**GENERAL HUMAN BIOLOGY – YEAR 12**

TASK 9 – INFECTIOUS DISEASE TEST MARKING KEY

1. Which of the following is an example of a disease spreading by direct contact?
   1. Sneezing
   2. Coughing
   3. Kissing
   4. Sweating
2. Which of the following is a transmissible (passed from host to host) disease?
   1. Scurvy
   2. Food poisoning
   3. Diabetes
   4. Cancer
3. Pathogens are \_\_\_\_\_\_\_\_\_\_.
   1. Disease causing microbes or germs
   2. Non disease causing and are beneficial
   3. A natural part of the body
   4. Always treated with antibiotics
4. Sam is preparing wooden beams when he receives a nasty splinter. Her immune system would start by causing what to occur at the sight of injury?
   1. Mast cells release histamine
   2. The capillaries become leaky to grant phagocytes access to the invading pathogen
   3. Nothing happens at the start because the body does not recognise the invading pathogens
   4. Clotting in the injury area occurs
5. James has developed flu, and his throat is very sore. Which of the following cells is responsible for destroying the cells of his throat because they have become infected by a virus?
   1. B Cells
   2. Phagocytes
   3. Natural Killer Cells
   4. Mast Cells
6. Which of the following will not efficiently prevent the transmission of a disease?
   1. Quarantine
   2. Immunisation
   3. Medications that disrupt pathogen life cycle
   4. Anti-histamines
7. When chefs wash their hands after going to the toilet, they:
   1. reduce the likelihood of infecting their customers through airborne transmission
   2. do not need soap as the water alone washes away pathogens
   3. reduce the likelihood of infecting their customers through bodily fluids
   4. lower the chance of their customers contracting food poisoning

***SHORT ANSWER (41 MARKS)***

1. Define ‘infectious disease’. (1 mark)

|  |  |
| --- | --- |
| **Description** | **Marks** |
| A disease caused by pathogens that is contagious | 1 |
|  | **1** |

1. Draw a line to match the pathogens with their example (2 marks)

½ mark each.

|  |  |  |
| --- | --- | --- |
| Bacteria |  | Tinea/Athlete’s Foot |
| Virus |  | Malaria |
| Parasite |  | Ross River |
| Fungi |  | Food Poisoning |

1. Parasites rarely kill their host. Suggest a possible reason why. (2 marks)

|  |  |
| --- | --- |
| **Description** | **Marks** |
| * Parasitic relationship/live off of host * If host dies, then they have no food/protection | 1-2 |
|  | **2** |

1. Sarah recently went on holiday to Sudan to visit her Sudanese friend. While there, Sarah was taken to lots of places by her friend, and she ate and drank the same as her friend, though it was her first time eating and drinking this cuisine and she became ill. The food and water were not contaminated, and Sarah has no intolerances. Suggest a possible explanation as to why Sarah fell ill but her friend didn’t.

(2 marks)

|  |  |
| --- | --- |
| **Description** | **Marks** |
| * Sarah’s friend adapted to the pathogens in their diet via early exposure * Sarah has never been to this area, so the pathogens are different to the ones she’s been exposed to as a kid | 1-2 |
|  | **2** |

1. Describe four ways that a disease can be transmitted from one person to another. (4 marks)

|  |  |
| --- | --- |
| **Description** | **Marks** |
| * Airborne – pathogen aerosolised, only virus * Droplets – droplets of mucous and saliva containing pathogen * Body Fluids – body fluids containing pathogen exchanged * Contact – direct and indirect * Vector – another organism carrying pathogen, usually mosquito * Contaminated food/water – pathogen present in consumable | 1-4 |
|  | **4** |

1. List two adaptations that bacteria have and explain why the enable entry to the human body. (4 marks)

|  |  |
| --- | --- |
| **Description** | **Marks** |
| *Any two of the following rows.* | |
| * Endospore * Protective coat that can form | 1-2 |
| * Outer layer * sticky so bacterium can ‘stick’ to human body | 1-2 |
| * Toxin production * make environment more hospitable for bacterium | 1-2 |
| * Pili * fight off anything that threaten bacterium | 1-2 |
|  | **4** |

