11 HUMAN BIOLOGY GENETICS ASSIGNMENT /42

Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Due date: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

1. **Explain** what are co-dominant allele are. (1 mark)

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2. An example of co-dominant alleles is the human ABO blood types. **State** the possible genotypes of the alleles for the ABO blood types. (2 marks)

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3. **List** the A and B blood antigens. (2 marks)

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4. **List** all the possible phenotypes for the ABO blood types. (2 marks)

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5. **Explain** why is it important to receive compatible blood during a blood transfusion. (2 marks)

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6. **State** the blood type that is the universal acceptor. (1 mark)

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7. **State** the blood type that is the universal donor. (1 mark)

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8. Another blood grouping is the Rh grouping. **State** the Rh blood group antigen. (1 mark)

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9. **List** all the possible genotypes for the Rh blood type groupings. (1 mark)

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10. **State** the allele is recessive for the Rh blood group type. (1 mark)

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11. A man who is blood type O marries a woman who is blood type AB. What proportion of the couple’s offspring could donate blood to the father? Show all working using a punnet square.

1. marks)

12. A man who is blood type AB marries a woman who is blood type BB. What proportion of the couple’s offspring could donate blood to the father? Show all working using a punnet square.

(6 marks)

13. Bob Rocket is a wealthy film actor. He is blood type O. A woman attempts to sue Bob for the support of her child that she claims Bob is the father of. The Child is blood type AB and the mother is blood type AA. Is Bob the father? Show all working using a punnet square.

(6 marks)

14. Two newborn babies were accidentally mixed up in the hospital. In an effort to find out which parent each baby belongs to the blood type of the babies and the parents were collected. The following results were found.

|  |  |
| --- | --- |
| Individual | Blood type |
| Baby 1 | OO |
| Baby 2 | AO |
| Mrs Brown | BO |
| Mr Brown | AB |
| Mrs Smith | BO |
| Mr Smith | BO |

Which baby belongs to which set of parents? Show all working.

(10 marks)