

حاضر ☐

غائب ☐



رقم الورقة	
رقم المغلف	

## امتحان دبلوم التعليم العام للمدارس الخاصة (ثنائية اللغة)

للعام الدراسي ١٤٣٤/١٤٣٥ هـ - ٢٠١٣ / ٢٠١٤ م

الدور الثاني - الفصل الدراسي الأول

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

- تنبيه: المادة: الأحياء.
- الأسئلة في ( ٨ ) صفحات.

### 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:
- عاصمة سلطنة عمان هي:
  - القاهرة ☐ الدوحة ☐
  - مسقط ☒ أبوظبي ☐
- ملاحظة: يتم تظليل الشكل (●) باستخدام القلم الرصاص وعند الخطأ، امسح بعناية لإجراء التغيير.

صحيح ☒ غير صحيح ☐ ☐ ☐ ☐ ☐ ☐

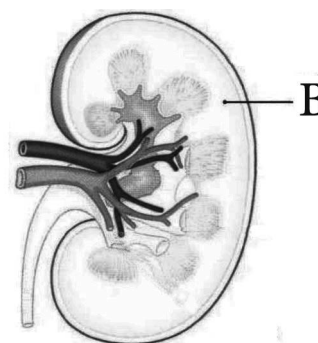


**Question 1****(28 marks)****Shade the best correct answer for each of the following questions.**

- 1) One of the following animals has external gills:
- |                                       |                                         |
|---------------------------------------|-----------------------------------------|
| <input type="checkbox"/> tadpole.     | <input type="checkbox"/> flatworm.      |
| <input type="checkbox"/> sea anemone. | <input type="checkbox"/> nematode worm. |
- 2) The structure which found in the gas exchange system of an insect is:
- |                                    |                                        |
|------------------------------------|----------------------------------------|
| <input type="checkbox"/> pharynx.  | <input type="checkbox"/> gill lamella. |
| <input type="checkbox"/> alveolus. | <input type="checkbox"/> spiracle.     |
- 3) The site of gas exchange in the respiratory system of human is:
- |                                    |                                      |
|------------------------------------|--------------------------------------|
| <input type="checkbox"/> alveoli.  | <input type="checkbox"/> trachea.    |
| <input type="checkbox"/> bronchus. | <input type="checkbox"/> bronchiole. |
- 4) One of the following happens during expiration:
- |                                                                                                        |
|--------------------------------------------------------------------------------------------------------|
| <input type="checkbox"/> both internal and external intercostal muscles relax.                         |
| <input type="checkbox"/> both internal and external intercostal muscles contract.                      |
| <input type="checkbox"/> internal intercostal muscles relax and external intercostal muscles contract. |
| <input type="checkbox"/> internal intercostal muscles contract and external intercostal muscles relax. |
- 5) The substance that formed after water stress and lead to closing the stomata is:
- |                                                         |                                          |
|---------------------------------------------------------|------------------------------------------|
| <input type="checkbox"/> O <sub>2</sub>                 | <input type="checkbox"/> CO <sub>2</sub> |
| <input type="checkbox"/> H <sub>2</sub> CO <sub>3</sub> | <input type="checkbox"/> ABA             |
- 6) which of the following animals have closed blood system?
- |                                     |                                       |
|-------------------------------------|---------------------------------------|
| <input type="checkbox"/> fish.      | <input type="checkbox"/> flatworm.    |
| <input type="checkbox"/> earthworm. | <input type="checkbox"/> grasshopper. |
- 7) Blood is carried from heart to lungs by:
- |                                          |                                            |
|------------------------------------------|--------------------------------------------|
| <input type="checkbox"/> aorta.          | <input type="checkbox"/> vena cava.        |
| <input type="checkbox"/> pulmonary vein. | <input type="checkbox"/> pulmonary artery. |

