رقم الورقة	
رقم المغلف	

☐ حاضر

☐ غائب

سلطنة عمان

وزارة التربية والتعليم

امتحان شهادة دبلوم التعليم العام للمدارس الخاصة (ثنائية اللغة)

للعام الدراسي ١٤٣٣/١٤٣٤ هـ - ٢٠١٢ / ٢٠١٣ م

الدور الثاني - الفصل الدراسي الثاني

تنبيه:
- المادة: الأحيـــاء.
- الأسئلة في (١١) صفحة.
- زمن الإجابة: ثلاث ساعات.
- الإجابة في الورقة نفسها.

تعليمات وضوابط التقدم للامتحـان:

- الحضور إلى اللجنة قبل عشر دقائق من بدء الامتحان للأهمية.
- إبراز البطاقة الشخصية لمراقب اللجنـة.
- يمنع كتابة رقم الجلوس أو الاسم أو أي بيانات أخرى تدل على شخصية الممتحن في دفتر الامتحان، وإلا ألغي امتحانه.
- يحظر على الممتحنين أن يصطحبوا معهم بمركز الامتحان كتبا دراسية أو كراسات أو مذكرات أو هواتف محمولة أو أجهزة النداء الآلي أو أي شيء له علاقة بالامتحان كما لا يجوز إدخال آلات حادة أو أسلحة من أي نوع كانت أو حقائب يدوية أو آلات حاسبة ذات صفة تخزينية.
- يجب أن يتقيد المتقدمون بالزي الرسمي (الدشداشة البيضاء والمصر أو الكمة للطلاب والدارسين والزي المدرسي للطالبات واللباس العماني للدارسات) ويمنع النقاب داخل المركز ولجان الامتحان.
- لا يسمح للمتقدم المتأخر عن موعد بداية الامتحان بالدخول إلا إذا كان التأخير بعذر قاهر يقبله رئيس المركز وفي حدود عشر دقائق فقط.
- يتم الالتزام بالإجراءات الواردة في دليل الطالب لأداء امتحان شهادة دبلوم التعليم العام.
- يقوم المتقدم بالإجابة عن أسئلة الامتحان المقالية بقلم الحبر (الأزرق أو الأسود).
- يقوم المتقدم بالإجابة عن أسئلة الاختيار من متعدد بتظليل الشكل (☐) وفق النموذج الآتي:

س - عاصمـة سلطنة عمـــان هي:

☐ القاهرة ☐ الدوحة

■ مسقط ☐ أبوظبي

ملاحظة: يتم تظليل الشكل (■) باستخدام القلم الرصاص وعند الخطأ، امسح بعناية لإجراء التغيير.

صحيح ■ غير صحيح ☐ ◉ ◔ ☒ ☑

Question 1 (28 marks)

Shade the best correct answer for each of the following questions.

1. **The final number of ATP molecules released from two glucose molecules after aerobic respiration is:**

   ☐ 80 ☐ 76

   ☐ 68 ☐ 60

2. **The final amount of energy in (kJ/mol) released after aerobic respiration of 20glucose molecules is (each ATP = 60 kJ/mol):**

   ☐ 48000 ☐ 45600

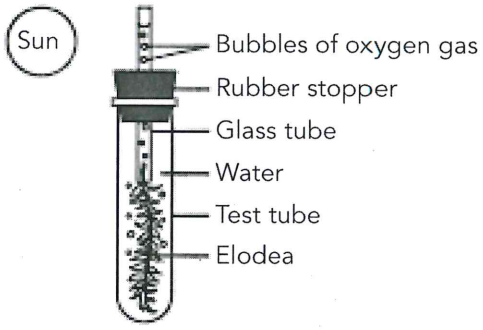
   ☐ 42400 ☐ 40000

3. **The number of CO_2 molecules that will be released from Krebs cycles of 36 carbon atoms in form of carbohydrates is:**

   ☐ 72 ☐ 36

   ☐ 24 ☐ 12

4. **The figure below shows a water plant (elodea) placed under bright sunlight for five hours. Which of the following dissolved gases did the plant most likely to absorb from the water.**



