## SECTION A

**Answer ALL questions.**

**1.** (a) Define the term 'drug'.

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**(1 mark)**

(b) Figure 1 is a graph which shows the percentage of adults, aged 21 and older, who use drugs in Country X.

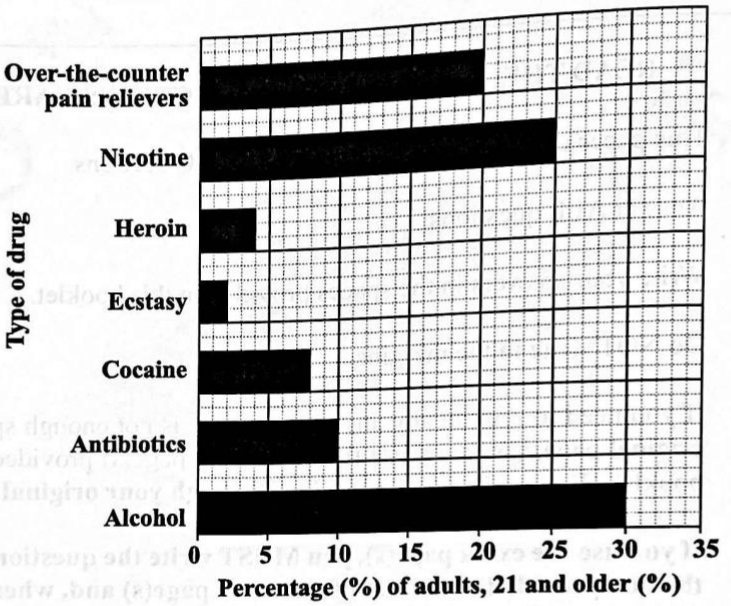



**Figure 1. Percentage of adults, 21 and older, who use drugs in Country X**

Using Figure 1,

(i) identify the drug which is classified as a narcotic and the drug which is classified as a hallucinogen

Narcotic .....

Hallucinogen .....

**(2 marks)**

(ii) identify the drug which is MOST used and the drug which is LEAST used by adults in Country X

Most used .....

Least used .....

**(2 marks)**

(iii) determine the percentage of adults who utilize prescription drugs

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**(1 mark)**

(iv) determine the percentage of adults who utilize illegal drugs.

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**(1 mark)**

(c) Ethan is 13 years old and has seen his parents use drugs for most of his life. His father smokes marijuana daily and his mother drinks alcohol most weekends when her friends come over to visit.

(i) State TWO **psychological** effects Ethan's father could experience as a result of regularly smoking marijuana.

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**(2 marks)**

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(ii) State THREE **physiological** effects Ethan's mother could experience as a result of drinking large volumes of alcohol.

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**(3 marks)**

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(iii) Suggest THREE negative effects that the misuse of drugs could have on Ethan's household.

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**(3 marks)**

**Total 15 marks**

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**2.** Figure 2 is a diagram of the human skeleton.

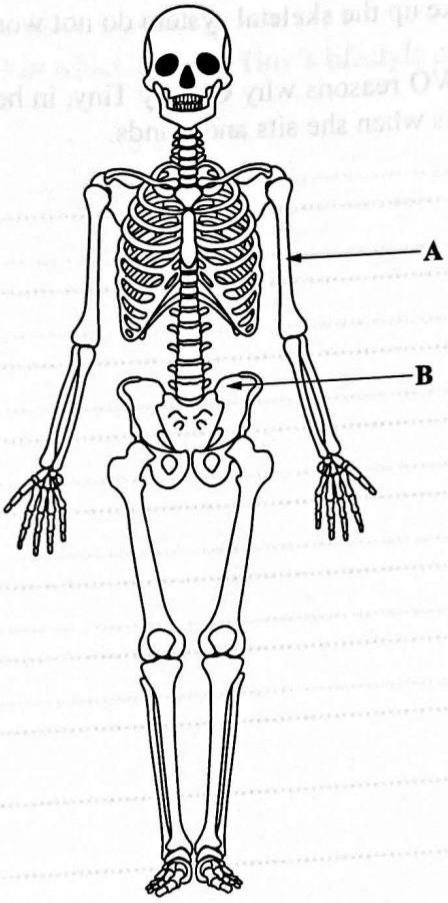



**Figure 2. Human skeleton**

(a) (i) Identify the bone labelled A in Figure 2.

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**(1 mark)**

(ii) On Figure 2, label TWO bones which have protective functions. **(2 marks)**

(iii) Identify the bone labelled B in Figure 2 and state the TWO bones to which it is attached.

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**(3 marks)**

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(b) Granny Tiny, who just celebrated her 85th birthday, is complaining about pains in her joints when she sits and stands. Her grandson, Suki, tells her that as a person ages, the structures that make up the skeletal system do not work as well as they should.

(i) Outline TWO reasons why Granny Tiny, in her old age, would experience pains in her joints when she sits and stands.

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**(4 marks)**

(ii) Suggest the degenerative disease from which Granny Tiny is MOST likely suffering.

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**(1 mark)**

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(c) Granny Tiny spends most of her days indoors watching television. Her diet largely consists of bread and jam.

Explain TWO ways in which Granny Tiny's lifestyle could negatively affect the health of her bones.