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- 8) The valve that prevent blood from flowing back into the left atrium when the ventricle contracts is:
- ☐ bicuspid ☐ tricuspid
- ☐ aortic semilunar ☐ pulmonary semilunar
- 9) The cohesion refers to the attraction forces between water molecules and:
- ☐ walls of vessels. ☐ walls of stomatal cells.
- ☐ walls of companion cells. ☐ water molecules each other.
- 10) The Casparian strip in the endodermal cell walls is made up of a waxy compound known as:
- ☐ suberin. ☐ fibrin.
- ☐ cutin. ☐ cuticle.
- 11) Xylem tissue in plants includes all of the followings EXCEPT:
- ☐ vessels. ☐ companion cells.
- ☐ tracheid. ☐ parenchyma cells.
- 12) All of the following factors increase the rate of transpiration EXCEPT:
- ☐ high light intensity. ☐ high humidity.
- ☐ high temperature. ☐ high wind speed.
- 13) The main nitrogenous waste excreted by insects is:
- ☐ ammonia. ☐ uric acid.
- ☐ ammonia & urea. ☐ uric acid & urea.
- 14) The next diagram shows a vertical section of the kidney.  
The letter ( B ) pointing to:
- ☐ cortex.
- ☐ ureter.
- ☐ medulla.
- ☐ pelvis.

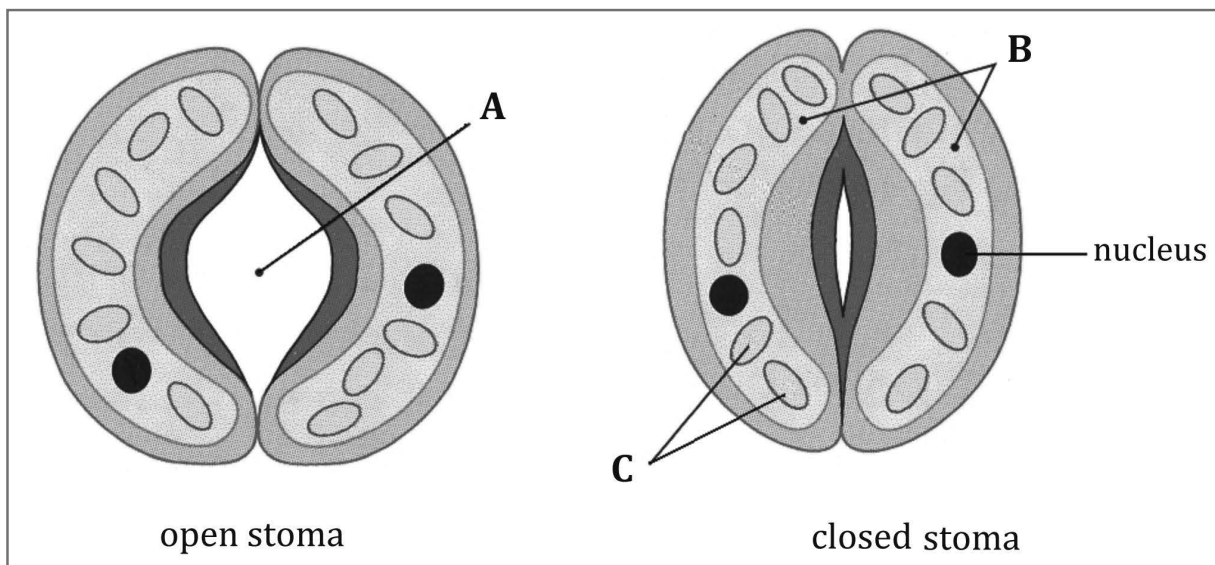


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**Question 2****(14 marks)**

15) The diagram below shows open and closed stomata.

(5 marks)



a. Name the parts labeled (A), (B) and (C)

A: \_\_\_\_\_

B: \_\_\_\_\_

C: \_\_\_\_\_

b. In relation to light intensity, explain the opening and closing of stomata.

