

# Guide to participation in Mawhoob Competition Biology Track

مؤسسة الملك عبدالعزيز ورجاله للموهبة والإبداع  
King Abdulaziz & his Companions Foundation for Giftedness & Creativity



## دليل المشاركة في مسابقة موهوب تخصص الأحياء



“ موهبة ... حيث تنتمي ”

Prepared by: Saudi Biology Team

# بِسْمِ الرَّحْمَنِ الرَّحِيمِ

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## Introduction

In line with the Kingdom's determination to achieve vision 2030 objectives that are primarily concerned with transforming into an innovative knowledgeable society and the strategic plans directed to achieve the goals of sustainable national development and given that scientific competitions that are no longer an indispensable luxury, but rather have become an objective equation for excellence and progress in scientific fields. For the reason that it is with the momentum the competition to ascend the podiums, everyone who wants to achieve this must take all the means that allow them not only to access those platforms but to reserve a permanent place on them.

There is no doubt that many countries rely on local competitions as one of the methods for developing and raising the rates of scientific creativity and innovative capabilities and discovering the scientific talents of their students to provide them with the necessary scientific care. That fact has been perceived by the world around us for a long time.

Hungary, for instance, held the first mathematics competition in 1894, i.e. 119 years ago. Whereas more than 79 local competitions are organized at all levels and regions in the United States. Perhaps everyone agrees here that the mobility that these competitions do on all the elements of the educational process goes beyond solely winning a competition, but rather deepens on the positive impact, which aims at raising the professional competencies of teachers and achieving the ambition of our distinguished sons and daughters to obtain ideas that are much deeper than the ones provided by a school curriculum.

The methods of implementing these competitions vary according to the different goals and aspirations of the organizing countries. It is perhaps agreed upon by everyone here that the movement that these competitions make on all elements of the educational process goes beyond just winning a competition, but deepens the positive impact, which is aimed at raising the professional competencies of teachers and achieving the ambition of our distinguished sons and daughters. To get deeper ideas than what the school curriculum offers.

King Abdul Aziz and His Companions Foundation for Giftedness and Creativity "Mawhiba" have always been the forerunner to such challenges. From which it always aims to discover the nation's talents in scientific disciplines, and keen to find different sources to improve the quality of selection.

Along with the National Program for Gifted Students Identification, "Mawhoob" Mathematics Competition And science competition was established to delve deeply in search of these creative national competencies and capabilities to find them early. Allowing us to refine, nurture, and train them for a sufficient period to achieve the standards of participation in the International Olympiad programs.

## What is a

It is a scientific competition in mathematics, science, physics, chemistry, biology, and informatics.

## Implementing agency for Mawhoob competition

King Abdulaziz & His Companions Foundation for Giftedness and Creativity  
"Mawhiba", in cooperation with the Ministry of Education.

## Target group

Saudi male and female students from grades six to the 10th grade.

## Competition stages:

**The competition will take place in two stages:**

**I:** It is carried out remotely and the target is to participate in 15,000 students.

**II:** It is done in writing\*\*\*\* for students nominated from the first stage at the headquarters specified by the education departments to which the students are affiliated. (Exceptionally done this year remotely II).

## Competition

- 1- Pushing the educational field towards more efforts to develop mathematics and science education.
- 2- Discover the distinguished elements of our male and female students at an early stage to develop their capabilities.
- 3- Discovering distinguished teachers interested in the field of work on Olympic problems.
- 4- Spreading the culture of the Olympiad.
- 5- Raising the spirit of competition between the elements of the educational process.

## Competition

The competition targets male and female students who have a passion for the scientific disciplines below, according to the following criteria:

1. The student must be a Saudi national.
2. The student must register in one scientific major only.
3. The student must register in the required specialization according to his grade, provided that the student is in one of the following grades at the beginning of the school year 1442H

Class	Subject					
	Mathematics.	Science	Physics	Chemistry	Biology	Informatics
6th Grade	✓	✓				
7th Grade	✓	✓				✓
8th Grade			✓	✓	✓	✓
9th Grade			✓	✓	✓	✓
10th Grade						✓

4. Complete the competition in its two phases.

## Test Instructions

1. The only reference to the subjects of the competition is the mathematics and science syllabus from the Ministry of Education.
2. The student can access the system and take the pilot test directly after receiving the account activation message from the e-learning management system on the e-mail registered in the portal.
3. The test duration is 90 min only.
4. The calculator is allowed to be used in all stages of the competition except for mathematics major.

