



حاضر

غائب

رقم الورقة

رقم المغلف

سُلْطَنَةُ عُومَانِ
وَزَارَةُ التَّرْبِيَةِ وَالتَّحْلِيلِ

الامتحان النهائي لشهادة دبلوم التعليم العام للمدارس الخاصة (ثنائية اللغة)

للعام الدراسي ١٤٣٣/١٤٣٤ هـ - ٢٠١٢ / ٢٠١٣ م

الدور الأول - الفصل الدراسي الأول

- زمن الإجابة: ثلاث ساعات.
- الإجابة في الورقة نفسها.

- المادة: الأحياء.
- الأسئلة في (١٠) صفحة.

تعليمات وضوابط التقدم للامتحان:

- الحضور إلى اللجنة قبل عشر دقائق من بدء الامتحان للأهمية.
 - إبراز البطاقة الشخصية لمراقب اللجنة.
 - يمنع كتابة رقم الجلوس أو الاسم أو أي بيانات أخرى تدل على شخصية الممتحن في دفتر الامتحان، وإلا ألغى امتحانه.
 - يحظر على الممتحنين أن يصطحبوا معهم بمركز الامتحان كتباً 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 - عاصمة سلطنة عمان هي:
- القاهرة الدوحة
- مسقط أبوظبي
- ملاحظة: يتم تظليل الشكل () باستخدام القلم الرصاص وعند الخطأ، امسح بعناية لإجراء التغيير.
- صحيح غير صحيح
-

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6. One of the following living organisms has an open circulatory system:

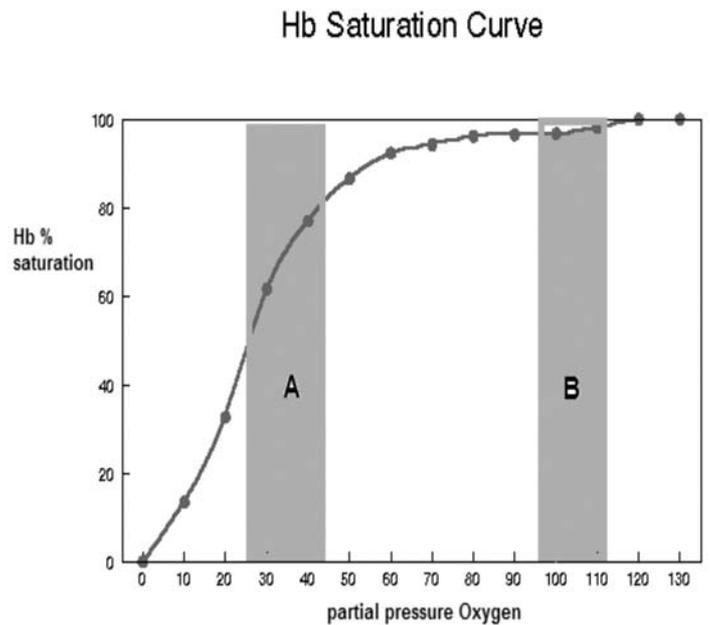
- human.
- insect.
- birds.
- fish.

7. All of the followings are characteristics of blood vein EXCEPT:

- have thick wall.
- carry blood to the heart.
- have valves.
- have low blood pressure.

8. The following graph shows the partial pressure of O₂ in the blood in two parts of the body, A and B. Which of the followings is correct?

	A	B
<input type="checkbox"/>	tissue	heart
<input type="checkbox"/>	heart	tissue
<input type="checkbox"/>	tissue	lungs
<input type="checkbox"/>	lungs	tissue



9. Phloem tissue in plant includes all of the followings EXCEPT:

- paranchyma cells.
- sieve tube cells.
- tracheids.
- companion cells.

10. Which of the following forces is enough to push water up in grass?

- capillarity.
- root pressure.
- transpiration.
- cohesion-tension.

11. The tissue that makes up most of the wood in a tree is:

- primary xylem.
- secondary xylem.
- primary phloem.
- secondary phloem.