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16) State three of xerophytes adaptations which help them to reduce water loss. (3 marks)

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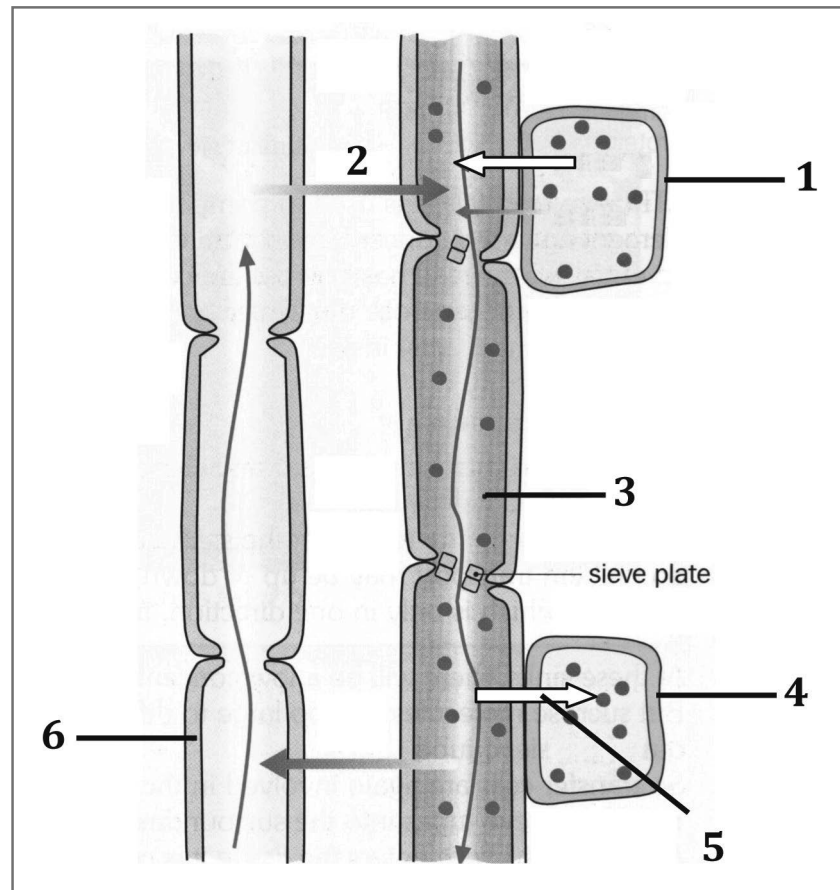
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- 17) The diagram below shows carbohydrate movement in plants which can be described by the pressure flow hypothesis. (6 marks)



- a. Name the parts labeled (3) and (6).

3: \_\_\_\_\_

6: \_\_\_\_\_

- b. Name the process which shows the movement of substances along arrow labelled (2).

\_\_\_\_\_

- c. What are the substances transported along arrow (5)?

\_\_\_\_\_

- d. Provide the number of source and sink.

Source: \_\_\_\_\_

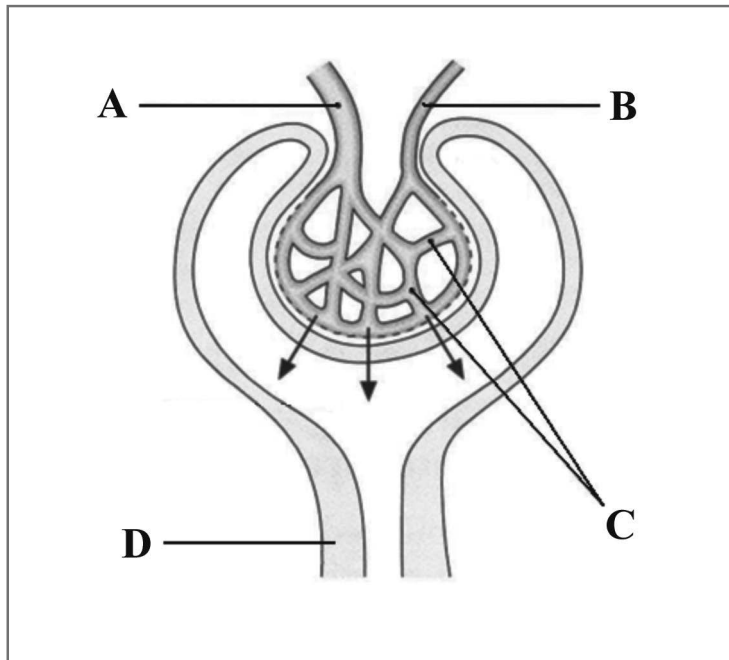
Sink: \_\_\_\_\_

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**Question 3****(14 marks)**

18) The diagram below shows the structure of Bowman's capsule.

