SCIENCE ASSESSMENT TASK NOTIFICATION

YEAR 12 BIOLOGY

2022

Task Number: 1

Topic/s: Module 5 (IQ 2, 3 and 4)

Weightings: 15%

Due Date: Week 2, Term 1 2022 (Date to be confirmed when 2022 timetable is available)

Time: During your normal timetabled lesson

Venue: Allocated classroom

Outcomes to be Assessed:

BIO 11/12-3: A student conducts investigations to collect valid and reliable primary and secondary data and information.
BIO 11/12-4: A student selects and processes appropriate qualitative and quantitative data and information using a range of appropriate media.
BIO 11/12-6: A student solves scientific problems using primary and secondary data, critical thinking skills and scientific processes.
BIO 11/12-7: A student 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

Task: IC

Electronic Submission of Task: No

Please Note:

1. The College policy regarding malpractice, including cheating and plagiarism, late submission and absenteeism will apply. Please refer to moodle.pmaclism.catholic.edu.au (Assessment Tasks – Rules and Procedures). Stage 6 students should also refer to their *2022 Assessment Handbooks*.
2. Email is NOT an accepted form of assessment task submission.
3. If you are going to be away for any reason, including school based activities, you must fill in a "Planned Absence Notification" form and submit to the Assistant Principal Curriculum or the Leader of Curriculum. This form can be found at https://moodle.pmaclism.catholic.edu.au/mod/page/view.php?id=17637&forceview=1.

Task Outline:

Synopsis – This task comes from and is based around Module 5 - Heredity. The task will be composed of two main activities:

Data Gathering – In the weeks leading up to the in-class analysis component, students will be required to prepare a research summary focussed on **their understanding of mechanisms of inheritance.** The aim of the summary is to provide you with additional detail and reference material when answering questions during the in-class component. Students should ensure that they have enough information to meet the requirements of the outcomes, and marking guide below. Students are encouraged to use a wide range of sources including their textbooks, class notes and the internet. 5 marks will be given for research that is thorough, uses multiple reliable sources and includes correct references.
The summary itself is to be collated in the booklets provided. Information may be entered into the booklets by hand or printed on paper and stuck in. Either way no information included may be double sided and no extra pages may be added to the booklet. It should be noted that students will not have time to answer questions well if they rely solely on their notes.

Analysis – This part will be completed on the date to be announced during the scheduled 60 minute lesson. Students will be required to answer written questions based on various scenarios presented to a genetic counsellor, and the advice she may give parents relating to the genetic diseases/conditions. Each section will require students to analyse information and provide evidence of their working knowledge of biological concepts. Students will be able to bring their research booklet into this session along with pens, pencils, eraser, calculator and a ruler. At the end of the exam the research booklets will be collected to ensure they comply with the requirements above.

Marking guide – students may be assessed on their ability to:

- Interpret and analyse written inheritance information in a pedigree using standard symbols
- Use accepted symbols for genotypes
- Predict the possible genotypes and phenotypes of offspring using Punnet squares for various types of genetic inheritance problems
- Explain the link between genotype and phenotype
- Interpret karyotypes for conditions such as Turners, Klinefelters, Triple X syndrome and use knowledge of gamete formation and fertilizations to show how these karyotypes are produced
- Determine ABO blood type and Rhesus factor from antibody testing
- Illustrate sex linked inheritance for conditions such as colour blindness, Fragile X syndrome, haemophilia
- Show an understanding of the building blocks of DNA
- Interpret a table of codons to determine identity of amino acids
- Illustrate an understanding of polygenic inheritance in humans eg. Hypertension, skin colour
- Communicate complex genetic concepts using language that could be understood by the general public and members of the scientific community

Here are some resources/links to get you started. Note: this is not an exhaustive list

- https://www.genetics.edu.au/publications-and-resources/facts-sheets/fact-sheet-40-turner-syndrome
- https://www.genetics.edu.au/publications-and-resources/facts-sheets/fact-sheet-39-klinefelter-syndrome/view?searchterm=klinef
- http://www.biology.arizona.edu/human_bio/problem_sets/blood_types/02t.html
- https://genetics.thetech.org/ask-a-geneticist/blood-type-and-pregnancy
- **MUST WATCH**: Blood typing demo - https://www.youtube.com/watch?v=5ysaMKoqmr8&t=468s