1. A friend of yours is going to malaria-prone Nepal for leavers. In the space below, outline one recommendation you have to reduce your friends’ chance of contracting malaria, and explain why it will help. (2 marks)

|  |  |
| --- | --- |
| **Description** | **Marks** |
| *Any reasonable suggestions + why it will help:*   * Wear long, loose-fitting clothing 🡪 to stop mosquitoes from being able to access skin to pass on parasite * Use bug repellent 🡪 to stop mosquitoes from biting and passing on parasite * Stay away from areas with stagnant water 🡪 mosquitoes breed in stagnant water, more likely to be bitten nearby. | 1-2 |
|  | **2** |

1. Explain why patients in third-world hospitals are more prone to water-borne diseases than Australian patients. In your answer, address the differences in infrastructure, education and hygiene practises.

|  |  |
| --- | --- |
| **Description** | **Marks** |
| * Infrastructure – sanitation facilities not as rigorous/higher chance of water being contaminated when it comes out of hospital taps/not cleaned as well as Australian hospitals * Education – less people aware of germ theory/why clean water is important * Hygiene Practises – lower access to soap/disinfectant, lower water access to less washing | 1-3 |
|  | **3** |

1. Josie was walking barefoot outside when she accidently stood on a dirty nail. The next day, the wound was red, hot, swollen and sore. Explain why Josie experienced each of these symptoms. (4 marks)

|  |  |
| --- | --- |
| **Description** | **Marks** |
| * Red – more blood in area * Hot – more blood in area * Swollen – more fluid in tissue * Sore – pain receptors activated because lots of pressure | 1-4 |
|  | **4** |

1. Explain how cilia and mucous membranes in your respiratory system work together to reduce your chance of becoming infected. (2 marks)

|  |  |
| --- | --- |
| **Description** | **Marks** |
| * Mucous is sticky, so pathogens get stuck in it * Cilia beat to move mucous up to mouth the be spat out or swallowed and destroyed by stomach acid | 1-2 |
|  | **2** |

1. In the space below, label three external defences, other than cilia and mucous membranes, that help to reduce your chance of contracting an infectious disease. (3 marks)

|  |  |
| --- | --- |
| **Description** | **Marks** |
| * Any 3 correctly labelled:   + Hair   + Acid – vagina or stomach   + Skin   + Lysozyme   + Earwax | 1-3 |
|  | **3** |

1. Compare antigens and antibodies. (2 marks)

|  |  |
| --- | --- |
| **Description** | **Marks** |
| * Antigen - on surface of pathogen * Antibody – produced by immune system to attach to antigen/destroy pathogen | 1-2 |
|  | **2** |

1. Explain what memory cells are, and how they enable a faster immune response when exposed to a pathogen. (2 marks)

|  |  |
| --- | --- |
| **Description** | **Marks** |
| * Memory cells are white blood cells that remember how to destroy a specific pathogen (or some variation) * Enable faster response because cells don’t need to become sensitised to pathogen (or some variation) | 1-2 |
|  | **2** |

1. Observe the graph below. Explain why antibodies are made more rapidly, and in greater numbers, during the secondary exposure. (2 marks)

|  |  |
| --- | --- |
| **Description** | **Marks** |
| * During secondary response memory cells become activated * Can make antibodies more efficiently as primary exposure caused immunity | 1-2 |
|  | **2** |

1. Compare and contrast the cell-mediated and antibody-mediated immune responses. (6 marks)

**Cell-Mediated Immune Response**

**Antibody-Mediated Immune Response**

Uses B-Cells

B-cells destroy specific antigen with antibodies

Any appropriate comment

Both attach specific pathogen/antigen

Both involve memory cells

Any appropriate comment

Uses T-Cells

T-cells destroy specific antigen

Any appropriate comment