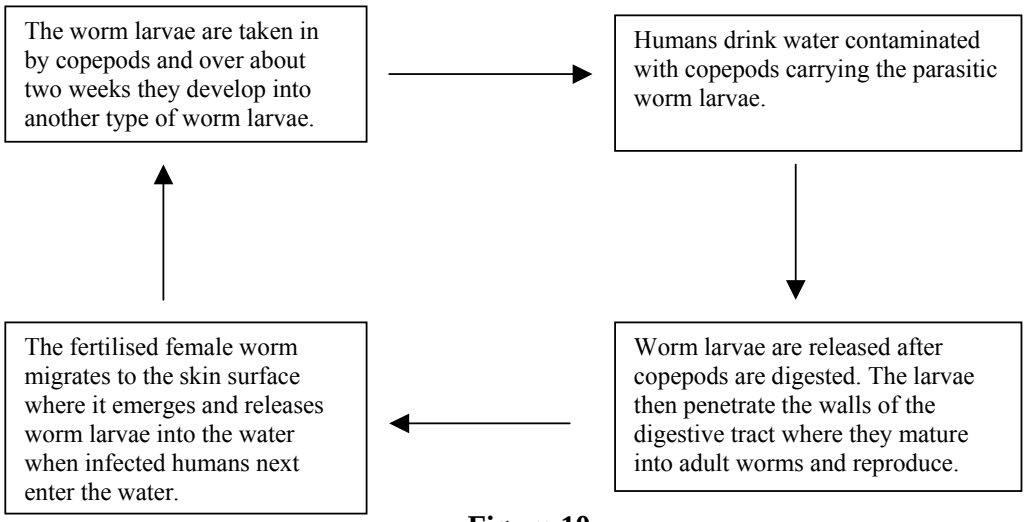

Figure 10

a. What terms are used to describe the type of hosts that humans and copepods are in **Figure 10** above?

_____

_____

(1 mark)

b. Briefly explain the meaning of the term *parasitic disease*.

_____

_____

_____

(1 mark)

Guinea worm disease is not fatal, but the wound where the worm emerges can develop a secondary bacterial infection.

c. Briefly explain which group of chemicals could be used to treat this secondary infection.

_____

_____

_____

(1 mark)

d. What is the advantage to this parasitic worm of having the copepod host in its life cycle?

_____

_____

_____

_____

(1 mark)

e. Briefly explain why individuals who recover completely from the disease are not immune from catching the disease over and over in the future.

_____

_____

_____

_____

(1 mark)

f. Name the term used to describe an organism that transports a disease causing microorganism between hosts but is not affected by the disease.

_____

(1 mark)

Total = 6 marks

Question 6

Plants produce a wide range of different hormones which are responsible for bringing about specific responses and regulating the growth in different structures of the plant.

a. Name the term that is used when plants flower in response to the amount of time they are exposed to light and periods of uninterrupted darkness.

_____

(1 mark)

b. Explain the difference between a tropism and geotropism.

_____

_____

_____

_____

_____

_____

(2 marks)

Cytokinins and auxins are both plant hormones involved in promoting plant growth.

c. Explain the main way in which cytokinins and auxins promote growth in plants.

_____

_____

_____

_____

_____

_____

(2 marks)

d. Briefly explain the advantage to a plant of having a phototrophic response.

_____

_____

_____

(1 mark)

Total = 6 marks

Question 7

Transplanting organs such as lung, heart, liver and kidney have become routine operations over recent years. Only the shortage of donors limits the number of transplants that can be performed.

a. What is the name of the specific type of cell that can identify an organ that has been transplanted?

_____

(1 mark)

b. Briefly explain how the rejection of transplanted organs is minimised in humans.

_____

_____

_____

_____

(1 mark)

c. Outline two disadvantages that can occur while a patient is taking treatment to minimise rejection of their organ transplant.

_____

_____

_____

_____

_____

_____

(2 marks)

d. Name the type of diseases that are characterised by antibodies being made against particular tissues in an individual's own body.

_____

(1 mark)

e. Name the non specific immune response that results in large numbers of phagocytes entering an injured or infected area of the human body.