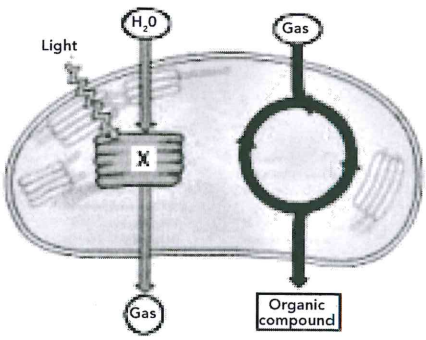
   ☐ nitrogen.

   ☐ oxygen.

   ☐ nitrogen.

   ☐ carbon dioxide.

5. **The diagram represents part of a process in a chloroplast. If the process at point (X) stopped, there would be a direct effect on the production of:**



   ☐ chlorophyll.

   ☐ glucose.

   ☐ oxygen.

   ☐ carbon dioxide.

Do not write in this space

6. **The electron and hydrogen acceptor in the noncyclic pathway is**

- ☐ $NADP^+$.
- ☐ ADP.
- ☐ O_2.
- ☐ H_2O.

7. **All of the followings act as antibiotics EXCEPT:**

- ☐ penicillin.
- ☐ perforin.
- ☐ tetracyclines.
- ☐ streptomycin.

8. **The cells that destroys the antigens directly are:**

- ☐ helper T – cell.
- ☐ memory T- cell.
- ☐ cytotoxic T- cell
- ☐ suppressor T- cell.

9. **One of the followings is a mechanical defence:**

- ☐ lysozyme.
- ☐ cilia.
- ☐ HCl.
- ☐ harmless bacteria.

10. **During bacterial growth, a scientist found that the number of bacteriachanged from 10^6 cell/mm^3 to 10^2 cell/mm^3. The phase defined as:**

- ☐ lag.
- ☐ stationary.
- ☐ log.
- ☐ death.

11. **The blood group B can be donor for blood groups:**

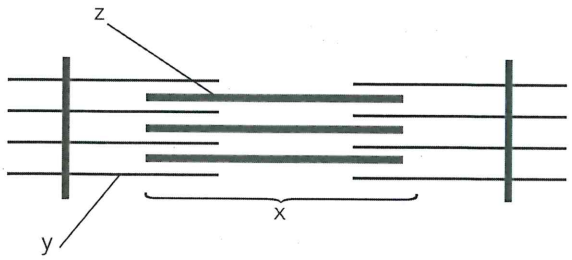
- ☐ B and AB.
- ☐ A and B.
- ☐ A and AB.
- ☐ B and O.

12. **The number of a certain type of bacteria needed to cause infection is called:**

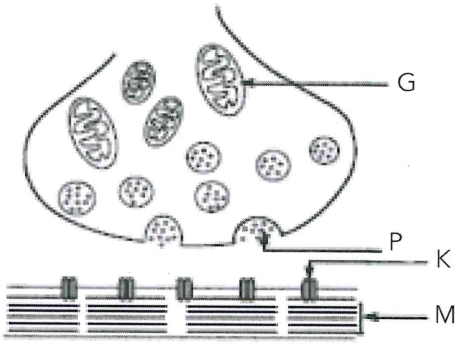
- ☐ invasiveness.
- ☐ pathogenicity.
- ☐ exotoxins.
- ☐ infectivity.

13. What is indicated by the letters X, Y and Z?

	X	Y	Z
☐	sarcomere	myosin filaments	actin filaments
☐	sarcomere	actin filaments	myosin filaments
☐	A band	myosin filaments	actin filaments
☐	A band	actin filaments	myosin filaments



14. A bite from a snake injects toxins into a person. These toxins bind to acetylcholine receptors. Those receptors are indicated by which letter in the following diagram?:



☐ M.

☐ K.

☐ P.

☐ G.