(You can use the guide for the competition on our website to obtain samples of questions for each major)

## The schedule for the 2020 talent competition

Program	Date		Length in Days	Scientific Disciplines
<b>Register for gifted test</b>	July 8, 2020	September 21, 2020	76	All Specialities
<b>the first stage of Mawhoob test: "Performing an e-test"</b>	September 28, 2020	September 28, 2020	1	Chemistry - Physics - Biology
	September 29, 2020	September 29, 2020	2	Mathematics - Informatics - Sciences
<b>Announcing the results of the first phase</b>	October 1, 2020	October 1, 2020		All Specialities
<b>The second stage of the gifted test: "Performing an e-test"</b>	October 4, 2020	October 4, 2020	2	Chemistry - Physics - Biology
	October 5, 2020	October 5, 2020		Mathematics - Informatics - Sciences
<b>Announcement of phase II results</b>	October 8, 2020	October 8, 2020	1	All Specialities

### Exam entry

1. Availability of a computer operating system (Windows or IOS)
2. Connecting the computer device to the internet (making sure that no other device is connected to the network during the testing period to ensure the stability of the connection).
3. Only use **Google Chrome (Google Chrome)** and make sure that it is updated to the latest version **and not** to use any other browser to perform the test, including Microsoft Internet Explorer or Microsoft Edge or Safari.
4. Just keep the Google Chrome browser running and make sure that all other programs and windows are closed during the test.

### Entry Instructions:

Enter on the link: <https://mawhiba.classera.com>

Then enter the login data as follows:

1. In the Username field: The email with which the student was registered in Mawhiba portal
2. In the password field: Password sent to you.
3. Click on the blue login button to enter the test



تسجيل الدخول

البريد الإلكتروني الذي تم تسجيل الطالب به في بوابة موهبة

اسم المستخدم

كلمة المرور المرسل لك.

الضغط هنا للدخول إلى الاختبار

تسجيل الدخول

تسجيل الدخول بحساب موهبة

### If you encounter difficulty:

What to do if you encounter one of the following problems?

1. Machine restarting problem
2. Close the browser
3. Internet disconnection during the test

We hope that you will follow the steps below to get back for testing

1. Open the browser again and enter the test link <https://mawhiba.classera.com>
2. Then enter the login data
3. Press the start test button
4. Navigating between the test questions is by clicking on the Previous and Next button located in the top left of the screen, above the question in the Arabic interface, and in the upper right of the screen in the English interface.

### Test Delivery

Upon completion of answering the test questions:

1. Click on the Submit button located at the bottom of the screen in the last question in the test.
2. When you click on it and confirm the delivery, the test will end and the result will appear to you, and you will not be able to enter it again.

### Competition registration link:

<https://www.mawhiba.org/Ar/programs/competitions/mawhoob/Pages/Registration.aspx>

Note: The student who does not have an account in Mawhiba is directed to create an account through the link:

<https://login.mawhiba.org/Check/RegistrationPage.aspx>

And then register for the competition.



## Important

1. Mawhiba website has introductory guides for each of the six contest tracks, and each guide contains several experimental questions that explain to the student the type of questions.

<https://www.mawhiba.org/Ar/programs/competitions/mawhoob/Pages/library.aspx>

2. 1- Ensure that you are connected to the internet before the test date.
3. Verify the test login data (username: the remote mail with which the student is registered in Mawhiba portal and the password that will be sent to you later)
4. 3- Entering the test site 15 min before the test time.
5. Avoid closing the browser during the test.
6. 5- Pay attention to the remaining time for the test.
7. 6- There is only one submission attempt for the test.
8. 7- Avoid clicking the Submit button unless you are sure that all questions have been answered and the test has been completed.



## رحلة الطالب مع برنامج موهبة للأولمبيادات الدولية

### مسابقة موهوب

فيزياء كيمياء أحياء معلوماتية  
الصفوف ٨ و ٩ و (١٠ للمعلوماتية فقط)

رياضيات علوم  
الصف ٦ و ٧

دورات  
أساسية

دورات  
أساسية



mawhiba.org



Mawhiba

“ موهبة ... حيث تنتمي ”

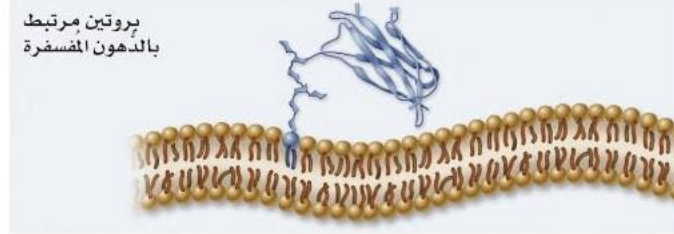
## Training exercises

# Biology Track



## Exercise 1

The cell membrane is a Semipermeable membrane which means:



- A Certain things can enter while others cannot
- B No materials can enter or leave the cell
- C All materials can enter and leave the cell
- D Materials only existence out of the cell
- E Materials only Existence inside the cell

## Exercise 2

Which of the following is able to perform all of the functions needed to survive?