12. The cell layer which is NOT part of the plant apoplast pathway is:

- | | |
|--------------------------------------|-------------------------------------|
| <input type="checkbox"/> cortex. | <input type="checkbox"/> epidermis. |
| <input type="checkbox"/> endodermis. | <input type="checkbox"/> xylem. |

13. The primary function of descending loop of Henle in the kidney is reabsorption of:

- | | |
|---|---------------------------------|
| <input type="checkbox"/> sodium ions. | <input type="checkbox"/> water. |
| <input type="checkbox"/> chloride ions. | <input type="checkbox"/> urine. |

14. One of the following is the process of broken down of amino acids in the liver:

- | | |
|--|---|
| <input type="checkbox"/> gluconeogenesis | <input type="checkbox"/> glycogenolysis |
| <input type="checkbox"/> deamination | <input type="checkbox"/> glycogenesis |

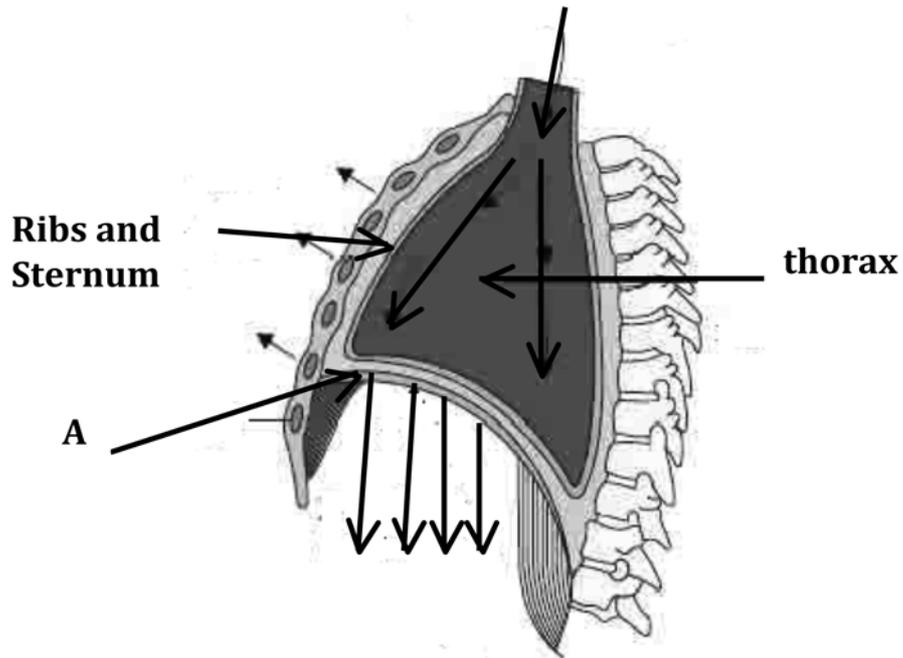
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Question 2

(14 marks)

1. The following figure shows inspiration in human lung.

(5 marks)



a. Name part A.

b. Explain the process of inspiration as shown in the previous figure in four steps.