(4 marks)



a. Name the parts labeled (A), (B) and (D).

A: \_\_\_\_\_

B: \_\_\_\_\_

D: \_\_\_\_\_

b. Explain how high blood pressure is maintained in the part (C).

\_\_\_\_\_

19) Explain the process of inspiration in human lungs in four steps.

(4 marks)

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

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20) Write two characteristics in which xylem vessels are adapted for their function. (2 marks)

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21) Explain the ventricular systole in human heart. (2 marks)

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22) Write four of capillaries adaptations which help them to allow the exchange of materials between the blood and the cells. (2 marks)

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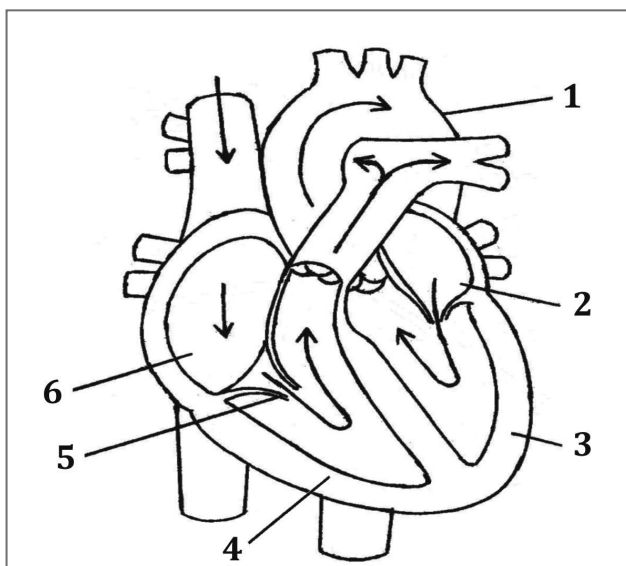
**Question 4****(14 marks)**

23) Compare between arteries and veins in term of: (3 marks)

- muscular wall.      - blood movement.      - presence of valves.

	Arteries	Veins
Muscular wall		
Blood movement		
Presence of valves		

24) The diagram below shows the human heart. (5 marks)



a. Name the structures labeled (1) and (2).

1: \_\_\_\_\_

2: \_\_\_\_\_

b. Explain why the structure (3) is thicker than structure (4).

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- c. What is the function of the structure labeled (5)?

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- d. Which type of blood received by the structure labeled (6)?

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- 25) Define the following:

(2 marks)

- a. glycogenolysis.

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- b. gluconeogenesis.

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- 26) Explain how can the increase of Abscissic Acid (ABA) in leaf affect the function of the stomata.

(2 marks)

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- 27) Explain how the process of gas exchange occurs in alveolus.

(2 marks)

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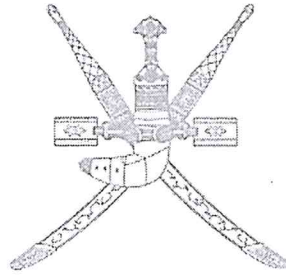
[End of Examination]

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SULTANATE OF OMAN  
MINISTRY OF EDUCATION  
DIRECTORATE GENERAL OF EDUCATIONAL EVALUATION

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

**BIOLOGY**

**Second Session – First Semester**

**2013 / 2014**

**MARKING GUIDE**

**[This guide consists of 7 pages]**

**ANSWERS****QUESTION 1 (28 marks)**

Each answer 2 marks

Question number	Answer
1	tadpole.
2	spiracle
3	alveoli
4	internal intercostal muscles contract and external intercostal muscles relax
5	ABA
6	fish
7	pulmonary artery
8	bicuspid
9	water molecules each other
10	suberin
11	companion cells
12	high humidity
13	uric acid
14	cortex

## Written Response

**QUESTION 2 (14 marks)****15. (5 marks)**

- a.
- |                 |          |
|-----------------|----------|
| A. stoma.       | (1 mark) |
| B. guard cells. | (1 mark) |
| C. chloroplast. | (1 mark) |



b.