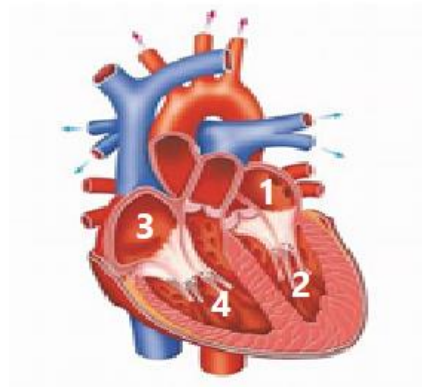
- A Amoeba
- B White blood cell
- C Sperm
- D Virus
- E Obligatory Parasites

### Exercise 3

Which of the heart cavities always contains oxygenated blood?

- I. 1
- II. 2
- III. 3
- IV. 4

- A 1 - 3
- B 1 - 2
- C 2 - 3
- D 2 - 4
- E 3 - 4



### Exercise 4

Many birds have a gizzard, but mammals do not have such an organ. Why is this difference?

- A The presence of appendix in mammals
- B Length of the gut in mammals
- C The presence of teeth in the mouth in mammals
- D The difference in the type of food
- E The presence of beaks in birds

## Exercise 5

**The biological systems that are most responsible for transporting and exchanging materials for getting energy are:**

- A Digestive, Circulatory, and Respiratory.
- B Circulatory, Respiratory, and Hormonal.
- C Circulatory, lymphatic, and Digestive.
- D Digestive, lymphatic, and. Hormonal
- E Circulatory and Digestive.

## Exercise 6

**The research subject professor decides to assign you for doing a project on the effectiveness of spiracles function, then you will definitely study .....**



A



B



C



D



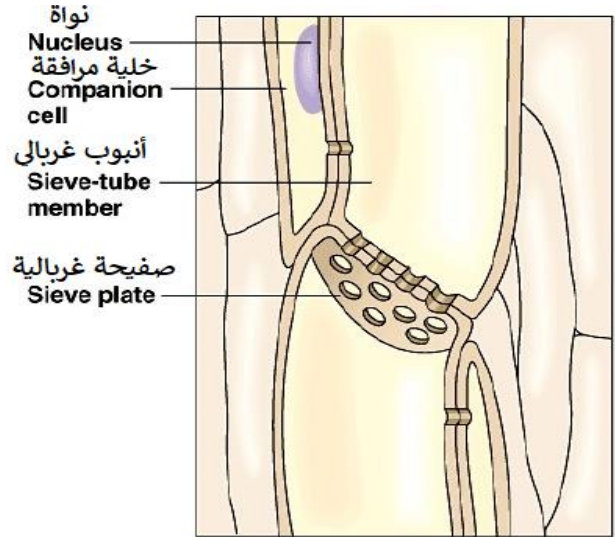
E



## Exercise 7

What does phloem carry up the stem?

- A Carbon dioxide
- B Water
- C Oxygen
- D Sugars
- E minerals



## Exercise 8

Which of the following numbers represent structural proteins?

1. Amylase is in saliva.
2. Collagen in skin.
3. Keratin in hair and nails.
4. Insulin in the pancreas.

- A 1 - 3
- B 1 - 2 - 3
- C 2 - 3
- D 2 - 3 - 4
- E 3 - 4

## Exercise 9

**Humans are usually infected with influenza viruses type A and B during the influenza season. Which of the following is true regarding the cells involved in the resulting immune response?**

- A** T cells are a type of red blood cell.
- B** Antibodies and T cells perform phagocytosis.
- C** B cells and T cells are formed and mature in the bone marrow.
- D** Viruses bind to receptors on T cells before phagocytosis.
- E** Viruses bind to receptors on B cells.

