

ASIC200 Final Exam 2016 - Science

EasyQ

6 questions, 4 marks each. Consider how I might mark to get to 4 marks. Point form and even diagrams are o.k. in fact, sometimes, they provide the answer in the clearest way.



LessEasyQ

1. If the basic code exists in DNA form, and yet proteins (which the DNA codes for) are usually the molecules with actual tangible functions; why does RNA need to exist as a mediator between the two? Two reasons with a brief explanation for each will suffice.

2. During the replication process, a multiple protein complex is formed that is composed of 4 proteins. List the 4 proteins, and provide a single explanatory sentence that explains its function for each.

(There is ALWAYS a replication based question)

3. According to the CENTRAL DOGMA, there is a flow of information from DNA to RNA to proteins. In terms of molecular stability (i.e. how tough or long-lived the molecules are), DNA is actually a very robust stable molecule, whereas the stability of proteins will tend to vary according their function and chemistry. However, RNA is a notoriously **unstable** molecule, subject to extremely fast degradation. Can you try to think of reason why this might be an important thing for the well-being of a cell, tissue or organism?

(note, this year, there will likely be a CRISPR related question)

6 MARKS EACH, 24 MARKS TOTAL. ANSWER IN ESSAY FORMAT. YOU MAY USE POINT FORM TO MAKE LISTS OF ITEMS, FACTS OR CLAIMS. AN ANSWER OF APPROXIMATELY ONE AND ONE-HALF TO TWO PAGES (DOUBLE SPACED) FOR EACH ANSWER SHOULD BE SUFFICIENT AS A MINIMUM REQUIREMENT (YOU CAN WRITE MORE IF YOU WISH).

Genomics Questions (choose two)

1. Describe the ways in which genomic information threatens privacy. How can genetic privacy be protected?
2. Describe how genomic information can threaten the rights of people with hereditary diseases. How can such groups be protected?
3. Using one of the “levels of analysis” discussed in class, in what ways has the sequencing of the human genome impacted society? How can society best respond to this impact?

In each of your answers, use concepts and content from the course lectures and learning materials, including at least two of the readings below.