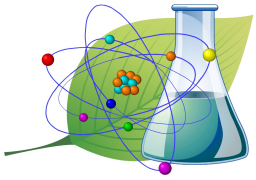

International Natural Sciences Tournament
February 6-12, 2020
www.scitourn.com
participants@scitourn.com

Questions about the problems of X International Natural Sciences Tournament

Q1: In the Problem 3, should our answer be in accordance to the guidelines given by the animal welfare which is being followed in Australia or can we adopt any measure?

A1: You can take any measures that are appropriate to the condition of the problem, but mentioning the legislative or other restrictions of your decision will be very appropriate. There is a separate item in the jury criteria - disadvantages and advantages of the decision.

Q2: I have a question regarding Problem 10. It says "...The list of instrumental methods for diagnosing this condition...". Which condition do you have in mind?

A2: "This condition"means the state of muscle clamping.

Q3.1: We have a request for clarification the text of problem в„–4 (Bioremediation). "The mechanism of chemical transformations of plastic processing"means:
1) Biochemical mechanism of substrate transformation by enzyme or
2) Scheme of industry application enzymes for plastic processing?

A3.1: The first one is right.

Q3.2: In this case we should:
1. Describe the mechanism of PETase (-like) enzymes work or
2. Construct/find another enzymes for which: no toxic compounds at any stage; end products are biodegradable?

A3.2: The condition of the problem does not contradict either the first or second paragraph. The council recommends that both be done for completeness.

Q4: The problem 10 "atlas shrugged". Do you mean a device to diagnose muscle cramps before or during the cramp?

A4: Your question relates to the model of the problem. The team itself should choose when to measure the clamp and argue their choice.

Q5.1: The challenge number 4 "Bio remediation". Are we supposed to come up with the mechanism for the ezyme "Petase"?
A5.1: In the task, it is required to propose a mechanism for processing plastic not only with PETase itself, but also with similar enzymes. Please note that in the problem statement there is a restrictive requirement for the mechanism you are proposing.

Q5.2: We are talking about the molecular mechanism, right (the chemistry behind or shall we make a process were we use such enzymes)?
A5.2: The problem asks for the mechanism of chemical transformations, but the mechanism includes not only chemical reactions.

Q5.3: Are we asked to explain how these enzymes degrade plastic and propose a chemical mechanism for that, or shall we use these enzymes to make a whole process for biodegradation?
A5.3: The task asks you to explain how the enzyme destroys plastic, and at the same time offer a mechanism that will describe the processes leading to non-toxic products.

Q6: Challenge 9. Is there a specific age we shall target with the kit we would design?
A6: You can find this information on the official website of the company.

Q7.1: Challenge 10. 1. Why is there a need for a medical device to diagnose muscle cramps?
2. Do muscle cramps really block blood circulation? My medical doctor friends said that it is the other way round.
3. Is there a reason why there is a mention on the shoulder girdle and collar bone?
A7.1: 1. The task does not say that the device must be medical.
2. This is one of the consequences, but not the only.
3. Experts suggest focusing precisely on this zone, since the clamps there are very common.

Q7.2: 1. If not a medical device then what would it be? Do you mean it can be just be an electronic device that diagnose muscle cramps, in other words, it is still a medical device?
2. Is it a neck clamp or neck cramp?

A7.2: 1. It means that the device does not have to meet all the conditions that are presented specifically for medical devices. These specifications may vary by country.
2. It is neck cramp, there is no mistake in the task.

Q8.1: We have a question regarding the cell spheroids challenge. The challenge says "that we shall design or edit on alternative existing method to produce a specific number of cells in the spheroid". Do you mean we should design a model to produce any number of cells we want, whether it is less than 4K or more than 8k as previously mentioned or you mean that we shall make a model to produce a fixed number of cells to prevent over proliferation and necrosis at the spheroid core?
A8.1: It is necessary to propose a method with the number of cells that is indicated in the question.

Q8.2: The question doesn't indicate a specific number of cells, it says that there is challenge in forming spheroids larger than 8k or smaller than 4k, you mean we should design a method that enables us to produce either more than 8k or less than?
A8.2: In this gap: 4K to 8K.

Q9: Challenge 7, "sunken franken". The problem says that the existing methods are expensive and technically difficult and asks us to suggest another method. 1)Do we have to suggest a totally different method from these two, or can we suggest a less expensive and complicated method of lifting or defueling?
2) do we have to retrieve the oil inside the tank or we just need to eliminate it's ecological danger?
A9: 1) tactically you can introduce your own decision of the problem;
2) you can choose one of the approaches, but should justify why it will be more appropriate than the other.