## Exercise 10

**Which statements describe the animal in the picture?**

- I. a double life Subsist
- II. Its internal structure is cartilaginous
- III. homeothermic
- She uses her skin as an additional source of oxygen
- IV. Has a developed sense of smell



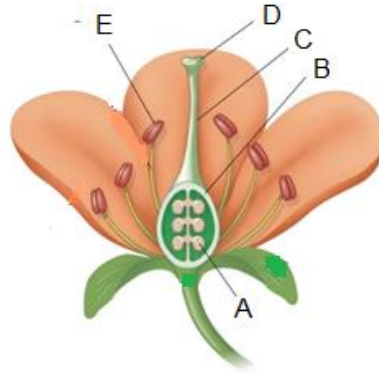
- A** I – III & IV
- B** I & IV
- C** II & V
- D** III & IV
- E** I – II & V



## Exercise 11

Which part of the flower produces pollen?

- A A
- B B
- C C
- D D
- E E



## Exercise 12

Which of the following does a plant need not to produce food?

Which of the following is not needed by plants to produce food?

- A Oxygen
- B Carbon dioxide
- C Sunlight
- D Water
- E Chlorophyll

## Exercise 13

The following figure shows a food chain in an aquatic environment. If a chemical contaminated water and killed snails, how would fish be affected?

algae → snail → fish → bird

- A They would lose a food source
- B The predator will die
- C They would be unaffected
- D They would become herbivores
- E Fewer algae numbers

## Exercise 14

An ecosystem refers to:

- A the animals and plants living there.
- B the condition of the water.
- C both living and non-living aspects of the area.
- D the types of plants found there.
- E water and plants.

## Exercise 15

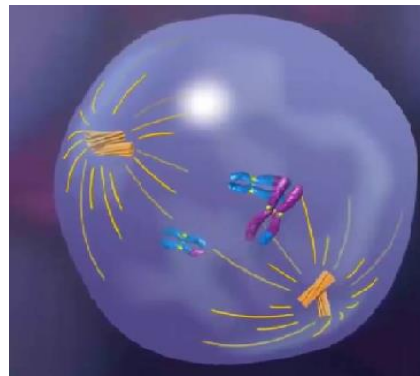
**The best way to identify organisms within the same species is to find those organisms that:**

- A Can interbreed.
- B Share the same physical traits.
- C Share the same biochemical traits.
- D Can be mated and produce offspring that can reproduce
- E Do not share any of the biochemical traits

## Exercise 16

**The process that occurs to produce sex cells such as sperm and egg cells is:**

- A mitosis
- B meiosis
- C fertilization
- D Regeneration
- E Conjugation



## Exercise 17

**Which of the following would be considered one of the body's first lines of defense against infection?**

- A B-cells
- B Red blood cell
- C Platelets
- D Stomach acid
- E T-cells

## Exercise 18

**A blood vessel is called a vein if it is:**

- A Carries blood away from the heart
- B Carries blood towards the heart
- C Carries oxygenated blood
- D Carries deoxygenated blood
- E Its thick and narrow diameter

## Exercise 19

Under what conditions will a substance be likely to enter a cell through diffusion?

- A when the substance is a particle of food
- B when a molecule of the substance is very large.
- C when the concentration of the substance is greater outside the cell than inside
- D when the concentration of the substance is greater inside the cell than outside
- E when the concentration of the substance is equal inside the cell and outside

## Exercise 20

Ahmed looked at a cross-section of a truncated tree trunk and charted its growth by measuring the rings in the tree trunk.

According to this graph, between the third and eighth year, how many millimeters did the tree grow in approximately a radius?

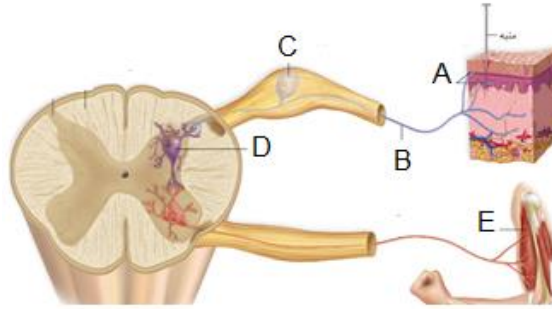
- A 5mm
- B 9mm
- C 11mm
- D 15mm
- E 20mm



## Exercise 21

The effector is labeled:

- A A
- B B
- C C
- D D
- E E



## Exercise 22

Cellular respiration is required by:

- A Plants
- B Animals
- C all living organisms
- D all living organisms except those with chlorophyll.
- E Unicellular organisms

## Exercise 23

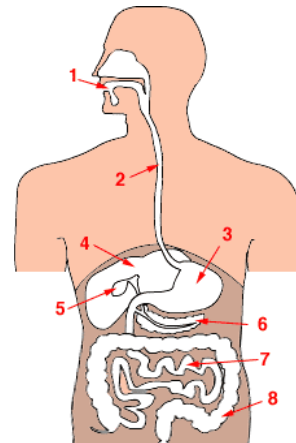
**Photosynthesis is important for all living organisms things because it supplies a source of:**

- A Energy, in the form of glucose, and oxygen for cell respiration.
- B Reduced carbon dioxide and oxygen for cell respiration.
- C Electrons with high energy and water.
- D Glucose for energy and carbon dioxide for cell respiration.
- E Just to balance the gases.

