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|  | Raffles Institution Raffles Programme  Year 3 Biology  Remedial Session: Transport in Man |

Name: ............................................ ( ) Class: .................. Date: .......................

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| **1** | Which of the following are found in both arteries and capillaries? | | |
|  |  | | |
|  | **A** | connective tissue |  |
|  | **B** | endothelial cells |  |
|  | **C** | smooth muscle cells |  |
|  | **D** | elastic fibres | ( ) |

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| **2** | The graph belowshows the pressure changes in the left side of the heart during one cardiac cycle. At which point **A**, **B**, **C** or **D**, does blood first enter the left ventricle after ventricular systole?  IMG_0003 | | |
|  |  |  | ( ) |

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| **3** | When legs are not moved for an extended period of time, the rate of blood flow through the veins is reduced.  Which of the following statements best explains this? | | |
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|  | **A** | The semi-lunar valves that prevent the backflow of blood are opened by the contraction of leg muscles. |  |
|  | **B** | The veins are located between muscles and the contraction of muscles helps to push blood along. |  |
|  | **C** | The thin muscular walls of the veins are unable to withstand high blood pressure and the leg muscles help to prevent them from bursting. |  |
|  | **D** | The muscular walls of the veins have to be contracted simultaneously with the muscles of the leg to aid in the movement of blood. | ( ) |

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| **4** | Which of the following would be the most likely consequence(s) of a leaky bicuspid valve?  1 A heart attack would occur.  2 The heart would stop beating.  3 There would be reduced blood pressure in the aorta.  4 The blood leaving the aorta would be less oxygenated. | | |
|  |  | | |
|  | **A** | 2 only |  |
|  | **B** | 3 only |  |
|  | **C** | 3 and 4 |  |
|  | **D** | 1, 2 and 4 | ( ) |

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| **5** | The diagram represents the heart of a lizard. Other parts of the lizard’s circulation system are broadly similar to that of mammals.  007  It is reasonable to conclude that | | |
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|  | **A** | the aorta of a lizard carries partially oxygenated blood. |  |
|  | **B** | blood in the pulmonary arteries of a lizard would be deoxygenated whilethose in a mammal would be oxygenated. |  |
|  | **C** | the pulmonary veins of a lizard carry partly oxygenated blood while those in a mammal would carry deoxygenated blood. |  |
|  | **D** | the lizard’s heart is a more efficient pump than the mammal’s heart. | ( ) |

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| **6** | **Fig. 6.1** is a representation of different blood vessels of the mammalian circulatory system associating with body cells.    **Fig. 6.1** | | |
|  | **(a)** | Name the type of blood vessels labeled **A**, **B** and **C**.    **A**\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  **B**\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  **C**\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | [2] |
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|  | **(b)** | By means of an arrow, indicate the direction of blood flow in blood vessel **C**. | [1] |
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|  | **(c)** | With reference to **Fig. 6.1** and your knowledge, give two structural differences between blood vessels **A** and **C** and explain the significance of such differences.  ................................................................................................................................  ................................................................................................................................  ................................................................................................................................  ................................................................................................................................  ................................................................................................................................  ................................................................................................................................ | [4] |
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|  | **(d)** | High blood cholesterol may lead to the deposition of fatty substances in blood vessel **A**. If **A** is a vessel in the heart, explain how a heart attack might happen.  ................................................................................................................................  ................................................................................................................................  ................................................................................................................................  ................................................................................................................................ | [3] |
|  |  | [Total: 10 marks] | |

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| **7** | Red blood cells and cheek epithelial cells are both found in the human body. | | | | |
|  | **(a)** | List **two** differences between these cells.  First difference:  ................................................................................................................................  ................................................................................................................................  Second difference:  ................................................................................................................................  ................................................................................................................................ | | | [2] |
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|  | **(b)** | State **three** ways in which red blood cells play a role in the transport of carbon dioxide.  First difference:  ................................................................................................................................  ................................................................................................................................  Second difference:  ................................................................................................................................  ................................................................................................................................  Third difference:  ................................................................................................................................  ................................................................................................................................ | | | [3] |
|  |  |  | | |  |
|  | **(c)** | The blood pressure of a runner was monitored for twenty minutes. For the firstthree minutes, the runner rested. Then, he ran on a treadmill at a steady speed for ten minutes before resting again. The results are shown below in **Fig. 8**.**1.**    **Fig. 8.1** | | |  |
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|  |  | **(i)** | | State the resting values for systolic and diastolic blood pressure.  Resting systolic pressure: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  Resting diastolic pressure: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | [1] |
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|  |  | **(ii)** | | Explain the change in systolic blood pressure during the period of exercise. |  |
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|  |  | **(iii)** | Why was there no change in the diastolic blood pressure throughout the experiment | |  |
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|  |  | [Total: 10 marks] | | | |