_____

(1 mark)

Total = 6 marks

End of Section B

End of Trial Exam

Suggested Answers

VCE Biology 2009 Year 12 Trial Exam Unit 3

Multiple Choice Answers – Section A

1C	2B	3C	4D	5B	6D	7B
8B	9D	10B	11C	12D	13A	14C
15A	16B	17A	18C	19D	20D	21B
22A	23B	24A	25B			

Short Answer (Answers) – Section B

Question 1

a. Action potential **(1 mark)**.

b. Depolarisation **(1 mark)**.

c. During the passage of a nerve impulse the inside of the cell membrane in a neuron momentarily becomes positive, as sodium ions diffuse into the neuron from the surface of the membrane **(1 mark)**. This is immediately followed by potassium ions diffusing out of the neuron onto the surface of the membrane so once again it becomes positive. Finally sodium ions are moved back to the membrane surface and potassium ions are moved back into the neuron from the surface by active transport **(1 mark)**.

d. Disagree with the student **(1 mark)**. For a nerve impulse to be generated the stimulus must be strong enough so that the threshold potential is reached. Once this is reached a nerve impulse is generated. If the stimulus is not strong enough, the threshold potential is not reached and a nerve impulse will not be generated. Therefore a nerve impulse will only be generated if the stimulus results in the threshold potential being reached **(1 mark)**.

e. Refractory period **(1 mark)**.

f. Stimuli of different strengths are distinguished from one another by the quantity of nerve impulses that are generated in a neuron or by the number of neurons that generate a nerve impulse. If there are a lot of impulses in a neuron in a given time, or many neurons generate nerve impulses, then the stronger the stimuli are **(1 mark)**.

g. As neuron A transmits the nerve impulse along its axon, it will eventually come to the end of the axon where there is a gap called the synapse. The impulse is carried across this gap by chemicals called neurotransmitters that are released from synaptic vesicles **(1 mark)**. The neurotransmitters diffuse across the synapse and bind to receptors on the dendrite of neuron B. As long as the stimulus from the neurotransmitters is strong enough, so that the threshold potential is reached in neuron B, a nerve impulse will be generated and carried along neuron B **(1 mark)**.

Question 2

a. Ribosome **(1 mark)**.

b. Maltase breaks down maltose but not sucrose because enzymes are highly specific in their actions and each enzyme only acts on a particular substrate. Therefore maltase can only act on the substrate maltose **(1 mark)**. The three dimensional shape of each particular enzyme and its active site means that only a specific substrate can fit into the active site. In this case the active site for maltase will only accept the substrate maltose which has the correct shape to fit while sucrose does not **(1 mark)**.

c. The breakdown of maltose will be greatly reduced or stopped if pH levels are1.8. A change in pH from 6.8, which is the optimum level for maltase to function, down to 1.8 is nowhere near the optimal pH level for maltase **(1 mark)**. A pH level of 1.8 will change the shape of the enzyme maltase and its active site. This would result in the maltase not being able to combine with its substrate maltose effectively and so the break down of maltose would be greatly reduced **(1 mark)**.

d. A small volume of saliva containing amylase may break down all the starch in a much larger volume of starch solution, since enzymes involved in chemical reactions are not used up or changed, but continually reused. Therefore a small amount of amylase will breakdown a large amount of starch because the amylase is used over and over again until there is no longer any starch left **(1 mark)**.

e. The ibuprofen inhibits the enzyme cyclooxygenase because the shape of the ibuprofen molecule allows it to combine with the active site of the enzyme cyclooxygenase **(1 mark)**. As a result the ibuprofen interferes with the normal substrate enzyme reaction and inhibits the production of prostaglandins. With less or no prostaglandins being produced, the result is that there is both inflammation and pain relief **(1 mark)**.

Question 3

a. After a particular stimulus is detected there will be an appropriate response. When the response to the stimulus results in a reduction in the intensity of the original stimulus, it is referred to as negative feedback **(1 mark)**.

b. Both hormones and nerves are specific in their actions. Hormonal action results in certain target cells becoming active, while nerves terminate in specific parts of the body **(1 mark)**. The action of both hormones and nerves involves the use of chemicals. The action of nerves requires the use of chemicals known as neurotransmitters at the synapse, and hormones are chemicals which are carried in the bloodstream **(1 mark)**.

c. Signal molecules only interact with their specific cell type since each cell type has their own particular receptor present on or in the cell. Therefore the signal molecule can only interact and bind with cells that have the appropriate receptors for them **(1 mark)**.

d. If a signal molecule is not lipid soluble but water soluble, then the message is received by receptors on the outside of the cell membrane, before the message is transferred inside the cell **(1 mark)**. However if the signal molecule is lipid soluble then the message is received by receptors found inside the cell. This occurs because the lipid soluble signal molecule can easily pass through the phospholipids that make up part of the cell membrane **(1 mark)**.

e. Signal transduction **(1 mark)**.