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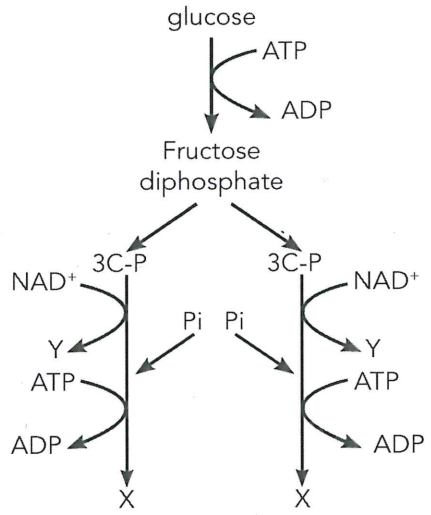
Question 2 (14 marks)

1. The following diagram shows the glycolysis in aerobic respiration. (4 marks)



a) Name compounds:.

X: _____

Y: _____

b) Assume that 5 glucose molecules enter the same stage, calculate

i. number of ATP used up.

_____

ii. number of NAD^+ that entered to this stage.

_____

2. The carbohydrates in green plants are formed during the light -independent stage of photosynthesis. (3 marks)

a) State where the synthesis of carbohydrates takes place during the light-independent stage of photosynthesis.

_____

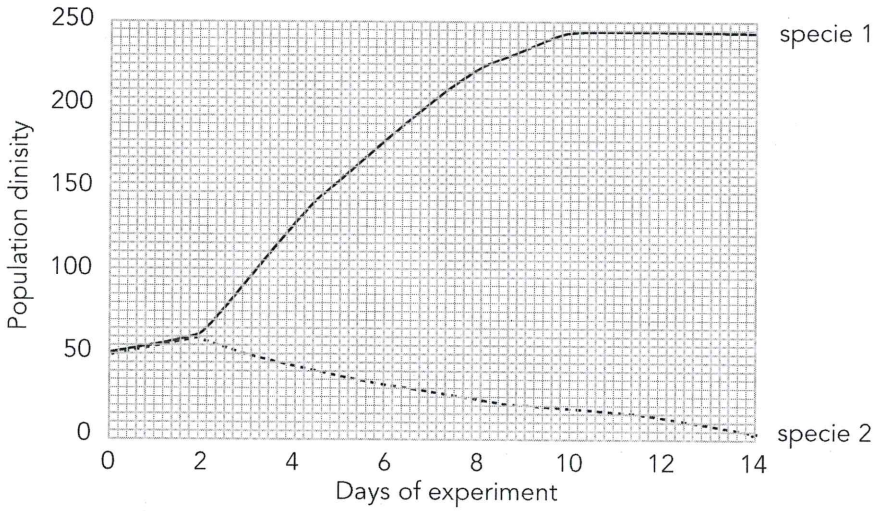
b) Name the products of the light-dependent stage of photosynthesis used during the synthesis of carbohydrates.

_____

c) Describe the role of ribulose bisphosphate (RuBP) in the light-independent stage of photosynthesis.

_____

3. Two species of single-celled organism (1 & 2) were grown together in a normal culture. Their population densities were measured every two days and the results are shown in the graph below. (3 marks)



a) For spices (1) on which day of the experiment did the population growth enter the stationary phase?

day: _____

b) On which days of the experiment is the population growth enter the death phase for spices (2)?

From day: _____ to day _____

c) Suggest, with an explanation, what would happen to the population of spices (2), if spices (1) became infected with a parasitic microorganism at day six?

Suggestion: _____

Explanation: _____

_____

4. ***Salmonella*** **bacteria affect the gut lining causing diarrhoea and vomiting. There is usually an interval of several hours between ingesting Salmonella and the appearance of symptoms.** (4 marks)

a) i. Explain why there is a time to the appearance of symptoms.

_____

_____

ii. Explain the effect of inadequate cooking of meat?

_____

_____

b) Explain how each of the followings minimizes the risk of Salmonella food poisoning.

i. Keeping raw meat at the bottom of fridge and cooked meat at the top.