## Exercise 24

**The initial breakdown of protein takes place in the part labeled:**

- A 1
- B 2
- C 3
- D 4
- E 7



## Exercise 25

**The erythrocytes are responsible for:**

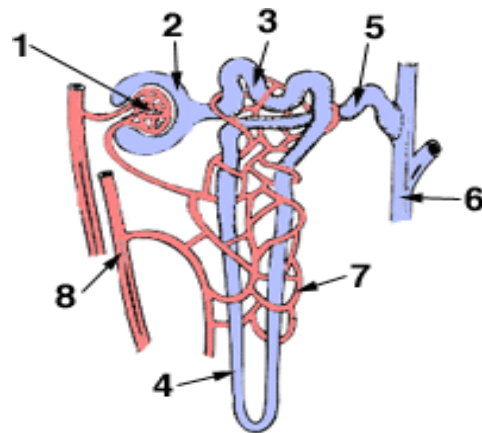
- 1-delivery of oxygen
- 2-delivery of glucose
- 3-removal of waste
- 4-fighting of infection
- 5-regulation of body temperature

- |   |       |
|---|-------|
| A | 1-2-4 |
| B | 1-2   |
| C | 1-2-5 |
| D | 1-3   |
| E | 1-3-4 |

## Exercise 26

**The structure responsible for the ability of an organism to remain in the desert for a period of time without water is:**

- |   |   |
|---|---|
| A | 1 |
| B | 3 |
| C | 4 |
| D | 7 |
| E | 8 |





## Exercise 27

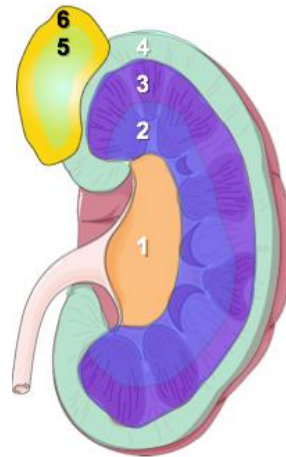
The largest concentration of urea is found in:

- A Renal vein
- B Renal artery
- C Hepatic artery
- D Hepatic vein
- E Aorta

## Exercise 28

Identify the region in which the renal pelvis is located:

- A 1
- B 2
- C 3
- D 4
- E 5



## Exercise 29

A term that describes your first stage as a diploid chromosome creature:

- A Sperm
- B Gamit
- C The egg
- D The fetus
- E Zygote

## Exercise 30

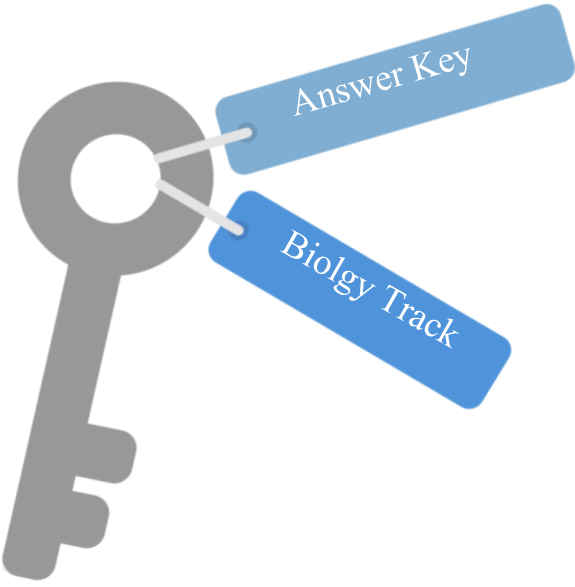
If a cell were hypertonic to its surroundings, it would:

- A Stay the same
- B Swell up
- C Shriveled up
- D Take up more solutes
- E Gaining energy

# Answer Key

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Question	Correct Answer
1	A
2	A
3	B
4	C
5	A
6	A
7	D
8	C
9	D
10	B
11	E
12	A
13	A
14	C
15	D
16	B
17	D
18	B
19	C
20	B
21	E
22	C
23	A
24	C
25	D
26	D
27	B
28	A
29	E
30	C

Prepared by

Yusef Al-Shahrani

Done