Examination Period 3: 2016/17

SLS200117N

Module Title: Genes and Genomics
Level: Five
Time Allowed: Two hours and thirty minutes

Instructions to students:

- Enter your student number not your name on all answer books.
- Answer two out of five questions.
- All questions are equally weighted.
- Begin each answer in a separate answer book; label each answer book clearly with the number of the question you are answering.
- Neither books nor notes may be taken into the examination.

No. of Pages: 2
No. of Questions: 5
Answer two of the following questions:

1. Discuss, using examples, how RNA-based gene therapy could be used to prevent or treat disease.

2. Discuss how genetic and environmental factors might influence blood pressure.

3. Discuss how you would conduct an experiment to establish whether or not a genetic polymorphism within a gene’s regulatory sequence results in a change in mRNA expression. In giving your answer assume that you have full access to any laboratory facilities along with access to human subjects and/or human tissue. You should also include details of how you might quantify any changes in expression that you observe.

4. Discuss, using at least three examples from the scientific literature, molecular mechanisms that might cause a healthy cell to become a cancerous one.

5. Discuss, using relevant examples, how transgenic technology can be used to further our understanding of disease processes. You should also comment on any weaknesses that might be associated with this approach.

---

End of Paper