



JOHN EDMONDSON HIGH SCHOOL

Assessment Notification

Faculty: Science Course: Biology Year: 12

Assessment Task: Model Building and Report

Assessment Weighting: 20% Due: Term 4 Week 8 Date: 27/11/2023

Task Type: Hand in Task In Class Task Practical Task

Outcomes assessed (NESA)

BIO11/12-4 selects and processes appropriate qualitative and quantitative data and information using a range of appropriate media
BIO11/12-6 solves scientific problems using primary and secondary data, critical thinking skills and scientific processes
BIO11/12-7 communicates scientific understanding using suitable language and terminology for a specific audience or purpose
BIO12-12 explains the structures of DNA and analyses the mechanisms of inheritance and how processes of reproduction ensure continuity of species
BIO11/12-3 conducts investigations to collect valid and reliable primary and secondary data and information.
BIO11/12-5 analyses and evaluates primary and secondary data and information.

Module 5

DNA and Polypeptide Synthesis Inquiry question:

Why is polypeptide synthesis important?

Students:

- construct appropriate representations to model and compare the forms in which DNA exists in eukaryotes and prokaryotes (ACSBL076)
- model the process of polypeptide synthesis, including: (ACSBL079)
 - transcription and translation
 - assessing the importance of mRNA and tRNA in transcription and translation (ACSBL079)
 - analysing the function and importance of polypeptide synthesis (ACSBL080)
 - assessing how genes and environment affect phenotypic expression (ACSBL081)
- investigate the structure and function of proteins in living things

Task Description/Overview

Section 1- Construction of Model- Polypeptide Synthesis (20 marks)

Section 2- Report and In-class questions (40 marks)

Total: 60 marks

Detailed Assessment Task Description

Due Date- Monday 27/11/23

Hand in before roll call(8.20 am) in D04- Model and printed copy of Report to be submitted at this time (Also submit on CANVAS).

All students will be completing In-class questions on 27/11/23 on Monday period 5 and 6.

You will be given **5 periods** in class to research **on IQ 3: DNA and polypeptide synthesis**. During this time, you can plan the construction of your model and write a report on this inquiry question.

Section 1- Construction of Model- Polypeptide Synthesis

You are required to construct a model demonstrating the stages/processes involved in polypeptide synthesis.

On your model, the location of the processes within the cell must be clearly represented i.e. nucleus or cytoplasm. You must also include a brief description of the processes occurring during each stage

The stages which must be displayed on your model are listed below:

a) DNA structure.

Include • complimentary nitrogenous bases • sugar phosphate backbone • hydrogen bonds
• 3 prime and 5 prime ends

b) Transcription

Include • RNA polymerase • mRNA formation •mRNA processing (splicing)

c) Translation

Include • mRNA codons • tRNA anticodons and amino acids • growing chain of amino acids

d) Protein Folding

Section 2- Report and In- class Questions

Using a variety of resources, students are to write a report (summary notes) on all the dot points included in Inquiry question 3.

Why is polypeptide synthesis important?

Students:

- construct appropriate representations to model and compare the forms in which DNA exists in eukaryotes and prokaryotes (ACSBL076)
- model the process of polypeptide synthesis, including: (ACSBL079)
 - transcription and translation
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- investigate the structure and function of proteins in living things

You may use visuals, labelled diagrams to explain the processes.

These notes can be used to answer in-class questions during the double period on 27/11/23 period 5 and period 6.

Report not to exceed three A4 pages (double sided).

Resources to write report:

Nelson: Yr 12 Biology in Focus

Pearson: Yr 12 Biology

ATOMI

Class notes and booklets provided by your teacher

Section 1 MODEL				MARKS		
	10-9	8-7	6-5	4-3	2-1	0
Accuracy: Scientific concept - Transcription & Translation	Model accurately reflects the scientific concept. Model is detailed and demonstrates a sophisticated understanding of transcription & translation. Links explanation to stages in the process	Model accurately reflects the scientific concept. Model is detailed reflecting a thorough understanding of transcription & translation.	Model mostly reflects the scientific concept. Model reflects a sound understanding of transcription & translation.	Model reflects some of the scientific concept. Model reflects a basic understanding of transcription & translation.	Model somewhat reflects the scientific concept. Model reflects a limited understanding of transcription & translation.	Insufficient evidence
	5	4	3	2	1	0
Clarity/Design: Ease of reading/ understanding	Labels & keys are correct and easy to read. Labels and keys add an extensive understanding of the model. Identifying all aspects of the process. Colour is used appropriately and consistently to represent the scientific concept.	Labels & keys are correct and easy to read. Labels and keys add a thorough understanding of the model. Colour is used appropriately to represent the scientific concept.	Labels or keys are mostly correct but may be difficult to read. Labels and keys add a sound understanding of the model. Colour is used to represent the scientific concept.	Labels &/or keys are missing. Labels and keys add basically to an understanding of the model. Colour is used less appropriately.	Labels & keys are difficult to read or missing. Labels and keys add limitedly to an understanding of the model. Colour is not used.	Insufficient evidence
	5	4	3	2	1	0
Creativity: Choice & Appropriateness of materials	Model is two or three-dimensional. Materials & shapes are appropriate to the represented concept. Aspects of the model are movable and interactive	Model is two or three-dimensional. Materials & shapes are appropriate to the represented concept.	Model is two-dimensional. Materials & shapes are mostly appropriate to the represented concept.	Model is two-dimensional. Shapes are appropriate to the represented concept.	Model is two-dimensional. Shapes are mostly appropriate to the represented concept.	Insufficient Evidence
TOTAL						20

This is an individual task therefore should be completed individually. Any plagiarism will result in a mark of zero and an N determination will be issued.

Assessment Criteria		
Grade	Description	Mark Range
Outstanding (O)	The student has an extensive knowledge and understanding of the content and can readily apply this knowledge. In addition, the student has achieved a very high level of competence in the processes and skills and can apply these skills to new situations.	84.5-100
High (H)	The student has a thorough knowledge and understanding of the content and a high level of competence in the processes and skills. In addition, the student is able to apply this knowledge and these skills to most situations.	69.5-84
Sound (S)	The student has a sound knowledge and understanding of the content and has achieved a good level of competence in the processes and skills.	49.5-69
Basic (B)	The student has a basic knowledge and understanding of the content and has achieved a basic level of competence in the processes and skills.	27.5-49
Limited (L)	The student has an elementary knowledge and understanding in a few areas of the content and still requires further work to achieve competence in the processes and skills.	0-27

Satisfactory completion of courses

A course has been satisfactorily completed, when the student has:

- Followed the course developed/endorsed by the NSW Educational Standards Authority (NESA)
- Applied himself/herself with diligence and sustained effort to the set tasks and experiences provided in the course.
- Achieved some or all of the course outcomes