_____

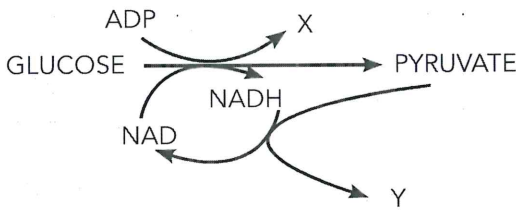
ii. Storing food in cool conditions in the refrigerator.

_____

_____

Question 3 (14 marks)

1. **The following diagram shows lactate formation (anaerobic respiration)** (3 marks)



a) Name compounds:.

X: _____

Y: _____

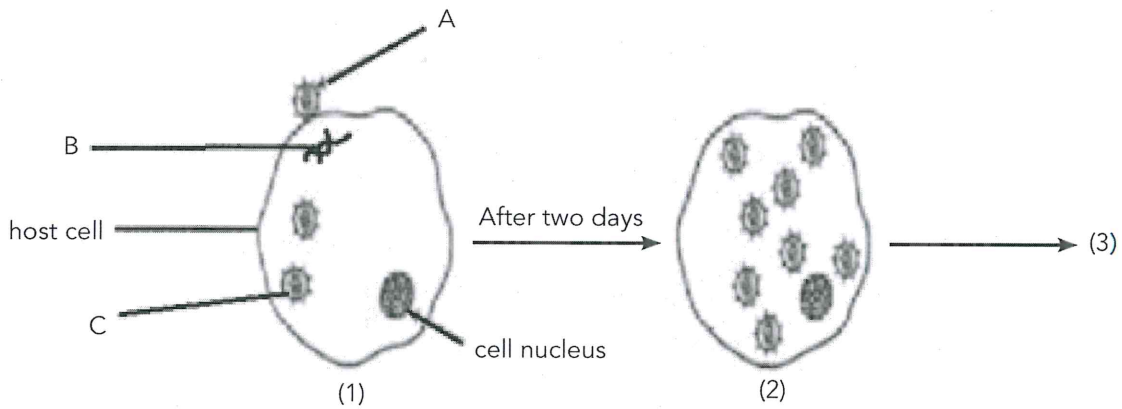
b) Where this stage occurs?

_____

2. Name the other two pigments found in the chloroplast other than chlorophyll. (2 marks)

_____

3. The following diagrams show a cell being attacked by the influenza virus. (4 Marks)



a) Name parts labeled

A: _____

B: _____

b) Explain what happened to part C in step 2?

_____

_____

c) Explain what would happened to the host cell in step 3?

_____

_____

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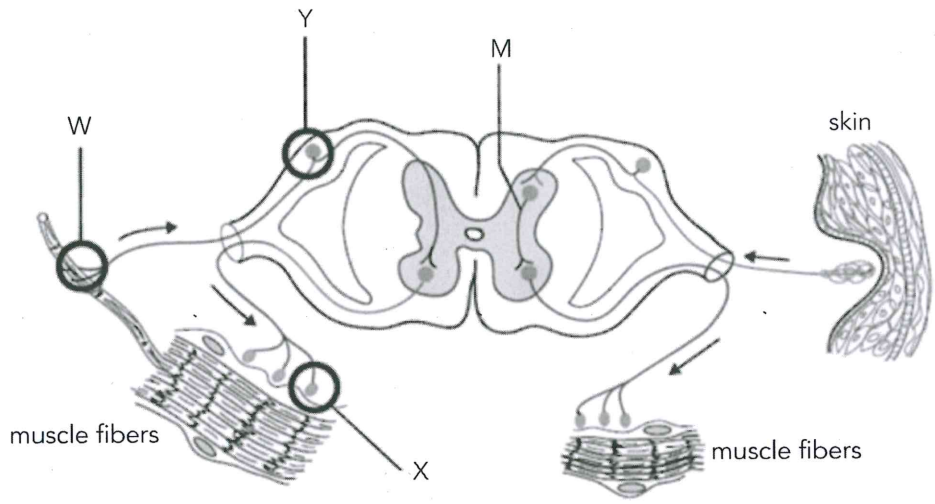
4. The diagram below is a portion of the nervous system. The various parts are not drawn to scale. (5 marks)



a) What kind of neuron is M?

