Practice Question Set For A-Level
Subject : Biology
Paper-1 Topic: 4 Genetic Info and Variation and Relationships

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Name of the Student:_____
Max. Marks : 18 Marks **Time : 18 Minutes**

Q1.

(a) What is the proteome of a cell?

_____

_____

_____

_____

(1)

(b) Give **two** structural differences between a molecule of messenger RNA (mRNA) and a molecule of transfer RNA (tRNA).

1. _____

_____

_____

_____

_____

2. _____

_____

_____

_____

_____

(2)

(c) Starting with mRNA in the cytoplasm, describe how translation leads to the production of a polypeptide.

Do **not** include descriptions of transcription and splicing in your answer.

_____

_____

_____

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(5)
(Total 8 marks)

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Q2.

Read the following passage.

Sizes of populations of normal intestinal bacteria are usually controlled by T cells that are produced slowly and in small numbers by the immune system. These T cells do not normally survive for very long. As a result, they do not release large amounts of cytokines. Cytokines are chemicals that can cause swelling of the lining of the intestines.

Crohn's disease is a long-lasting disease that causes swelling of the lining of the intestines. It is believed that Crohn's disease can be caused by a loss of tolerance to normal intestinal bacteria, as shown by an unusually large response by T cells. This response can be triggered by pathogenic bacteria in the intestines of people with a genetic tendency to Crohn's disease.

Some people's Crohn's disease can be controlled by a drug called 5-aminosalicylic acid (5-ASA) that reduces swelling. Another drug called 6-mercaptopurine (6-MP) may also be used. 6-MP inhibits an enzyme required to make adenine and guanine. This is effective because most cells can recycle nucleotides, but T cells are not able to do so.

Use information from the passage and your own knowledge to answer the questions.

(a) The Crohn's disease symptom of swelling of the lining of the intestines could be triggered by pathogenic bacteria in the intestines (lines 6–10).

Suggest how.

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(3)

(b) Suggest the meaning of ‘a genetic tendency to Crohn’s disease’ (line 10).

(2)

(c) Suggest why 5-ASA is only effective in controlling the swelling of the lining of the intestines in **some** people with Crohn’s disease (lines 11–12).

(2)

(d) Suggest why 6-MP can be used to control the symptoms of Crohn’s disease (lines 13–15).

Do **not** include details of enzyme inhibition or protein synthesis in your answer.

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(3)
(Total 10 marks)

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