Question 4

a. Anaerobic respiration or fermentation **(1 mark)**.

b. Glucose **(1 mark)**. Sugar not specific enough.

c. Solution X. The electron transport chain would only be used in solution X since this biochemical pathway can only function if oxygen is present. This means that all the stored energy would be released instead of just a small amount of stored energy being released, as would be the case in solution Y **(1 mark)**.

d. The electron transport chain starts when high energy electrons that are stored in coenzymes are transferred to compounds known as cytochromes **(1 mark)**. The high energy electrons are transferred from one cytochrome to another in a series of steps until they are finally accepted by oxygen, which then reacts with hydrogen ions to form water. As the high energy electrons are transferred down this chain, the energy is released and used to form adenosine triphosphate molecules **(1 mark)**.

e. Cristae of mitochondria **(1 mark)**.

f. Carbon dioxide **(1 mark)**

Question 5

a. Humans – primary host. Copepods – secondary or intermediate host **(1 mark)**. Both answers have to be correct to get the mark.

b. A parasite is an organism that lives on or in the body of another organism and obtains their nutrients directly from its host. If the parasite causes damage or harm to the host organism then a disease usually results **(1 mark)**.

c. Since a secondary infection can be caused by bacteria, the group of chemicals that could be used are antibiotics. Antibiotics are particularly effective against disease causing bacteria by either inhibiting or destroying them **(1 mark)**.

d. The advantage to the parasitic worm of having the copepod as a secondary host is that the copepod, after taking in the parasitic larvae, helps the parasite to become more widespread. Therefore the parasitic worm has a greater chance of finding new primary hosts, reducing competition and increasing its survival rate **(1 mark)**.

e. Individuals who have had the disease and have completely recovered can contract the disease over and over again, because the way individuals get this disease is by drinking water contaminated with copepods carrying the parasitic larvae. Hence if individuals in the future continue to drink any water contaminated in this way, they will keep re-infecting themselves with the parasite **(1 mark)**.

f. Vector **(1 mark)**.

Question 6

a. Photoperiodism **(1 mark)**.

b. A tropism is a growth response in which the direction of the growth is determined by the direction from which the stimuli, such as light, gravity or touch, strikes the plant. Growth towards the stimulus is positive tropism while growth away from the stimulus is negative tropism **(1 mark).** Geotropism is an example of a tropism in which the growth of plant structures is in response to the stimulus of gravity. Root structures are positively geotrophic, stem structures are negatively geotrophic **(1 mark)**.

c. Cytokinins promote the growth in plants mainly by stimulating cell division, which results in more cells being made and therefore an increase in the total number of cells in the plant **(1 mark)**. Auxins, on the other hand, promote plant growth mainly by being responsible for an increase in the rate of cell elongation and the rate of cell enlargement, which results in cells becoming larger **(1 mark)**.

d. The advantage that a plant has in having a phototrophic response is that such a response allows the plant to face the light directly. As a result the plant can maximise the amount of light that is absorbed for photosynthesis **(1 mark)**.

Question 7

a. Helper T lymphocyte **(1 mark)**. T lymphocyte not specific enough.

b. Rejection of transplanted organs is minimised by giving the recipient patient immunosuppressant drugs, especially drugs that act specifically against helper T lymphocytes. By suppressing parts of the immune system from identifying the transplanted organ, rejection is minimised **(1 mark)**.

c. A disadvantage is that the recipient of the transplanted organ is more open to infections since the suppressed immune system is less capable of defending the recipient against such infections **(1 mark)**. By inhibiting the immune system's role of constantly detecting and destroying abnormal cells such as cancer cells, patients with organ transplants are more vulnerable to cancer **(1 mark)**.

d. Autoimmune diseases **(1 mark)**.

e. Inflammatory response **(1 mark)**.

End of Suggested Answers