- low light intensity reduces photosynthesis,  $\text{CO}_2$  accumulates in the cells so this will stimulates the stomata to close. (1 mark)
- high light intensity increases photosynthesis,  $\text{CO}_2$  reduced in the cells so this will stimulates the stomata to open. (1 mark)

**16. (3 marks)**

- A very thick waxy cuticle.
- Having smaller leaves.
- Rolling up of leaves.
- Sunken stomata can be found.
- Leaf hairs are outgrowth of the epidermal cells of leaves.
- Some plants have succulent leaves.
- Other plants have succulent stems.
- Close their stomata during daylight.

(Any three adaptations /1 mark for each)

**17. (6 marks)**

a. 3. sieve tube (phloem) (1 mark)

6. xylem vessel. (1 mark)

b. Osmosis

c. Carbohydrate - sugar

d.

source: 1

sink: 4



**QUESTION 3 (14 marks)****18. (4 marks)****a.**

A. wide afferent arteriole. (1 mark)

B. narrow efferent arteriole. (1 mark)

D. glomerular capillaries. (1 mark)

b. because the afferent arteriole has a wide diameter and more blood is carried to the glomerulus. (1 mark)

**19. (4 marks)**

- The external intercostal muscles contract and the internal intercostal muscles relax, raising the ribs upwards and outwards.
- The muscular diaphragm contracts and flattens.
- Both these actions increase the volume inside the thorax, causing the pressure inside the thorax to decrease.
- Since the atmospheric pressure is greater, air rushes into the lungs and they inflate.

**20. (2 Marks)**

- The wall of xylem vessels is lignified to withstand water transport pressure.
- Xylem vessels lose their end-wall to allow the flow of water.

**21. (2 marks)**

- The atria relax.
- The thick muscular walls of the ventricles contract, forcing blood out of the heart into the pulmonary artery and the aorta.
- The pressure of blood against the atrio-ventricular valves causes them to shut, preventing blood go back into the atria.
- The pressure of blood against the semi-lunar valves opens them.
- The pulmonary artery then carries deoxygenated blood to the lungs and the aorta carries oxygenated blood to the different parts of the body.

**22. (2marks)**

- They have very thin, permeable walls, only one cell thick.
- They provide a huge surface area for exchange, because there are so many of them.
- Blood flows through them very slowly.
- The body cells are never far from a capillary.

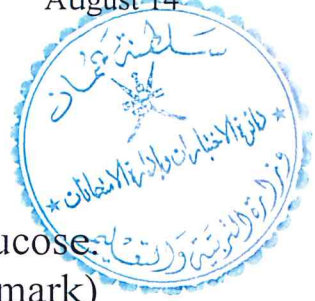


**QUESTION 4 (14 marks)****23. (3 marks)**

	<b>Arteries</b>	<b>Veins</b>
<b>Muscular wall</b>	Thick muscular walls	Thin muscular walls
<b>Blood movement</b>	Carry the blood away from the heart	Carry the blood back to the heart
<b>Presence of valves</b>	No valves	Valves present

**24. (5 marks)**

- a. 1. aorta (1 mark)  
2. left atrium (1 mark)
- b. Because the structure (3) has to pump blood for long distance ( from hart to all round the body) while the structure (4) has to pump blood for short distance ( from heart to lungs). (1 mark)
- c. Prevent the backflow of blood into the right atrium when the right ventricle contract. (1 mark)
- d. Deoxygenated blood. (1 mark)

**25. (2marks)**

- a. Glycogenolysis: the conversion of stored glycogen to glucose. (1 mark)
- b. Gluconeogenesis: the conversion of amino acids and glycerol to glucose. (1 mark)

**26. (2marks)**

During water stress, ABA formed (1 mark), and this will stimulate the stomata to close (1 mark).

**27. (2marks)**

Deoxygenated blood enters the alveolus which carry  $\text{CO}_2$ .  $\text{CO}_2$  will diffuse to the gap of the alveolus while  $\text{O}_2$  diffuse from the alveolus gap to combined with red blood cells. The oxygenated blood will move towards the heart.

**END OF ANSWER SCHEME**