1. _____

2. _____

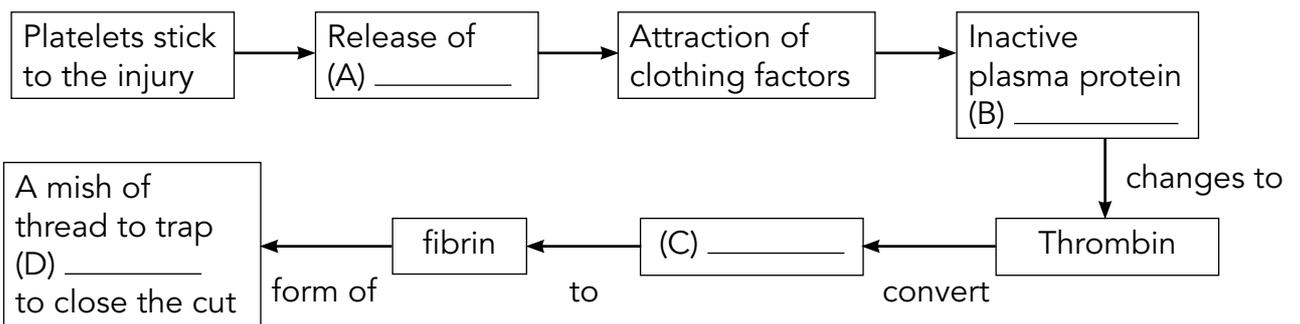
3. _____

4. _____

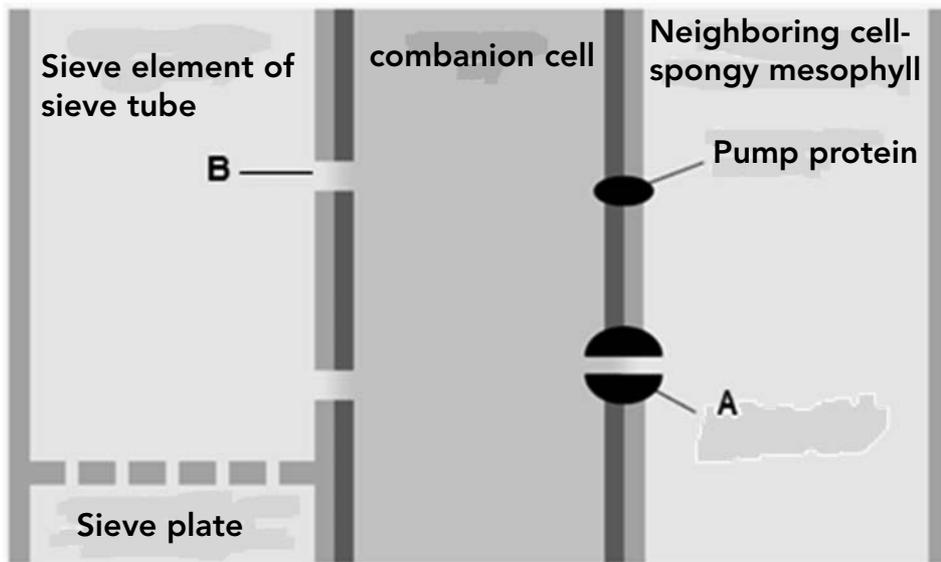
2. The following flow chart shows blood clotting.

(4 marks)

Complete the empty spaces labeled (A-D) in the chart.



3. The figure below shows part of a phloem tube (sieve element), a companion cell and a neighbouring cell. (5 marks)



- a) Name the parts labeled with A and B.

A: _____ B: _____

- b) Explain the following terms with examples from the figure above:

1. Sucrose source: _____

2. ATP source: _____

- c) Explain how sucrose molecules are loaded into the phloem from the neighbouring cell.

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Question 3**(14 marks)**

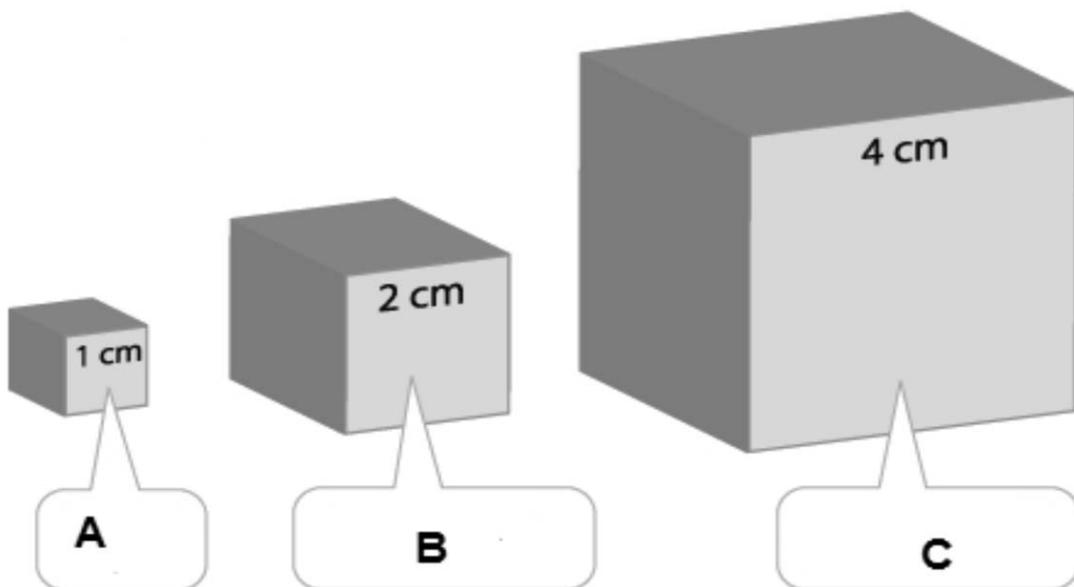
1. Define the followings: (2 marks)

a) goblet cells:

b) rib cage:

2. What is the importance of cuticle in plant leaf? (2 marks)

3. The following figure shows surface/volume ratio in three different animals A,B and C. (4 Marks)



a) Find the surface area/volume ratio for each animal.

A: _____ B: _____ C: _____

b) Which animal has more efficient for gas exchange?