_____

b) Explain the importance of the reflex arc shown in the diagram for the body.

_____

c) Arrange the symbols (W, X and Y) to their related function below.

1. Transmits the impulse coming from the receptor through the cell body: ( )

2. Receive the stimulus and start the impulse from the receptor: ( )

3. Send the response impulse to affecter tissue to make the needed response: ( )

Question 4 (14 marks)

1. **Calculate the number of Calvin cycles needed to produce 6 glucose molecules?** (1 marks)

2. **Define the following:** (2 marks)

   i. cell mediated immunity:

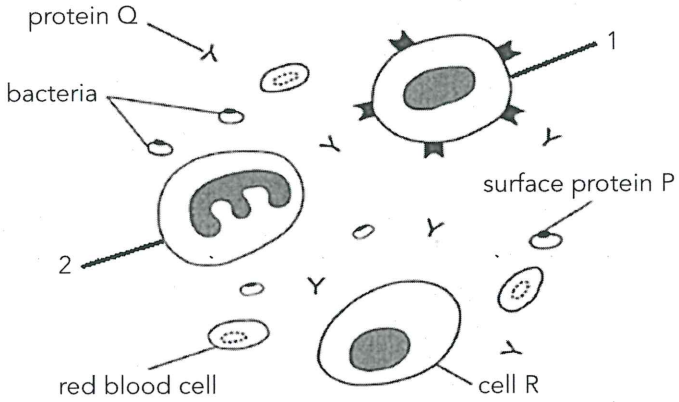
   ii. photolysis:

3. **The table below gives information about some components of red blood cells.** (2 marks)

Component	A	Phospholipid	Hemoglobin
Location in the cell	On outer surface of plasma membrane	Within plasma membrane	In cytoplasm

Name compound A and write its function?

4. The diagram below shows bacteria triggered an immune response involving proteins P and Q. (5 marks)



a) Name the proteins:

P: _____

Q: _____

b) Cell R produced protein Q. Name this type of cell.

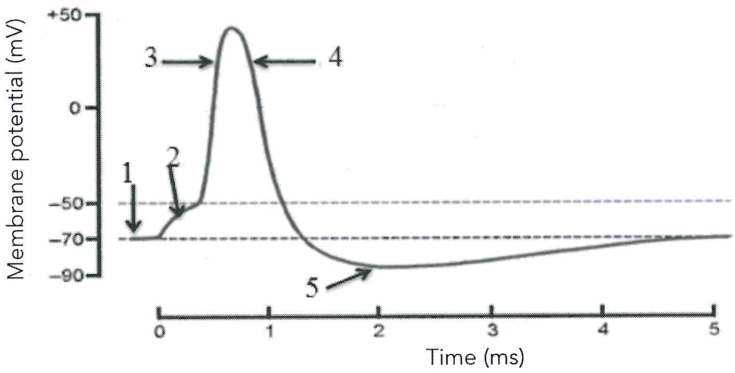
_____

c) Describe the role of the following labeled cells in combating infection.

1. _____

2. _____

5. The following graph shows the changes in electrical potential across the membrane of a nerve cell during the transmission of a nerve impulse. (2 marks)

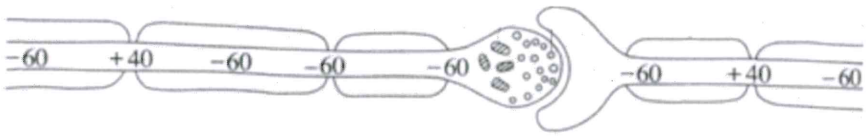


Indicate the numbers that shows:

a) Over shoot: _____

b) Resting potential of the neuron: _____

6. **The diagram below shows a section of two axons during rest and action potential** (2 marks)



a) Draw a circle around one region of the diagram where an action potential exists. Explain your choice.

_____

_____

b) Draw an arrow on the diagram that indicate the direction in which action potentials would normally travel along these fibers. Explain your choice of direction.

_____

_____

END OF EXAMINATION

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مُسَوَّدَة