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**(4 marks)**

**Total 15 marks**

3. (a) Identify TWO water-borne diseases.

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**(2 marks)**

(b) Describe TWO steps involved in large-scale water purification.

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**(4 marks)**

(c) (i) Suggest THREE ways in which Caribbean households may contribute to water pollution.

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**(3 marks)**

(ii) State THREE socioeconomic impacts of water pollution.

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**(3 marks)**

(iii) Recommend THREE measures that families in the Caribbean could take to reduce water pollution.

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**(3 marks)**

**Total 15 marks**

4. (a) (i) The following statements are related to types of cell division. Underline the statement(s) that is/are TRUE about meiosis.

- The offspring are different from each other.
- The offspring are identical.
- Exchange of genetic material occurs between chromosomes.
- Exchange of genetic material does not occur between chromosomes.

**(2 marks)**

(ii) Identify the type of cells formed as a result of meiosis.

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**(1 mark)**

(iii) Explain why microtubules must attach to homologous chromosomes during the metaphase of cell division.

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**(2 marks)**

(iv) State the MAIN reason why genetic variation is important to living organisms.

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**(1 mark)**

(b) Figure 3 shows pictures of four stages in the process of meiosis.

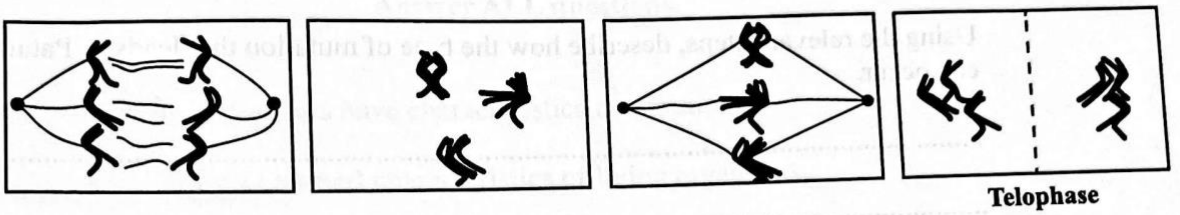



**Figure 3. Four stages of meiosis**

(i) Label EACH picture in Figure 3 with the term that BEST describes the stage. One picture has been labelled for you. **(3 marks)**

(ii) State whether the pictures in Figure 3 depict Meiosis I or Meiosis II.

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**(1 mark)**

(iii) State whether each of the cells depicted in the telophase in Figure 3 is haploid or diploid.

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**(1 mark)**

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(c) Down's syndrome and Patau syndrome are both trisomy syndromes. In Patau syndrome, also known as Trisomy 13, there are three copies of chromosome 13.

Using the relevant steps, describe how the type of mutation that leads to Patau syndrome can occur.

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**(4 marks)**

**Total 15 marks**

## SECTION B

**Answer ALL questions.**

**5.** (a) All living organisms have characteristics in common.

Describe TWO **named** characteristics of living organisms.

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**(4 marks)**

(b) Identify TWO structures which are found in a plant cell that are NOT found in an animal cell.

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**(2 marks)**

NEXT PAGE

(c) Mr X was promiscuous during his teenage years and did not practise safe sex. He is now 35 years old and notices that he is rapidly losing weight, has a persistent cough and has frequent respiratory infections.

(i) Identify the condition from which Mr X is MOST likely suffering and explain how this condition would have developed.

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**(5 marks)**

(c) Down's syndrome and Patau syndrome are both trisomy syndromes. In Patau syndrome, also known as Trisomy 13, there are three copies of chromosome 13.

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**(4 marks)**

**Total 15 marks**

## SECTION B

**Answer ALL questions.**

5. (a) All living organisms have characteristics in common.

Describe TWO **named** characteristics of living organisms.

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**(4 marks)**

(b) Identify TWO structures which are found in a plant cell that are NOT found in an animal cell.

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**(2 marks)**

(c) Mr X was promiscuous during his teenage years and did not practise safe sex. He is now 35 years old and notices that he is rapidly losing weight, has a persistent cough and has frequent respiratory infections.

(i) Identify the condition from which Mr X is MOST likely suffering and explain how this condition would have developed.

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**(5 marks)**

(ii) **Recommend FOUR ways in which Mr X could manage his condition.**

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**(4 marks)**

**Total 15 marks**

6. (a) (i) Identify TWO clotting factors necessary for the process of blood clotting to occur.

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**(2 marks)**

(ii) State the function of EACH clotting factor identified in (a) (i).

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**(2 marks)**

(iii) Name the disease that will develop if one of the clotting factors is missing.

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**(1 mark)**

(iv) Identify the cellular component of blood that is required for blood to clot.

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**(1 mark)**

(b) (i) Claire has Rh negative blood and her husband Calvin has Rh positive blood. The couple is expecting a second baby.

Given the blood types of Claire and Calvin, explain how it may be possible for the baby to be stillborn.

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**(6 marks)**

(ii) Two years later, Claire is shocked to learn that she has developed hypertension since she exercises regularly and maintains a strict and healthy diet.

Suggest THREE **other** ways in which Claire could manage her hypertension.

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**(3 marks)**

**Total 15 marks**

**END OF TEST**