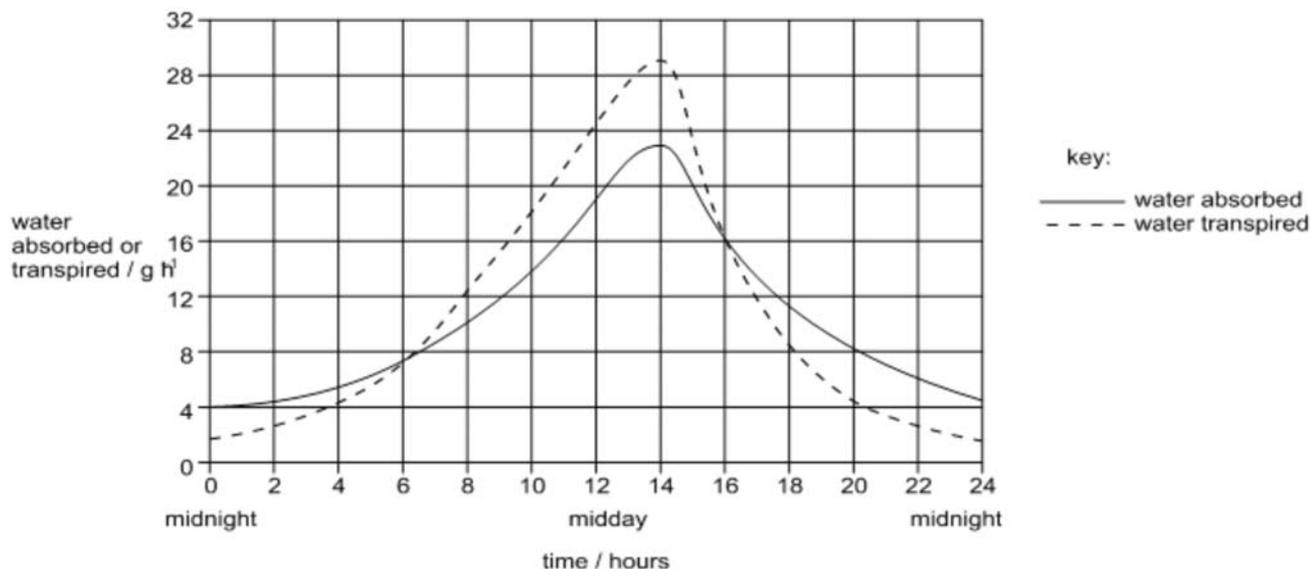
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4. A man heart is beating 90 times/minute in normal conditions. (3 marks)

a) What is the problem with this man?

b) How long would each cardiac cycle last?

5. The graph below shows the results of an investigation to compare rates of transpiration and water absorption by a plant during a hot day over 24 hours starting at midnight. (There was no shortage of water in the soil) (3 marks)



a) At which hour transpiration reaches the highest level?

b) Explain why the rate of transpiration and the rate of water absorption:

1. Increase between 6:00 morning and 12:00 midday.

2. Decrease at night time.

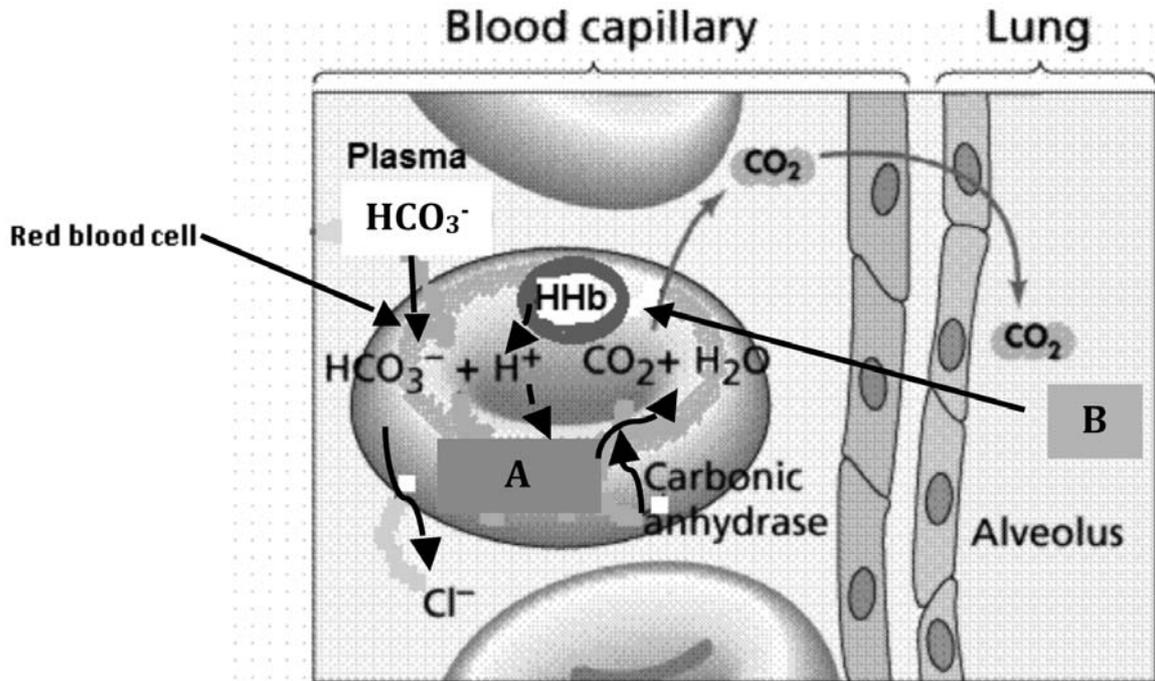
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Question 4

(14 marks)

1. What is the meaning of Counter current principle? (1 mark)

2. The following figure shows carbon dioxide and oxygen transport between lung and blood capillary. (4 marks)



a) Name parts A and B.

A: _____ B: _____

b) As shown, B combined with HHb. Write the final products of this reaction.

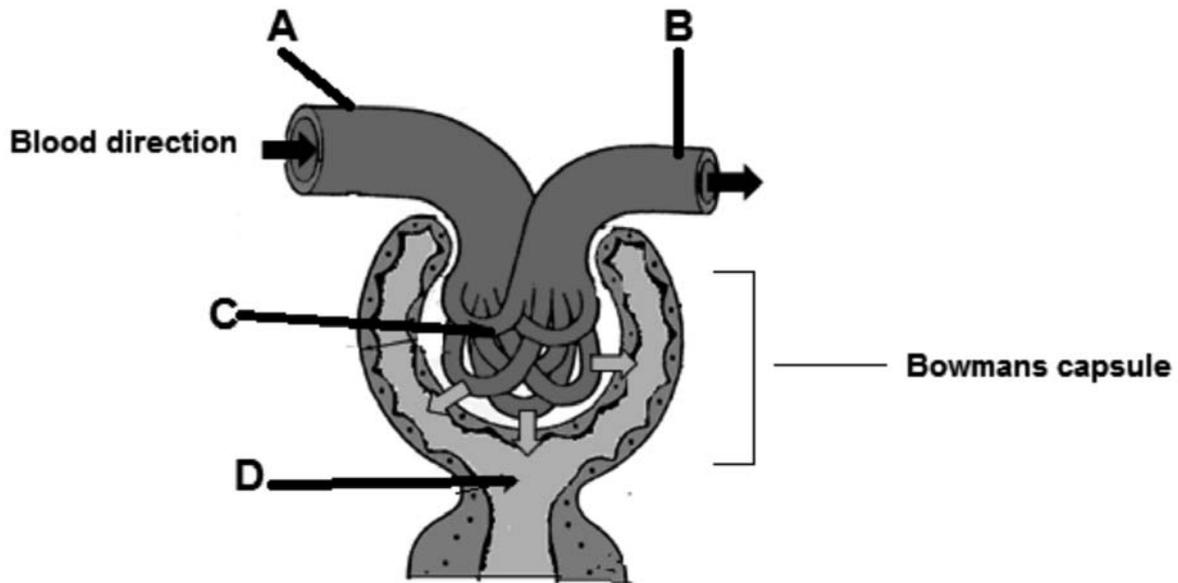
c) Explain the process shown in the figure in 4 steps.

1. _____
2. _____
3. _____
4. _____

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3. The figure below shows the structure of Bowman capsule.

(6 marks)



a) Give the name of the structures labeled with A, B and C ?

A: _____

B: _____

C: _____

b) Explain how high pressure is maintained in part A?

c) Part D consist of two layers. Name them and state their functions?

i. _____

ii. _____

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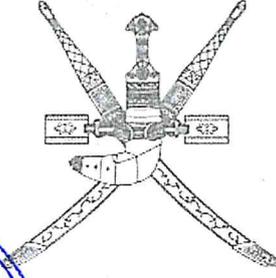
4. a) Define Casperian Strip. (1 mark)

- b) State two characteristics in which xylem vessels are adapted for water transport. (2 marks)

END OF EXAMINATION

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SULTANATE OF OMAN
MINISTRY OF EDUCATION
DIRECTORATE GENERAL OF EDUCATIONAL EVALUATION

**GENERAL EDUCATION DIPLOMA EXAMINATION
FOR BILINGUAL PRIVATE SCHOOLS**

BIOLOGY

**First SESSION 2012 / 2013
First Semester**

MARKING GUIDE

[This guide consists of 5 pages]

ANSWERS**QUESTION 1 (28 marks)****Each answer 2 marks**

Question number	Answer
1	c
2	a
3	c
4	d
5	b
6	b
7	a
8	c
9	c
10	a
11	b
12	c
13	b
14	c

Written Response

QUESTION 2 (14 marks)

1. (5 marks)

a. Diaphragm

(1 mark)

b. (4 marks for each step 1 mark)

* The external intercostal muscles contract and the internal intercostal muscles relax.

* The muscular diaphragm contracts.

* The inside volume of thorax ~~is~~ increases ^{and} causes the pressure inside the thorax to decrease.

* Since the atmospheric pressure is greater, air rushes into the lungs.

2. (4 marks)

A. Thromboplastins

B. prothrombin

C. fibrinogen

D. red blood cells

3. (5 marks)

a. A: Carrier protein

B: plasmodesmata (1 mark each ½)

b.

1- sucrose source: areas in plant where is loaded into the phloem, example: photosynthesis leaf or leaf or leaf mesophyll. (1 mark)

2- ATP source: the cell that contains a lot of mitochondria to produce ATP for active transport, example: companion cells. (1 mark)

c. Sucrose molecules may move by the apoplast pathway passing along the cell wall or the symplast pathway moving from cell to cell via the plasmodesmata, both by using active transport mechanism. ATP from respiration is used to pump sucrose into the sieve tube elements against a concentration gradient. (2 marks)



QUESTION 3 (14 marks)

1. (4 marks)
- a. Goblet cells: cells that secrete mucus and found in basement membrane in trachea and bronchi. (1 mark)
- b. Rib Cage: bones that protect the lungs and help in breathing in and out. (1 mark)
2. Prevent loss of water and protect leaf cells. (2 marks)
2. (4 marks)
- a. A: $6/1=6$ B: $24/8=3$ C: $96/64=1.5$ (3 marks)
- b. animal (A) (1 mark)
3. (3 marks)
- a. This man has a high blood pressure. (1 mark)
- b. Each cardiac cycle would last $60/90 = 0.7$ seconds (2 marks).
4. (3 marks)
- a. 14 or 2:00 midday. (1 mark)
- b.
- (i) Because at day stomata open, and the kinetic energy of water molecules increase so the rate of transpiration increase cause decrease of water potential and this increase water absorbed. (1 mark)
- (ii) Because at night stomata close, and the kinetic energy of water molecules decrease so the rate of transpiration decrease cause increase of water potential and this decrease water absorbed. (1 mark)

QUESTION 4 (12 marks)

1. (1 mark)

Counter current principle means the blood in the capillaries flows in opposite direction to the water flowing over the surface of the gill plates.

2. (4 marks)

a. A: H_2CO_3 B: O_2 (each $\frac{1}{2}$ mark)

b. $\text{H}^+ + \text{HbO}_8$ (each $\frac{1}{2}$ mark)

c. (each $\frac{1}{2}$ mark)

1- Oxygen enter the red blood cell from the alveolus and reacts with Hb to form HbO_8 .

2- H^+ will be released to react with HCO_3^- which is coming from the plasma.

3- H_2CO_3 formed.

4- H_2CO_3 will break down to H_2O and CO_2 which will be released into the alveolus.

3. (6 marks)

a. A: Afferent arteriole . ($\frac{1}{2}$ mark)

B: Efferent arteriole. ($\frac{1}{2}$ mark).

C: Glomerular capillaries. ($\frac{1}{2}$ mark)

b. because the afferent arteriole has a wide diameter than efferent arteriole. ($1\frac{1}{2}$ mark)

c. (i) endothelium layer(1 mark). Maintain gaps to allow the filtration. ($\frac{1}{2}$ mark)

(ii) podocyte (1 mark). Allow most molecules to pass to the Bowmen's Capsule ($\frac{1}{2}$ mark)

4. (3 marks)

a. Band of wax around the endodermal cells in the root.. (1 mark)

b.

1- The wall of xylem vessels is lignified to withstand water transport pressure

2- xylem vessels lose their end-wall to allow the flow of water. (2 marks)

THE END OF THE ANSWER SCHEEM